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Crisis of Agricultural Sector

Vision Tamil Nadu 2023

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Editorial . . . . .

It is really heartening to see that the Research Journal of "Peninsular Economist" published by 'Association of Economists of Tamil Nadu' has reached you in time due to the unflinching support of all the members of AET. This research journal as conceived by Rev. Dr. M. Sebastian Stanislaus SJ, the founder of AET is the launching pad for the budding Economists and young scholars to ventilate their fertile economic ideas on many untraveled areas. The dearth of opportunities for the young aspirants to present and publish their views influenced Fr. Sebastian to mull over the creation of AET and publication of Peninsular Economist. The overwhelming response of the economic is fraternity, particularly young aspirants from all over Tamil Nadu converged at Periyar University, Salem on 27th and 28th October 2012 bears testimony to the accomplishment of the vision of the Founder Father. The conference had received more than 600 participants and 400 research papers. The edited volume of all the papers presented at the conference is with your now.

The Indian economy successfully withered the storm of American sub- prime crisis. According to experts the impending crisis of Indian economy is more demanding and challenging. The extreme volatility of Indian currency, burgeoning CAD, overheating economy and policy logjam are stifling the Indian economy. The only saving grace is the role of weather God, who is really smiling on the tottering Indian economy to subdue the sprawling prices. The AET is really happy to see that next conference at VIT, Vellore discusses thread bare some of vexing issues confronting the Indian economy. The policies and programmers chalked out at the conference will be of immense help to the policy formulation hope Indian economy will scale greater heights in the ensuing years.

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Chairman's Message .....

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My heart is full of joy when I think of all the Economics teachers, especially those who keep the Association of Economists of Tamil Nadu going from strength to strength. I feel thrilled to notice the great work neatly carried out by the AET officials – the ever-available AET Secretary Dr G Gnanasekaran of St Joseph's College, Tiruchirappalli and the highly committed Dr D Kumar of Jamal Mohammed College, Tiruchirappalli. It is not without reason that these two men were chosen to receive the Best Economics Teacher Award by the Malcolm Adiseshaiah-Elizabethammal Trust in recent years! In fact, I have suggested to that Trust a quick way to choose the awardee every year – viz., to closely observe the participation and performance of the individuals at the AET and not to spend too much time on applying varied criteria for the selection. I have a third person in mind Dr S M Suriya Kumar of Urumu Dhanalakshmi College, Tiruchirappalli who is very much close to us at the AET. He had been our Secretary for three terms in the past. And this year (2012-2013) he is our President. He is reliable, knowledgeable and capable. His association with AET, I am sure, will be for a very long time to come. His able touch is in every page of our publication, Peninsular Economist (ISSN 0976-8270). With such a band of dedicated men at the helm of affairs, the question: After them, who? does not, cannot and ought not rise. I have, of late, getting the cooperation from Dr G Irudayaraj of St Joseph's College, Tiruchirappalli. He has been a source of strength to the AET, even when he is not an AET official. Hence, our AET will go on forever.

As I informed you earlier – and I am not tired of repeating it ad nauseam - prior to his passing away on 26th January 2004 at St Joseph's College, Thiruchirappalli, the head-quarters of AET, when our (Association of Economists of Tamil Nadu) Founder Chairman Rev. Dr Fr M Sebastian SJ named me as his successor, my expression resembled that of Brutus to Cassius in Shakespeare's play

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Julius Caesar: Into what danger, dost thou drag me in? But then, Fr M Sebastian SJ referred to the smooth sail that was sure to follow at the AET. And so, with a willing cooperation of the Economics teachers of every district of Tamil Nadu, we have made AET great. Whatever suggestion that has been made especially by the AET Life Members has been accepted and implemented immediately. With a huge number of such members willingly offering their service, we can remain confident that AET has a bright future and will definitely be in Tamil Nadu scene to celebrate plenty of anniversaries. Thus do we realise the dream of Fr M Sebastian SJ.

Among the many AET activities, conducting the Annual Conference is a very important task. That we have completed so far 33 conferences is not an easy task. I will not surely succeed if I make an attempt to list out all the details associated with conducting an annual conference. To begin with, the Executive Committee and the General Body provide the theme of the conference. There is then the generous and the committed offer made by the management of a college that seeks to serve as the venue – not merely by making arrangements for the meeting with all the accompanying materials, but more especially by providing accommodation and food for the participants. And the participants, especially the paper-presenters at the various sessions along with their respective chairpersons and the rapporteurs contribute their share for the success of the conference.

In recent years, this academic conference has acquired a social significance. We have started adopting a simple practice. We seek to honour individual paper-presenters whose papers are adjudged the best. Dr.V.Mohanasundaram,who shows significant focus on encouraging members in the art of research writing is appreciated for sponsoring the awards for the best papers presented in our conferences over the years. Some among us have taken initiative to establish Junior and Senior Economist Awards and we have begun honouring our members every year. And in the process, we have not forgotten our elders. We have named the award given to them as the Life Time Award. By honouring them, it is the AET that gets honoured. What greater joy I can have then than to see the smile on everyone concerned.

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Having completed the conference tasks, a great task remains to be done. It consists in faithfully recording and editing all the materials that have been accepted. A good research work is said to be completed only when the information so assiduously gathered is faithfully and beautifully disseminated in print form. This exercise is for widely diffusing the information that it richly deserves. By so doing, we can rectify the errors, enable the weak and ennoble the strong.

Hence, kindly permit me to say to each one of the participants the two words: Thank you. However, I must acknowledge that I entertain a desire to reap much more than what I sow.

The AET Annual Conference – XXXIII took place at Periyar University, Salem. All the beneficiaries of the hospitality of the venue authorities will surely utter a grateful word.

We experienced during the 33rd Annual Conference of the AET at Salem University on 27th and 28th October 2012, the benevolence of ***Dr Muthuchezhian****, revered Vice Chancellor of this Periyar University and his ever-available affectionate team and more especially* ***Dr.S Rajendran****, Professor and Head and the entire staff members of the Department of Economics, starting from Madam* ***Dr Sugirtha Rani****,* ***the*** *Organising Secretary.*

Dr S Neelakantan*, former Director of MIDS and* ***Dr C Thangamuthu****, former VC of Bharathidasan University provided economic inputs. Both these stalwarts are AET Life members and belonging to a section termed as Founding Fathers. On the occasion of the conference, there were people like* ***Dr Dhandayuthapani*** *of Thirvalluvar University, Vellore,* ***Dr S Rajendran*** *and* ***Dr Janagam*** *of Periyar University who brought out their books. They have come our successful and hence let us honour them and profit by their thoughts.*

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AET Annual Conferences are occasions for the meeting of minds – juniors, seniors, all fertile minds. We grow in relationships, and we seek to learn the art of building bridges not walls.

The themes of the 33rd Annual Conference of the AET are: 01. Poverty Studies; 02. Crisis of Agricultural Sector; 03. Tamil Nadu Vision 2023; and, 04. The Economy of Salem Region (Districts of Salem, Dharmapuri, Namakkal and Krishnagiri).

The AET members, having adequate acquaintance with facts relating to poverty faced by the people, seek to arrive at a helpful methodology of calculating the existence and extent of poverty in an economic unit; and this is done with the sole view to be of some benefit to the sufferers.

Agricultural sector considered 'major' contains the majority of the poor in our country. The one sure way to minimising, if not eradicating, poverty is to concentrate our attention on containing the crisis in the agricultural sector. Humans cannot survive crisis for long. Hence, the sooner the poor come out of their poverty, the better, they will feel..

The themes of our Annual Conferences are to be seen together. Reflecting on the first two themes mentioned earlier may lead us to despair. People concerned with economy and economics should be men and women of hope. To facilitate us to obtain hope, AET has given us two other considerations: the third theme ***TAMIL NADU VISION 2023*** *at the state level – emphasizing building infrastructural facilities for economic and social development initiated by our beloved Chief Minister Madam Jayalalithaa and the fourth theme* ***the economy of the Salem Region*** *at the district level, comprising four districts – Salem, Dharmapuri, Namakkal and Krishnagiri.*

It is my prayer and wish that our presentations and deliberations enshrined here in these pages bear abundant fruit among all concerned.

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Will Indian Agriculture Move Forward?[1]

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I record my sincere thanks to the authorities of Association of Economists of Tamil Nadu (AET) for having selected me as the President of AET and the responsibility of delivering Presidential Address on the inaugural function of the 33rd annual conference. I am equally thankful to the authorities particularly the Vice Chancellor of Periyar University for providing me all necessary support to conduct the Conference of AET in our Department.

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While contemplating on the theme for my Presidential Address, I felt appropriate that I should address on the current status of Indian agriculture in a futuristic perspective. To touch upon the various facets of this sensitive subject confidently, I have two qualifications: I hail from a peasant household and tilling the soil till today; and traversed across India for understanding the conditions of farmers as well as the growing complexities of farming practices.

I. Introduction:

The government of India's 12th five year plan document lays greater emphasis on the domains of sustainable, faster, equitable and higher growth in the country to attain two digits economic growth. Unless, agriculture sector improves its growth performance, (at least at 4 percent) the target of 12th five year plan will not be achieved. However, the present situation in the agriculture sector is not all that favorable. With rich biodiversity, favorable climatic conditions, conducive agro-environment and other factor endowments (including research and development network), India has been forefront in producing a number of farm products, which many countries can not do so. At the same time due to combination of institutional, technical, policy and a host of other factors encumber the farm sector. This is seen more naked in the recent past as the contributions of agriculture to GDP is steadily

[1] Presidential Address delivered at the 33rd Annual Conference of the Association of Economists of Tamil Nadu, organized by the Department of Economics, Periyar University, Salem on 27, October, 2012. Views are personal.

declining, farm enterprise is becoming less remunerative, increasing farmers' migration, exploding rural distress and disheartening farmers' suicides. As a few studies have pointed out the Liberalization Privatization and Globalization (LPG) policies have also adversely affected the farm sector (Chand and Parappurathu, 2012). It is postulated that (Neelakantan, 2007) when the economy is transforming from primary to secondary and tertiary sectors, it is inevitable that the farm sector will lose its role in the contribution of national economy. Given the complex but confounded situation of Indian agriculture is there any scope for taking forward the Indian agriculture and this paper attempts to take stock of the macro dimensions of Indian agriculture based on the available literature and secondary data.

II. Paradox in Agriculture Sector

In the Indian economy, the share of agriculture in the Gross Domestic Product (GDP) has registered a steady decline from 36.4 per cent in 1982-83 to 17.75 per cent in 2007-08 and further declined to 14.2 percent during 2010-10. Moreover the gap between the growth of agriculture and non-agriculture sector began to widen since 1981-82, and more particularly since 1996-97, because of acceleration in the growth of industry and service sectors. Despite decline in the share of agriculture sector to GDP, it continues to support more than half a billion Indian people providing employment to 50 percent of the workforce. Both theoretically and empirically it is proved that while the economy is fast growing (as in India) the share of agriculture sector in national income will decline. Simultaneously the magnitude of workers' participation in agriculture sector should decline proportionately and unexpectedly this is not happening, which is crucial for both reducing poverty and improving agriculture.

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While LPG, which is regarded as improving the economy, some studies have attributed that (Vasavi, 2011) liberalization policies have embarked upon consolidating farm lands for industrial purpose and the land losers became pauper in due course. Though the market determines the supply and demand for land, the state's liberal support to manufacturing sector enabled to favor the manufacturing rather than farming. It is found that in and around Bangalore - Indian Silicon Valley – farmers sold their farm lands to MNCs and within short span these farmers either had sufficient money or land and they become marginalized.

As a few studies has pointed out that the LPG has enabled to modernize agriculture and improve the performance through development in biotechnology research with more of private initiatives. It is found that the introduction of BT cotton has shown some improvement in yield and income levels. At the same time there are legal impediments and policy obstacles in allowing genetically modified (GM) crops for large scale cultivation in the country. It is argued that there are vested interests on both sides for opposing and supporting the introduction of GM crops (for a comprehensive discussion on Bt cotton see, Stone, 2012). Heated arguments were surfaced at the recently (October, 2012) held Convention on Biological Diversity at Hyderabad. While a group of scientists from France confessed that GM corn fed rats developed health disorders, a group from Brazil termed this as besides technical errors, there is evidence on ideological bias in the conclusions of the study. Careful, unbiased, transparent and scientific evaluation on environment implications, economic viability and technical feasibility has to be conducted on GM crops across diverse agro-climatic conditions.

Notwithstanding the fact that information revolution virtually transformed every economic activity and the world became a global village it is sad that agriculture is not benefitted much from this in India. Poor market intelligence, insufficient scientific micro storage facility, market imperfections, lack of transport facility and the dominance of middlemen have been blocking the farmers to realize maximum price for their products. In fact it has been argued that both the producers and the consumers have been exploited especially during peak harvest season. Recent erratic fluctuation in turmeric price is a glaring example.

There has been debate over the deceleration of farm growth and rural distress in India. While the policy makers argued that there has been failure on the part of technological revolution in Indian agriculture yet another set of arguments figure out at policy failures (Narayanamoorthy, 2007). It is worth mentioning here that there are difficulties, problems and impediments on both policy and technological fronts. For instance, technology mission on oilseeds and pulses is force for almost over two decades and there has been sincere effort on the policy and technological sides to improve the yield levels of pulses and oilseeds. But the data show there has been no improvement at all and India has been spending huge resources to import edible oil and pulses.

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Bank nationalization was done primarily to cater to the needs of marginalized resource poor farmers and rural artisans. The cooperative financial institutions and regional rural banks (RRBs) have also been largely engaged in farm credit. In the beginning five commercial banks with 75 RRBs concentrated and now there are 196 with 15000 branches in 518 districts. Realizing the need for institutional credit, the Royal Commission on Agriculture (RCA, 1928), the National Commission on Agriculture (NCA, 1976) and the National Commission on Famers (NCF, 2004) have all lay greater emphasize for strengthening formal credit source for agriculture sector. Bank nationalization has enabled undoubtedly to expand branch network, deposit mobilization and credit disbursal in the rural areas but did not demonstrate the required level and the Prime Minister of India remarked as below.

"...We need more thinking on the credit front. While the financial system should do more for the credit needs of farmers, we need to raise some question. What do farmers need-a lower rate of interest or reliable access to credit at reasonable rates? Is our existing institutional framework adequate for meeting the requirements of our farmers who are a diverse lot? Do we need to create new institutional structures such as SHGs, micro finance institutions, etc, to provide improved and reliable access to credit? Or do we need to bring in moneylenders under some form of regulation? It is necessary that we find answers to these questions in the near future. The Prime Minister of India, Dr.Manmohan Singh, in his address at the 2nd Agriculture Summit, October 18, 2006

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Indian Global Rank in Major Crops

Crops	Rank in 2010		
	Area	Production	Yield
Rice (Paddy)	1	2	52
Wheat	2	2	38
Coarse Grains	3	4	125
Pulses	1	1	138
Oil crops (primary)	2	5	147
Cotton seed	1	4	77
Jute and jute like fibers	1	1	7
Tea	2	1	13
Coffee (Green)	7	7	14
Sugarcane	2	2	31

Source: Food and Agriculture Organization, 2010.

On many grounds in farm sector, India dominates in the world map and failed to demonstrate its efficiency. Although Indian has potential to improve the performance in different crops, the ground realities (yield levels) is poor and displayed in table. Only jute and similar fibers have some advantage, others are far below in world ranking. Pathetically, the yield levels of pulses and oilseeds are very low. Associated with this there has been argument that Indian agriculture is largely oriented towards 'area led growth' rather than 'production led growth' (Bisaliah, 2006).

Non-judicial, unscientific and indiscriminate application of fertilizers and pesticides has resulted in environmental damage in some regions. Moreover, the state owned public sector company's (Kerala Plantation Corporation) unscientific pesticide use has caused greater damage to environment and human in Kerala as reported by Rajendran (2002). Conversely, there have been reports that the chemical inputs have not reached in hinterlands especially the dry land regions and on the other they are excessively used in a few irrigated region. The scientific community and the state machinery have a greater social responsibility to educate the farmers to use the chemical inputs with required quantity through periodical testing. If this is not done intensively with sensitivity many potential and productive areas will be environmentally destructive to become desserts.

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There has been heated debate on the likely impact of allowing foreign direct investment (FDI) in retail trade. It is envisaged that allowing of FDI in the retail market will create more employment, increase the efficiency level in farming and reduce wastage. Alongside the emergence of contract farming would ensure input supply and remunerative price (for farm products) to farmers and hence supply chain is built in. Although the union government, corporate houses and a few economists (Kumar, 2012) are optimistic on this, a few economists (Balakrishnan, 2012) have contested. Allowing FDI in retail trade rests with the state government and obviously for political reasons only 10 states have so far agreed for this.

III. Crop Holiday and ESMA

Exasperated with the distress in agriculture farmers declare holidays from growing crops. This is becoming increasingly common now-a-days and paddy growers

in Godhavary delta have declared crop holidays during 2011 rabi season. In fact such agitation is quite practical and will have serious implications when the farmers' associations are strong and well united. Due to various socio-economic and political reasons the farmers' movements are not so strong in India except in a few regions of Maharashtra and Mandhya Pradesh. Grape growers and sugarcane growers strongly backed by political heavy weights in Maharashtra are highly organized and strong in influencing the policy circles. Now the paddy growers in Andhra Pradesh have declared crop holiday and it is inferred that this may spreads to other regions as well and if it is a successful and consolidated move than there will be a serious concern for food security.

Meanwhile the union law minister has proposed to bring farming under the fold of Essential Services and Maintenance Act with a view to protect this sector from extreme weather conditions like drought. It is believed that the state of Karnataka is reeling under severe drought and hence to save the farming community ESMA has been proposed. Also it is believed that crucial inputs like electricity will be supplied uninterrupted at times of crisis like drought. Nevertheless, there have been allegations that ESMA may bring more harm to agriculture and farm laborers than advantages. In case if the farmers (like declaring crop holiday, demanding loan waiving and seeking compensation during distress situations) and the farm laborers (demanding higher wages and action against landlords' harassment) declare strike and resort to agitation, the ESMA will be brought in and promulgated, which will impede the farmers and agriculture laborers . Already cases have been booked on farmers who had agitated (and in some cases turned violent and farmers were killed) over the forceful land acquisition in Uttar Pradesh and Maharashtra. Hence it is suspected and feared that this will have more trouble to already ailing farm sector rather than saving it (SAHRDC, 2012).

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IV. Disasters and Agriculture

Both natural and man-made disasters often change the entire fabric of agriculture system. Tsunami in 2004 and cyclone Thane in 2011 have devastated the entire agriculture more on the east coast of Tamil Nadu. The former disaster

affected the coastal farm lands and the latter one disturbed the farming in the coastal and interior main land. In both the cases, the famers lost their livelihood means including livestock and rendered them penniless. Intrusion of salt water during tsunami affected the crop lands and with an active support of local farmers the NGOs including MS Swaminathan Research Foundation have managed to change the marshlands as fertile crop land. Dreaded Thane has uprooted many fruit yielding coconut, banana, jack and cashew plantations. Replanting and rearing of these gardens will take longer time and farmers have no option but to migrate to urban areas in search of employment. Perhaps the safety net in the form of comprehensive crop insurance would have helped the community to some extent, if not fully.

Compared to natural disasters manmade ones are more serious and have severe consequences on the agriculture system and on the local communities. For instance, discharging of industrial effluents on the farm lands and water bodies, mining on the riverbeds, excessive and indiscriminate use of pesticides have all lead to serious environment problems. In India a maximum of 90 percent of the water is used for industrial and agriculture purposes from the river Cauvery and the plight is that this is one of the highly polluted rivers in the country. Similarly sand mining is done without any scientific norm and hence the water holding capacity of the river beds and the water table in the nearby wells have gone dry. Non-judicial, indiscriminate and unscientific application of chemicals has caused not only environmental disequilibrium but also has taken heavy toll on the human lives (Rajendran, 2002).

Corruption and lack of good governance – from state to village levels - also hampers the agriculture and has disastrous effect on the agrarian economy. Bihar's fodder scam has been regarded as one of major and scientific scams and so far no one has been found guilty and punished. In Maharashtra the present political atmosphere is not cordial among alliance partners as Rs 20000 crore scam has been unearthed in irrigation sector. Ironically, a few officials, some farmers and the unscrupulous companies (which were agreed to install micro irrigation apparatus) joined hands in pocketing public money to the tune of Rs 10 crore from micro irrigation projects this year in the neighboring Namakkal district.

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IV. Way Forward

The 12th five year plan envisages sustained, faster, balanced and equitable economic growth in the country. To attain this, it is inevitable that every economic sector has to contribute equally their due share to the national economy. Going by the statistics, it is difficult that agriculture sector will sustain its growth rate projection of 4 percent. Since agriculture is the large employment provider, any disturbance in this sector will pull down the growth in other areas and thereby the overall economic growth. Therefore, greater attention is essential from technology front through research and development and careful planning at policy levels and more resource allocation from the budget for research and development would help improve the performance of agriculture sector in the country.

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(Footnotes)

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Structural and Functional Dynamism in the Bovine Economy of Tamil Nadu

8th Rev. Dr M Sebastian Stanislaus Memorial Lecture

33rd Annual Conference of the Association of Economists of Tamil Nadu

Dr.R.Albert Christopher Dhas
PG & Research Department of Economics
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I consider the opportunity of presenting the eighth Rev. Dr M Sebastian Stanislaus Memorial Lecture as a remarkable and awarding experience and great tribute to Fr.Sebastian, the Founder of the Association of Economists of Tamil Nadu. I had the privilege of obtaining Rev. Dr.Sebastian's last signature on the citation for me as Young Economist Award for the year 2003-04. My association with Fr.Sebastian began as a young researcher when I met him first in the AET Conference held at Nagercoil. After my presentation on "Development Indicators of Kanayakumari District", Prof.Velan and Fr.Sebastian together appreciated my work and invited me to be an active Member and take part in the AET activities. Thereafter, I registered myself as a life member and attending all its major activities regularly. This is the right time to remember his vision, concern, and contribution to AET and motivation to research through the Association activities.

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My presentation on Bovine sector has a great and significant transformation in the history of AET towards its attention on untouched areas of research and research that needs attention on both micro and macro levels. Though my presentation is on the macro issues of bovine sector of Tamil Nadu, it has several issues of research concern, both at micro and global levels.

Bovines include cattle and buffaloes of livestock population. Bovines render various services like draught power, milk, manure, meat, hide and bones which have high economic values. Bovines are also essential for the development of traditional rural industries like oil-pressing and sugarcane-crushing. Historically, cattle were considered 'best for work' and buffaloes 'best for milk' (Oliver 1943). Bullocks were used for various agricultural operations like tilling, lifting water for crops, separating grain from straw and transporting produce to the market. Cows

were valued for their male progeny that supply animal power for agriculture. While certain breeds of cows were known for their efficiency in producing high-class bullocks, there existed certain exotic and cross breeds too which were kept for milk production and for producing efficient milch cows. In fact, there was a third category, which were dual-purpose animals - both good for producing work animals and for milk production. She-buffaloes were commercial dairy animals, known for the high fat content of their milk and their high yield potential. Male buffaloes were used for work in agriculture in certain areas, but to a small extent.

Right from ancient times, cattle formed an important part of the Indian agricultural system; they were kept primarily for draught purposes and as a sure source of manure. However, in recent years, consequent on the diffusion of agro-mechanical technologies in agriculture, the importance of work animals as draught power has gradually diminished.

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Bovines in Tamil Nadu Economy: A Historical Perspective

Livestock have had a significant place of importance in the rural economy of Tamil Nadu, right from ancient times. Cattle and other species of livestock remained an indispensable part of the society, particularly in the plains. "The early inhabitants of the plains were almost certainly immune to the Vedic interdictions against eating the cow. Certainly they regularly replenished their supplies by raiding one another's herds and pilfering other stock from the valleys; ... and the ritualised way to start a war between plain peoples was by seizure of the opponent's cattle" (Baker 1984, p.35). The sport of 'jallikattu' (bull – fight) is a reflection of the plain dwellers' involvement in a herding economy.

The farmer has been dependent for ages on cattle mainly for draught purposes. Bullock has remained practically the only source of power available to the cultivator; whether for ploughing, transportation or for the lifting of water for irrigation purposes. Cattle have also been essential for manuring the cultivated land, threshing operations and development of rural industries like oil pressing and sugarcane crushing. Though animals have been in use in all these operations, their utilization pattern has varied significantly across regions, with changes taking place over time.

The bovine population in the state showed an increasing trend during the period between 1920 and 1951. In 1920, the total number of bovines in the state was 9.7 million. The number increased, albeit slowly, to 10.8 million in 1935. By 1951, the total bovine population had risen to 12.5 million (Table 1).

Table 1

Trends in Size and Composition of Bovine Population in Tamil Nadu (1920 1951)

Year	Population in '000			Density					
				Per 100 acres of Net Sown Area			Per 100 Human Population		
	Cattle	Buffalo	Total Bovine	Cattle	Buffalo	Total Bovine	Cattle	Buffalo	Total Bovine
1920	8101 (83.77)	1570 (16.23)	9671 (100)	60	12	72	32	7	45
1925	8018 (82.72)	1675 (17.28)	9693 (100)	61	13	74	-	-	-
1930	7801 (78.87)	1590 (21.13)	9391 (100)	58	12	70	33	7	40
1935	8889 (82.22)	1930 (17.84)	10819 (100)	69	15	84	-	-	-
1940	8632 (83.21)	1742 (16.79)	10374 (100)	66	13	79	33	7	40
1945	8892 (83.65)	1738 (16.35)	10630 (100)	68	13	81	-	-	-
1951	10227 (81.70)	2291 (18.30)	12518 (100)	69	13	97	34	8	42

Source: Indian Agricultural Statistics, various years, and

. Indian Livestock Census, various years

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Though a general long-term increase is observed in the bovine population, population of the cattle and buffalo population registered a decline during the period 1935 and 1940. The trend in the density of bovines with respect to net sown area remained constant up to 1930 at around 70 animals, increased to 84 by 1935, declined to around 80 by 1940 and remained unchanged till 1945; but it rose to 97 in 1951. Such an increase in the density from the mid-thirties was partially due to the decline in cultivated area.

Interestingly, more than four-fifths of the bovines were cattle and the rest buffalo, a proportion, which remained almost unchanged in all the census years from 1920 to 1951.

Bovines in Tamil Nadu Economy: Since Independence

Bovine Population and Sex Ratios:

The trends in size, composition and sex-ratios of bovines in Tamil Nadu during the second half of the 20th century showed a differential pattern (see Table 2). The total bovine stock in Tamil Nadu in the mid-'fifties was about 11.74 million; it increased to 13.42 million by the early 'sixties and the bovine population remained at around 13 million till early eighties. Since then, it showed a falling trend reaching 11.79 million by 1997 and then increased to 13 million by 2007. It is noted that the trends in the cattle population followed more or less the overall trend in the bovine stock until the early 1980s. However, the rate of increase in buffalo population was higher than that of the cattle population. In the subsequent years, the fall in the cattle population was much more rapid than that of the buffalo population. Consequent on these changes, the share of cattle in the total stock declined while that of buffaloes increased

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Table 2

Trends in Size and Composition if Bovine Population in Tamil Nadu (1956-2007)

Year	CATTLE						BUFFALO						TOTAL BOVINE STOCK	
	Male		Female		Total Cattle		Male		Female		Total Buffalo			
	adult	young-stock	adult	young-stock			adult	young-Stock	adult	Young-stock				
1956	4.2 (46.18)	1.17 (11.19)	3.45 (32.98)	1.01 (9.65)	9.70 (100)	[82.62]	0.28 (15.77)	0.44 (16.92)	1.06 (40.77)	0.69 (26.54)	2.04 (100)	[17.38]	11.74	[100]
1966	4.95 (45.58)	1.10 (10.13)	3.71 (34.16)	1.10 (10.13)	10.86 (100)	[79.97]	0.50 (18.38)	0.38 (13.97)	1.35 (49.63)	0.49 (18.02)	2.72 (100)	[20.03]	13.58	[100]
1977	4.64 (42.96)	1.13 (10.46)	3.80 (35.19)	1.23 (11.39)	10.80 (100)	[77.81]	0.38 (12.34)	0.43 (13.96)	1.64 (53.25)	0.63 (20.45)	3.08 (100)	[22.19]	13.88	[100]
1989	3.30 (35.25)	1.01 (10.79)	3.30 (35.33)	1.74 (18.63)	9.35 (100)	[74.94]	0.21 (6.64)	0.29 (9.33)	1.67 (53.49)	0.96 (30.54)	3.13 (100)	[25.06]	12.48	[100]
1997	2.25 (24.83)	1.13 (12.49)	3.53 (39.01)	2.14 (23.66)	9.05 (100)	[76.76]	0.18 (6.58)	0.33 (11.89)	1.39 (57.24)	0.85 (30.87)	2.74 (100)	[23.24]	11.79	[100]
2007	1.62 (14.48)	1.13 (10.10)	4.98 (44.50)	3.46 (30.92)	11.19 (100)	[84.77]	0.22 (10.94)	0.28 (13.94)	0.93 (46.26)	0.58 (28.86)	2.01 (100)	[15.23]	13.20	[100]

Source: Report on Livestock Census -Tamil Nadu, various years.

Interesting changes are also noted to have taken place in the composition of the cattle population. The proportion of adult males (mostly used for work) has declined sharply, from 46 per cent in the mid-'fifties to 25 per cent by 1997 and further down to 14 per cent in 2007. In absolute numbers, the decline in the adult male population was from 4.2 million to 2.25 million between 1956 and 1997 and further to 1.62 million in 2007; the number of adult female increased from 3.45 million to 3.8

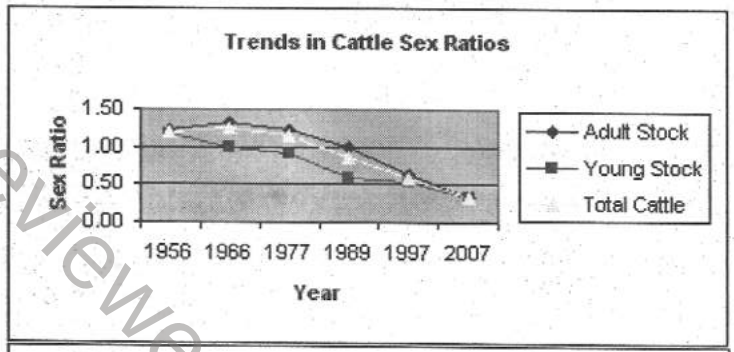
million between 1956 and 1977 and then stabilised at around 3.5 million in the subsequent years up to 1997 and increased to 4.98 million by 2007. In short, the composition of bovines has been getting oriented towards the cattle stock, particularly, towards cows from the early 'eighties onwards.

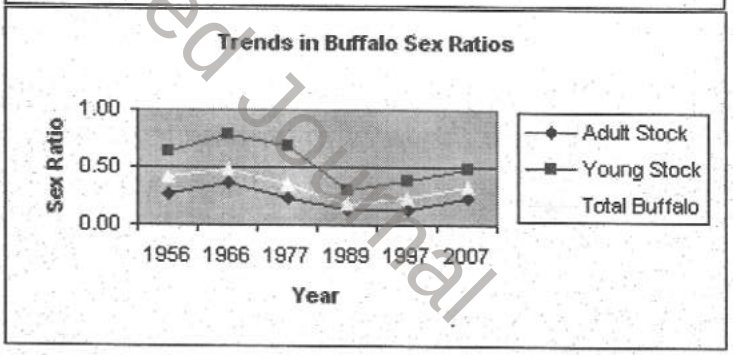
The reversal of sex ratios from the mid 'sixties indicated that the importance of milch animals that gained momentum from the mid-1930s has increased in more recent decades (see table 3).

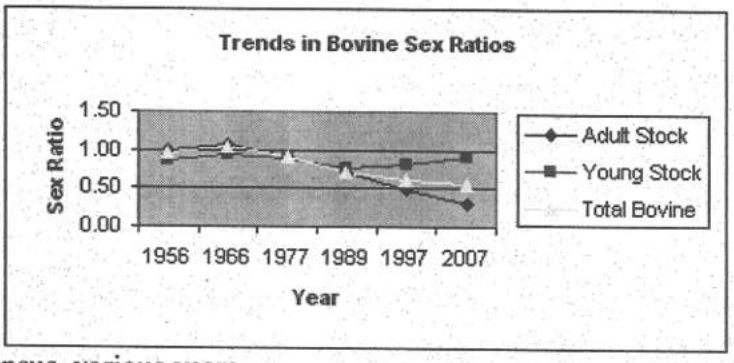
Table 3

Trends in Bovine Sex Ratios in Tamil Nadu (1956-2007)

Year	Cattle		
Year	Adult Stock	Young Stock	Total Cattle
1956	1.22	1.16	1.20
1966	1.33	1.00	1.26
1977	1.22	0.92	1.15
1989	1.00	0.58	0.86
1997	0.64	0.53	0.60
2007	0.33	0.33	0.33
	Buffalo		
	Adult Stock	Young Stock	Total Buffalo
1956	0.26	0.64	0.41
1966	0.37	0.78	0.48
1977	0.23	0.68	0.36
1989	0.13	0.30	0.19
1997	0.13	0.39	0.23
2007	0.24	0.48	0.33
	Bovine		
	Adult Stock	Young Stock	Total Bovine
1956	0.99	0.85	0.95
1966	1.08	0.93	1.04
1977	0.92	0.89	0.92
1989	0.71	0.75	0.72
1997	0.49	0.83	0.62
2007	0.31	0.93	0.56







Source: Computed from Livestock Census, various years.

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The shifts in the relative importance of adult male and female stocks and the changes in their age composition indicate that adjustments were carried out by farmers for managing their herd size and composition in accordance with changing requirements. The size of the work animal population is influenced by a number of factors such as land use pattern, irrigation, size of landholding, intensity of agricultural mechanisation and cropping pattern. The relative contributions of these factors do vary across regions and over time.

The relationship between work animal population and land use pattern needs to be examined from both the demand and the supply sides. On the demand side, gross cropped area is an important factor that determines the requirement of work animals. If the scope for agricultural expansion were high one would expect the demand for work animals to go up. From the supply point of view, to sustain the work animal stock, adequacy of feed supply is crucial. Since the area of non-agricultural land for grazing has been declining, the increase in feed requirement had to be met from the principal products and by-products of crops and by cultivating fodders. One would expect a strong relationship between agricultural expansion and the requirement of draught animals. The intensification of cultivation that normally follows agricultural expansion would further add to the requirement of work animals. However, if the cropping intensity facilitates the intensive use of work animals (by using the animals more hours efficiently), it may not increase the density of work animals, (a measure of the availability of draught animal power per unit of land) even though the total farm power requirement increases.

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The expansion and intensification of agriculture is strongly influenced by agro-climatic conditions and the extent and quality of irrigation. The agro-climatic conditions, particularly the soil condition and the intensity and seasonal distribution of rainfall, have significant influence on the density of work animals and the pattern of their utilisation. The cultivation operations in rain-fed areas are heavily dependent on the quantum of rainfall and its seasonal concentration. In general, summer is generally hot and the soil becomes very dry and hard. Hence, with onset of monsoon by June, the land has to be ploughed and made ready for cultivation within a short span of time so that timely sowing and crop growth could be ensured. In this context, the ownership of work animals provides enough strength and flexibility for the cultivators for the timely completion of their cultivation operations. Though animals

are not used during some parts of the year, they serve as an 'energy gate' that can be drawn as and when needed.

Given the agro-climatic conditions, irrigation is the most important factor that could mediate the number and utilisation pattern of draught animals. When the extent and quality of irrigation is better, both net sown area and intensity of cropping would become higher, thereby leading to higher requirement of draught power. While the proportion of irrigated area to gross cropped area would provide a measure of the spread of irrigation, the proportion of adequately irrigated area to total irrigated area would be a suitable indicator of the quality of irrigation. Since well irrigation provides to a great extent assured irrigation and thereby a stable agriculture, it would lead also to more effective utilisation of work animals. This is not only through increased use of work animals in crop production, but also through use of animals for lifting water, in conditions in which the wells are not energised. It would also mean that mechanisation of irrigation could displace the animals used for irrigation purposes and thereby reduce the required work animal stock. Mechanisation of irrigation has differential impacts on the work animal population. Electric pumpsets and oil engines might displace animals employed for lift irrigation. Energisation of wells leads to an increase in the volume of water lifted per unit of time, and thereby to an extension of cultivated area and rise in cropping intensity. Consequently, the requirement of draught power may increase for other operations like tillage, manuring, harvesting and threshing.

If mechanization of irrigation is followed by mechanization of land preparation and other cultivation operations like harvesting and threshing, it would result in the reduction of work animal stock. In this context, it may be useful to highlight the influence of the sequence of cultivation operations on work animal population. Cultivation operations could be broadly classified under (i) land preparation activities, (ii) sowing and/or crop planting activities, (iii) plant protection activities, (iv) harvesting or reaping activities and (v) post- harvesting activities.

Generally, cultivation operations vary significantly across crops, regions, agro-climatic conditions, size class of farms and socio-economic background of the cultivators. However, in a particular region and a specific crop, cultivation operations remain almost unchanged. Cultivation operations vary significantly between food crops and non-food crops. For instance, non-food crops like groundnut and gingelly

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require similar cultivation operations, as is the case also in certain food grains. Within the food crops, the cultivation operations of foodgrains (cereals and pulses) are similar and they vary significantly from those of the other food crops such as condiments and spices, sugar crops, and fruits and vegetables including root crops. Cultivation operations influence, in turn, the use of agricultural implements. As the requirement of human and animal labour inputs would vary from crop to crop, the cropping pattern is an important variable influencing the requirement of draught power. Agricultural operations can be done with human, animal or mechanical power, either alone or in combinations. While a few operations could be carried out either by human labour, most of the operations could be done either by animal or mechanical power. In fact, mechanical equipment could substitute most operations carried out by humans and animals.

Though the relationship between the use of work animals and of mechanical equipments seems to be inverse, in reality, their relationship is complex. For instance, tractors can displace draught animals in land preparation, sowing, manuring and threshing. But, the influence of tractors in reducing the work animal population is constrained by the scale of operation and fragmentation of land holdings. For a tractor to be economical, its scale of operation should be high and therefore, tractorisation is carried out in general only in large farms. Moreover, due to fragmentation of land holdings, the average size of landholding declines and the number of plots per household increases, a situation which raises constraints on tractorisation and the consequent displacement of work animals, particularly in small and marginal farms. To understand this phenomenon, it is necessary to analyse the major institutional changes, especially in the size and the distribution of landholdings. This is important not only because of the positive association between the size of landholding and the spread of mechanisation, but also due to the relationship between the size of holding and the density of work animals, as postulated in Vaidyanathan et al. (1982).

The dominant influence was agricultural mechanization especially tractorisation that led to reduction of the work animal stock. The reduction in the average size of landholding has been another factor that significantly influenced work animal density; but the influence of this factor seems to have been declining in recent years.

Peer Reviewed Journal

The role of cows as a producer of males for work has undergone change over time, in the context of the declining work animal requirements. However, its role as a producer of milk has gained importance.

Milk Production and Productivity:

Estimates of milk production based on sample surveys conducted by different agencies are available for a number of years. According to the IARS estimate , the total milk production in Tamil Nadu during 1965-66 was about 8.7 lakh tonnes. The estimated milk production as per the Integrated Sample Surveys was about 17 lakh tonnes in 1977-78. Thus, within a period of about 13 years, the production of milk had reportedly, almost doubled. From 1977-78 there is a steady increase in milk production and reached to 56.73 lakh tonnes in 2008-09. Consequent to the increase in milk production, the per capita consumption of milk had also increased steadily. The estimated per capita milk consumption in Tamil Nadu was 181 grams per day in 1994-95 and it has increased to 235 in 2008-09.

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Growth in milk production is contributed by both increases in milch animal population and in the productivity of milch animals. Growth in productivity has taken place due to improvements in breeding, feeding and other management practices of milch animals; the expansion of marketing and processing infrastructure for milk have facilitated the growth in productivity too. During the 'eighties, there was considerable expansion in the artificial insemination (AI) facilities as a result of which significant increase was registered in the milch animal population covered by the AI programme. This development contributed to the increase in the population of crossbred cows and upgraded buffaloes in the milch stock. Along with the increase in the proportion of improved animals, the feeding practices of milch stock have also been undergoing change: from grazed and stall-fed to stall-fed with fodder and concentrates. Available estimates also show an increase in the per head availability of feed. Although the relative price of milk and concentrate feeds has not been very favourable in recent years, farmers have not reduced the use of concentrates since marginal revenue was still higher than marginal cost.

Commericalisation of Milk Production

Increase in commercialisation has been contributed to a large extent by the expansion of dairy cooperatives. The overall efficiency of the milch animal stock

has been also on the increase not only because of the increase in the proportion of improved animals, but also reduction in the proportion of low productive and unproductive animals. The available estimates show that the aggregate demand for milk has been steadily on the increase. Milk has now moved from the category of a luxury to that of a necessary, as reflected in the sharp fall in expenditure elasticities. Milk prices have been increasing at a slower pace than of its close substitutes and complementary goods in the food basket. The net result over time is that the per capita consumption of milk has increased in both the rural and the urban areas.

The importance of bovines as a source of draught power in agriculture has sharply declined; they are now considered mainly a source of milk production. Consistent with these changes, the reproductive role of female bovines has shifted to that of a producer of female calves to be raised as milch animals. There exist several constraints, which need to be resolved to sustain the growth and development of the bovine sector, especially dairying and milk production.

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Bovines and Agricultural Economy

The decline in the draught animal population is accompanied by intensive input use of non-renewable sources of energy in various agricultural operations. The data thrown up by the 59th round of the National Sample Survey show that out of the total farmer households in the state, 30 percent used non-renewable sources of energy on ploughing, 0.3 percent for irrigation, 13 percent for harvesting and 14 percent for threshing. The use of animal energy is confined only to a small proportion of farmers, especially in the small and marginal categories. While the intensive use of non-renewable energy has released feed resources in favour of milch animals, there have been often changes taking place in the agricultural economy that offset this advantage. The shift in the cropping pattern from food crops to commercial and tree crops and the near-stagnation in cropping intensity appear to be contributing to the slow growth of the overall availability of feeds and fodder for the bovine sector. The changes in the pattern of land utilisation, especially the decline in the proportion of area under permanent pastures and grazing land have reduced the access of the landless households to common grazing lands for raising their animals. In a situation of this kind, when milch animal holdings have been shifting to households with weak resource base, they have had to increasingly depend on the market for procurement of feed resources for milk production. Thus, milk production has become increasingly sensitive to the relative prices of milk and feed. Sustaining

milk production in such a situation would require increase in the supply of feed and enhancing its nutritive value, as also adoption of breeding and other complementary technologies for reducing cost of production per unit of milk output.

Augmentation of the supply of feed and fodder will become increasingly feasible if the link between agriculture and dairying is strengthened by promoting mixed farming that produces more by-products per unit of crop output. The possibility of promoting cultivation of green fodder is limited due to bleak prospects for expanding irrigation. Various types of technologies are available for enhancing the nutritive value of dry fodder that could reduce the requirement for concentrate feed to milch animals. However, the diffusion of such technologies is taking place at a slow pace due to weak links in the extension system.

Bovines and Breeding Technology

There exists considerable scope for improving breeding efficiency by enhancing the effectiveness of artificial insemination. Though effective techniques like embryo transfer are available, their large-scale application in the field conditions in India is yet to come. Therefore, artificial insemination is likely to continue to play a major role for some more years. Improvement of AI efficiency would require not only the expansion of its infrastructure, but also improvement of the quality of the technical personnel delivering AI services and also of the level of knowledge of farmers in its effective adoption. Since the draught power constraint has disappeared, the choice of animals for cross-breeding has become easier. However, the attempt to introduce high-yielding exotic breeds of animals will make dairying a costly proposition to farmers. This is so not only because animals would be more expensive, but also because they are more prone to diseases and would need more expensive feed than indigenous breeds. Such technological up-gradation should therefore be accompanied by an effective system of animal insurance to compensate the farmers for loss of animals or fall in incomes due to diseases and other calamities like drought.

In the present situation, the formal extension system in the animal husbandry sector of the state appears to be weak. The data provided by the 59th round of the NSS (GOI 2005b) show that the proportions of farmer households receiving information on modem technology for animal husbandry in the state are 22 percent on breeding, 18 percent on feeding, 65 percent on health care and 8 percent on management. In order to improve effectiveness of the extension system and to provide more cost-effective supports to the dairy farmers, privitisation of veterinary and other related services is advocated by several international agencies (Ahuja et al 2000, Morrenhof 2004). The issue is actively under the consideration also of the Central

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and State governments. However, in a situation characterised by households owning one or two animals with weak resource base, the extent to which privitisation of services would work in favour of the vulnerable segments of the animal owners is an issue that needs to be seriously considered. There exists scope for enhancing effectiveness of the public sector institutions in the animal husbandry sector if it can be made part of the local governance system and accountable to local communities.

Prospects of Bovine sector:

In the years to come, demand for milk and milk products would tend to increase, not only because of income growth, but also changes in the consumption pattern. Therefore, demand constraints for milk are unlikely to emerge in the state. However, from the point of view of providing more income to farmers, the task of increasing the value per unit of milk produced through product diversification and effective marketing network will remain a major challenge. The cooperative sector has taken a leading role in the procuring and processing of milk in the state. However, with liberalisation, private investment in the dairy-processing sector is already taking place on a significant scale. Therefore, the cooperative sector has to work in a competitive environment.

At present, the elimination of unproductive animals in the state takes place largely through their export to the neighbouring state of Kerala for slaughter. While the meat is consumed in Kerala, the hides and skin are sent back to Tamil Nadu as raw materials for its leather industry. The possibility of development of the meat industry within the state itself is limited because of the relatively low demand for beef and the constraints of retaining unproductive animals. Given the severe constraints on feed resources, fattening of male calves for meat purposes is also a very difficult proposition. Therefore, development of the meat industry based on the bovine stock is unlikely to emerge as a viable proposition in Tamil Nadu. However, the state should initiate steps for effective organisation for marketing of live animals by bringing appropriate regulations and measures for transportation, disease control and more proper treatment of animals.

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Peer Reviewed Journal

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Peer Reviewed Journal

CONTENT

Vol. XXV Peninsular Economist 2012-2013 No.1

Crisis of Agricultural Sector - Vision Tamil Nadu 2023

No.	Name Title	Page. No.
1.	The Causes and Effects of Agrarian Crises in India – A Situational Study Dr.L.Ganesan, Mr.B.Neppolian	1
2.	Status of Agricultural Products in Indo-Pakistan Trade: A Brief Analysis Dr.B.Ambrose, Mr.P.Sundar Raj	5
3.	Problem and Point of View of Unorganised Women Labour in India M. Elangovan	7
4.	Real Estates Boom and Agriculture: Evidences from an Indian Village S. Suganthi	10
5.	Impact of Primary Agricultural Co-operative Society on Crop Cutivation in Tamil Nadu G. Karthikeyan, S. Jeyanthi	13
6.	Financial Crisis in Indian Agricultural Sector M.Satheesh Pandian,	19
7.	A Study on Small Onion Cultivation in Pullambadi Block of Tiruchirappalli District Dr. G.Iruthayaraj, M.Kamaraju,	22
8.	Technological Crisis in Indian Agriculture K.Balachandran,	25
9.	An Over View of Indian Agriculture A.Anbulakshmi, Dr.V.J.R.Emerlson Moses,	28
10.	Agricultural Crisis- a study on declining trend and patterns of agricultural growth and its Contribution to GDP of India A. Mariyappan Dr. M. Selvaraj.	31
11.	Agrarian Crisis in India: It's Impact on Production and Export R. Jayachandran, P. Thenmozhi,	34
12.	Crisis in Price Fixation of turmeric in Taml Nadu R.Pachaiyammal,	37

Peer Reviewed Journal

13. Challenges and Issues of Indian Agricultural Sector
C. Sivakkolundu 38

14. A Study on Agrarian Crisis: The Current Status of Production Processing and Utilization of Millets in Fortified Foods
P. Stanly Joseph Michaelraj, A. Shanmugam, 42

15. Growth and the Extent of Globalization in the Agricultural Sector in India
Dr.S.Karthikeyan , S.Senthil kumar , 45

16. Crisis in Agricultural Sector – Review in India
Dr. S. Mookiah, N.Suja, 48

17. A Study on Agricultural Growth in India
M.Karthikeyan, 51

18. Crisis in Agricultural Sector in Tamil Nadu
Dr. S.Suresh 54

19. Impact of Economic Recession on Indian Agriculture
Dr.S.Kayarkanni, 57

20. Livestock in Indian Agriculture: An Analysis
Dr.D.Swamikannan 60

21. Rural Indebtedness and the Agrarian Crisis: A Macro Level Analysis
N. Mukundan 63

22. Agricultural Investment for Food Security
Dr. A.P. Palanichamy 66

23. Farmers' Suicides in India: Issues and Concerns
Dr.A.Sangamithra 68

24. Betel Leaf: The Neglected Green Gold of India
V. Kaleeswari, Dr. T.Sridhar 71

25. An Anayysis of Agriculture in India in The Post National Agriculture Policy (Nap 2000)
P. Nalraj 73

26. Indian Agriculture Sector in the New Economic Regime: A Study Based on Cobb-Douglas Production Function
Dr. R. Ganesan, Dr. N. Mani 76

Peer Reviewed Journal

27.	Agrarian Distress, Suicides and Alleviatory Measures Mrs.J.Jacintha Maria Florence	79
28.	Agricultural Crisis in India R.Sathya	83
29.	Growth And Performance of Agricultural Sector in India During Planning Periods R.Umamaheswari	86
30.	The Present Status of Agriculture Sector in India - An Overview B.Karthikeyan, M.Saravanan	89
31.	Role of Crop Diversification in Indian Agriculture V. Kalaiselvi, N. Kaviezhil	93
32.	An Analytical Study on Crisis of Agriculture Sector in India R. Swaminathan , S.Kerthivasan	96
33.	Economic Conditions of Agricultural Labour in Agrarian Crisis: A Study of Tamil Nadu Dr. V.Sivasankar, V.Vidhyalakshmi	99
34.	Watershed Development Programme: A Solution to Indian Agricultural Crisis T. Ravisankar	102
35.	A Study on Farmer Suicides in India – Causes, Consequences and Remedies Dr.S.Lakshmanan, Mrs.S.Vimala	107
36.	Impact of Climate Change on Agriculture Sector in India B.Komala, B.Vaishnavi	112
37.	Water crisis of Agriculture in Tamilnadu S.Bhavani Priyadarshini	115
38.	Impact of Real Estate Business on Agriculture Sector in Karur District P. Manicka Chellam, S. Renganayaki	118
39.	Agricultural Crisis in India M. Radhika, S. Suganya	121

Peer Reviewed Journal

40. A Study on Agricultural Production and Productivity in India From 1955 To 2011
A. Thangavel, Dr. R. Rajendran 124

41. A Study on The Socio-economic Conditions of Agricultural Labourers in Tirunelveli District
V. Alaguselvam 129

42. Trends in Area, Production and Yield of Spices in Tamilnadu: 1990-91—2009-10: The New Revealations
Dr.R.Balasubramaniyan, Ms. M. Cuba 133

43. Disparity in Cropping Intensity in India
Ms.S.Kalaiselvi 139

44. Agrarian Crisis in India is a Creation of the Policy of Globalisation
N.K. Muthusamy 143

45. Food For All
A.Kannan, Dr.R.Rajendran 146

46. An economics analysis of paddy cultivation: Nutritional Security and Nutrient Management in Tamilnadu
Dr.S.Thamilarasan 148

47. Agricultural Input and Output Through Co-operative Societies
M.Gomathi, 151

48. Economic Analysis of Goat Rearing in Keeraplayam Block, Cuddalore District
G. Kumar 154

49. Gambling With Farming – A Risky Proposition
P. Allli, R. Suresh 157

50. Trends in Area, Production and Productivity of Sugarcane in India
Dr.R.Sasikala, 160

51. The New Avatar of the Mgnregs
N.Boobalan, Dr.P.Jayaprabakaran 162

52. Food Production in India in Pre and Post Reform Period
Dr.S.Gandhimathi, Dr.P.Ambigadevi, 165

Peer Reviewed Journal

53. Issues Related to Use of Chemical Fertilizers in Agricultural Sector of India
A.Justin Thiraviam, 169

54. Crisis of Indian Agriculture : Before and After Economic Reforms in India
Dr. C. Sundarapandian 172

55. The Concept of Green Industry: A Road to Sustainable Development
G. Phary 174

56. The Agricultural Crisis in India
M.Manikandan, R.Alaguraja 177

57. Cotton- The White Gold of India
Saidmohammed.V.H, Mrs.Bindu V.V 179

58. Agricultural Environmental Issues in India
M.Selvakumar 182

59. Farmers' Suicides and Agrarian Crisis in India :is There A Way Out?
Dr. A.Gopalakrishnan 185

60. A Study on Agrarian Crisis in India
Prof. M.Karuppiah, Dr. C. Selvaraj 188

61. A Study on Poverty among Agricultural Labourers in Tirunelveli District
Dr.V.Duraisingh 191

62. Farmers Suicides in India
Dr. G. Vanithamani 196

63. Agricultural Crisis and Globalisation in India
P.Mohanraj 200

64. Agrarian Crisis and Farmers Suicide in India
Dr.N.Padmasundari, R.Nandhini 203

65. Economics of Agricultural Crisis: A Study in India
S. Venkatesan, Dr. D. Murugan 206

66. Crisis of Agriculture Sector Economy Growth in India
R.Veerachamy 208

Peer Reviewed Journal

67. Impact of Globalization and Farmer's Suicides in India
Dr. N. Savitha 211

68. Agricultural Labourers and Social Security Measures in India: A Great Challenge
Dr.S.Jayaselvi 214

69. Declining Trend in Agriculture GDP and Agriculture Productiviy – Agricultural Crisis in India
Mrs. K.Priya, 217

70. Impact of Climate change on Agriculture sector in India
S. Palanisamy, Dr. B. Muniyandi 219

71. Performance of Growth of Food Grains Production in India During Pre and Post Liberalization Period
S.Krishnan 222

72. Economics of Flower Cultivation at Pattukkottai Taluk of Thanjavur District (Crisis of Agricultural Sector)
Mrs. A. Ahilandeswari, Mrs. R. lakshmi 224

73. Growth of Banana Cultivation in Tamil Nadu Districts
Dr. M. Saravanakumar, Dr. A. Kathiresan 227

74. Agricultural Crisis in India: Causes and Consequences
R. Senthil Kumar 229

75. An Economic Assessment of Agriculture Sector in Tamil Nadu
S.Pichaipillai 231

76. Technological Crisis in Banana Cultivation in India
R.Chandrasekar 234

77. Factors Leading to the Crisis in Agriculture Sector in Indian
N. Kogila, S. Rajesha 236

78. Women's in Indian Agriculture Sector
Dr. K.M.Senthilkumar, M.Thirumal 238

79. Production and Export Prospects of Indian Spices
R.Rajanbabu 240

Peer Reviewed Journal

80. A Study on the Role of Indian Women in Agriculture
Mr.K.Marimuthu 243

81. Challenges Faced By the Agriculture Sector in India
Dr.N.Subburaj, P.Muthukumar 246

82. Relentless Crisis in Indian Agricultural Sector: A Case Study of Tamil Nadu
S.Balanarayanan, Dr.K.Vetrivel 250

83. Crisis of Indian Agriculture in the Post Globalization
Dr.S.Liyahath John, Dr.A.Pandu 254

@@@@@@@@@

84. Water and Sanitation in Tamilnadu Vision 2023: A Comment
R.Rathika, Dr.V.Mohanasundaram 259

85. Vision of Tamil Nadu 2023: Strategic Plan for Infrastructure Development in Tamil Nadu
G. Senthilkumar, K. Ramu 264

86. Foreign Direct Investment in Tamil Nadu: A Note on the Vision 2023 Statement
A. Shanpareeth, S. Saravanan 267

87. Wind Energy –A Vision of 2023
Dr. D. Janagam, M.Jeyamani 271

88. Vision Tamil Nadu 2023 – A Study With Reference To Leather Industry
Dr. T. Indra, A.Eswaran 276

89. Vision Tamil Nadu 2023
M.Jeevanantham 279

90. Vision Tamilnadu-2023: An Overview and Evaluation
T.Saravanan 283

91. Numero Uno State 2023: trends in health status and Infrastructure sustain in Tamilnadu
Dr.C Subburaman 287

92. The Energy Scenario in Tamil Nadu: Some New Evidences
C.J. Lakshmi 291

93. Indian Logistics Industry and Vision Tamil Nadu 2023- A Comparative Study
Dr.A.Joseph Rex, A.Anbarasi 297

Peer Reviewed Journal

94.	An overview of growth strategy and its feasibility of Tamilnadu vision 2023' Mr. Loganathan	299
95.	Emergining Scenario of Higher Education in Tamilnadu C. Vijayalakshmi, Dr. R. Annapoorani	302
96.	FDI in retail and Vision Tamilnadu 2023 in Agricultural productivity Dr.S P Robert, K Prakasam	307
97.	Sectoral Investment plans – Improving Agricultural Productivity – Vision Tamilnadu 2023 Dr. R. Gopalasundar	309
98.	Strategic Initiation of Improving Agricultural Productivity (Vision Tamil Nadu 2023) A. Kalaimohan Dr. A. Mohamed Abdul Khader	312
99.	Grass – Root Women Entrepreneurship Through Micro Credit and Shg (Vision Tamilnadu – 2023) Mrs. R. Rajeswari, Mrs. K. Manohari	315
100.	Energy Sector – With Special Reference To Tamilnadu Electricity Board (Vision Tamilnadu 2023) Mr. V. Omprakash, Dr. N.Chithra	318
101.	Themes of Vision 2023 – An Overview Mrs. R.Vidhya	323
102.	The Socio-economic Conditions of Fishermen in Adirampattinam at Thanjavur District (Vision Tamilnadu 2023) K. Ashok Rani, Dr. P. Ganapathy	325
103.	Growth Strategy (Vision Tamilnadu 2023) R. Ashokumar	329
104.	Growth Strategy (Vision Tamilnadu 2023) R. Rathidevi	332
105.	Government of Tamil Nadu Environment and Forest Department Draft State Environment Policy R.Nandakumar, T. Prakash	334
106.	Economic Perspective of Tamil Nadu Towards Vision 2023 G. Jayasankar, C. Dhandapani	337
107.	Growth of Manufacturing Industries in Tamil Nadu by 2023 L.Vadivel	340

Peer Reviewed Journal

Crisis of Agricultural Sector

Peer Reviewed Journal

Peer Reviewed Journal

The Causes and Effects of Agrarian Crises in India – A Situational Study

Introduction

Indian is being recognized as the global power in key economic sectors with consistently high economic growth. The economy has performed well on the growth front, averaging 8.2 per cent in the first 4 years of the Eleventh Five Year plan. Even though the economy has slowed down somewhat in 2011-12, we are still likely to average a gross domestic product (GDP) growth of around 8.2 per cent over the Eleventh plan period, according to the Approach Paper to the 12th Five Year Plan, while industry and services have grown, agriculture sector has lagged behind. Information technology sector is growing consistently at 30 per cent every year but agriculture has not even achieved 4 per cent growth. The contribution of agricultural sector to national Gross Domestic Product (GDP) has continued to decline over the years; while that of other sectors, particularly services, has increased. Agriculture as a component of GDP has shrunk from 55 per cent in 1951-52 through 44 per cent in 1970-71 to 31.4 per cent in 1990-91 and 14.6 per cent in 2009-10, while the share of agricultural imports to total imports increased from 2.8 per cent in 1990-91 and reached a high of 8.2 per cent in 1998-99 and declined to about 4.4 per cent in 2009-10 (Government of India 2010). Nonetheless, agriculture remains a major source of employment, absorbing about 52 per cent of the total national workforce in 2004-05, down from about 70 per cent in 1970-71. The present paper is divided into four parts. The first part is general introduction and deals about the overall performance of the economy during the tenth and eleventh plan periods. The second part is explores the poor performance farm sector which causes for agrarian crisis in India during the same above mentioned plan periods. The third part of this study is analyses about causes behind it for deceleration of agrarian economy in India. The last part, the researcher have made an attempt to give some suggestions to overcome crises and end with concluding remarks.

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Reasons for the Agrarian Crisis

There is a need for analyzing the reasons for the crisis to see whether there is any connection with globalization and, if so, what measures could be adopted to face this challenge.

1. Liberal Import of Agricultural Products

The main reason for the crash of prices of agricultural products, especially of cash crops, in India was removal of all restrictions to import these products. As, for example, when the Government of India reduced the import duty on tea and coffee from Sri Lanka and Malaysia, their prices in the domestic market got reduced drastically. Thus cultivation of such products became unprofitable and so their production was fully or partly stopped. Since the removal of quantitative restrictions and lowering of import duties were according to the restrictions of the World Trade Organizations (WTO), the crash in the prices of agricultural products is directly related to the liberalization policy of the government.

2. Cutback in Agricultural Subsidies

In the post-reform period the government reduced different types of subsidies to agriculture, and this has increased the production cost of cultivation. According to Ramesh Chand, an economist, cutback in subsidy and control of fertilizers over the last few years has adversely affected the agricultural sector. It has increased the input cost and made agriculture less profitable. Since the decrease in subsidy to agriculture is part of the regulations of the WTO, it is related to the policy of globalization.

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3. Lack of Easy and Low-cost Loan to Agriculture

After 1991 the lending pattern of commercial banks, including nationalized banks, to agriculture drastically changed with the result that loan was not easily available and the interest was not affordable. This has forced the farmers to rely on moneylenders and thus pushed up the expenditure on agriculture. The National Commission for Agriculture, headed by Dr. M.S. Swaminathan, also pointed out that removal of the lending facilities and concessions of banks during the post-reform period have accelerated the crisis in agriculture. When the farmers were not able to pay back loan with high interest, they fell into the debt trap. Studies show that most of the farmers' suicides was due to the debt trap. It is part of the policy of privatization that banks, even nationalized banks, look for profit over their social responsibilities to the people.

4. Decline in Government Investment in the Agricultural Sector

Studies show that after the economic reforms started, the government's expenditure and investment in the agricultural sector have been drastically reduced. This is based on the policy of minimum intervention by the government enunciated by the policy of globalization. The expenditure of the government in rural development, including agriculture, irrigation, flood control, village industry, energy and transport, declined from an average of 14.5 per cent in 1986-1990 to six per cent in 1995-2000. When the economic reforms started, the annual rate of growth of irrigated land was 2.62 per cent; later it got reduced to 0.5 per cent in the post-reform period. The consequences were many. The rate of capital formation in agriculture came down, and the agricultural growth rate was also reduced. This has affected the purchasing power of the rural people and subsequently their standard of living.

5. Restructuring of the Public Distribution System (PDS)

As part of the neo-liberal policy, the government restructured the PDS by creating two groups—Below Poverty Line (BPL) and Above Poverty Line (APL)—and continuously increased the prices of food grains distributed through ration shops. As a result, even the poor people did not buy the subsidized food grains and it got accumulated in go downs to be spoiled or sold in the open market. As the in-take from PDS was less it has affected the food security of the poor, especially in the rural areas, and this has indirectly affected the market and the farmers.

6. Special Economic Zones

As part of the economic reforms, the system of taking over land by the government for commercial and industrial purposes was introduced in the country. As per the Special Economic Zones Act of 2005, the government has so far notified about 400 such zones in the country. Very often it is fertile land which has been acquired. According to Khasanoki, a writer, the government has acquired five million hectares of land for purposes other than agriculture between 1991 and 2003. This is almost half of what was acquired during the last 40 years. It was in the news that the government decided to acquire 10,120 hectares of land near Mumbai (almost one-third area of Mumbai) for the Reliance Company and reduced it to 5000 hectors due to public pressure. Since the SEZ deprives the farmers of their land and livelihood, it is harmful to agriculture. In order to promote export and industrial growth in line with globalization the SEZ was introduced in many countries.

Towards a Solution to overcome the agrarian crisis

Some of the suggestions are being listed here.

1. Quantitative restrictions should be imposed on import of agricultural products. Since the import policy was the major reason for the crash in prices of many agricultural products, there should be restrictions on the quantity and customs duty of such products

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2. Subsidy and concessions given to agriculture but removed in the post-reform period should be restored. This is a must to make agriculture remunerative. One of the main disputes in the Doha Round of talks at the WTO is the high subsidy given by the United States and European Union to their farmers in spite of the WTO regulation.

3. Bank loans should be easily made available to the farmers, especially since the input cost of agriculture has gone up.

4. The government should augment its investment and expenditure in the farm sector. One reason for the agricultural stagnation is low government expenditure. Investment in agriculture and its allied sectors, including irrigation, transport, communication and farm research, should be drastically increased, and the government should aim at integrated development of the rural areas. Effecting Implementation of National Rural Employment Guarantee Scheme can also become a means of revival of the rural economy.

5. There is a need for periodic revision of the procurement prices for farm produce making those remunerative. This will help the farmers to meet the increasing expenses for farm inputs and ensure at least remunerative income.

6. The government should revise the policy on Special Economic Zones as it goes against the interest of farmers and the agricultural sector.

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Thrust Areas for Accelerating Agricultural Reforms

The six key elements common to all economic reforms are:

a) Sound macro-economic management which will ensure the success of other policies and therefore as crucial for economic performance

b) Large-scale liberalization and deregulation of the domestic economy in search of greater efficiency.

c) A redefinition of the role of the public sector involving some withdrawal from the public sector, ranging from wholesale privatization in some cases to more cautious programmes of disinvestment and part privatization in others.

d) Openness to trade and foreign investment flows. This led to efficiency, technological dynamism and international competitiveness.

e) Financial sector reform that would facilitate reallocation resources from inefficient to efficient users.

f) A well designed safety net component aimed at mitigating any possible short term impact on the poor, and ensuring that the poor also benefit from general economic growth.

Concluding Remarks

The growth rates are an important indicator of the overall situation of farming in India, what is more important is their effect on the livelihoods of farmers. This is not only significant because more than half of the Indian workforce is employed in agriculture, but also because farmers are also the most vulnerable section of the society. The terms of trade, which were moving in favour of agriculture, have started moving against it since the end of 2010. With food price inflation turning negative, it is only expected to worsen. Considering that international food prices are also moving downwards, this may have an impact on the income received by farmers. But while income is likely to remain low, costs may rise, if not for anything else but simply because of fertilizer price rationalization and the consequent increase in the price of urea. There is also the possibility of hike in diesel prices and some upward revision of electricity rates. These are

worrisome possibilities. The first relates to the already worsened fiscal deficit situation which will enforce some fiscal tightening, particularly in agricultural subsidies. It may also effect investment in agriculture. Then, the growth of agricultural credit is showing signs of flattening due to higher interest rates. Moreover, with the developed world already in recession and Indian economy showing signs of deceleration in growth rates, there is unlikely to be any demand pull domestically.

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Status of Agricultural Products in Indo-Pakistan Trade: A Brief Analysis

Introduction

Kautilya in his writing about political economy theorized that to maintain a strong kingdom the king must develop healthy relations with its neighboring states through trade. At the outset it is said that India is one of the fast growing economy in the world and is currently the focus of a great deal of international attention. Ever since India became independent it is having trade relation with Pakistan may be because of geographical proximity or out of necessity. However, the trade relation has seen may an ups and downs mainly due to the political interference or differences. Trade policies followed by both the countries like the import substitution and less commitment for regional trading etc., all this contributed to low level of India–Pakistan trade. In the recent past the idea of free trade has crept into the mind set of both the countries this has led to water downing of restrictive trade.

Major Road blocks to trade

Trade flows between India and Pakistan have been low over the course of the past half a century for three main reasons: political tensions, the use of import-substitution policies to promote industrialization, and, in contrast to other regions of the world, relatively little commitment to regional integration.

At the time of independence, almost three-fifths of Pakistan's total exports were directed to the Indian market, and one third of its imports came from India (Sangani and Schaffer 2003). The situation began to change when Pakistan refused to devalue its currency after India's devaluation in 1949 and later imposed import restrictions. Bilateral trade declined sharply during periods of conflict or heightened tensions. Trade and economic integration within South Asia was not high on Pakistan's or any of the other South Asian countries', agenda until recently. Pakistan took part in only few regional trade and economic arrangements, such as the Regional Cooperation for Development, which existed from 1964 to 1979, and the Economic Cooperation Organization initiated in 1985.

Initial attempts to create a regional trade arrangement through the South Asia Preferential Trade Agreement (SAPTA) failed largely due to the Pakistan–India political standoff and the lack of domestic economic reforms.

A new détente

Over the last few years, there has been encouraging movements along all three dimensions are political relations, trade competitiveness, and trade integration. First, the political environment for expanding trade with India has become more favorable. Pakistan and India have started the Composite Dialogue process on an eight-point agenda covering a range of defense, political, and economic issues. Almost monthly announcements on measures agreed by Pakistan and India have built new confidence in their mutual relations. On the economic front, the two governments intend to tackle a broad agenda, ranging from improving trade logistics; easing visa restrictions; reducing nontariff barriers; facilitating trade via the sea, land, and rail routes; and opening-up the banking sectors.

In this paper the author attempts to shed some light specifically more on the agricultural trade between India and Pakistan. Here the author has the insight that though the trade between the two countries has increased in the past, the level of concentration has to be measured. This may give the correct picture about the level of trade between the two countries.

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Methodology

In this paper to analyze the level of India-Pakistan agricultural trade between them a simple technique called trade concentration index has been used. The Hirschman index is a measure of the geographical concentration of exports. It tells us the degree to which a region or country's exports are dispersed across different destinations. High concentration levels are sometimes interpreted as an indication of vulnerability to economic changes in a small number of export markets.

Definition: The regional Hirschman index is defined as the square root of the sum across destinations of the squared export shares for the region under study to all destinations.

Range of values: Takes a value between 0 and 1. Higher values indicate that exports are concentrated on fewer markets.

Limitations: The Hirschman index is subject to an aggregation bias – the more disaggregated the data from which it is calculated the better.

Mathematical definition:

$$Hj = \text{“ “ } \{x_i/x\}^2$$

X_i = value of product i's export of the country.

X = value of total exports of the country.

In this analysis India's exports to Pakistan has been selected and more particularly the agricultural products with products codes ranging from 06 to 53 was taken into consideration. These 21 items constitute India's exports to Pakistan and calculation was done using the above formula of concentration index.

Conclusion

In this study, the agricultural export of India to Pakistan has been identified and 21 items has been selected for the study. the exports of India to Pakistan for the last 10 years. In this it is obvious that items like Edible vegetables, coffee and tea, oil seeds, sugar and cotton play a dominant role in India's exports. Items like edible fruit, nut products, lac and gum products, cereal and flour products and paper products also show a tremendous increase in the volume of India's exports over the period of last ten years.

Finally the calculation for the concentration index shows that over the period of ten years the index shows a marginal increase that is from 0.012 in 2001 to 0.058 in 2010. From this it can be concluded that the concentration of agricultural products exports from India to Pakistan has increased. Normally, what happens is that higher level of concentration makes the country more vulnerable to trade and price fluctuations. In the case of India's exports to Pakistan it can be said that as the level of concentration is minimal, it is hoped that the vulnerability too to be minimal.

The study also reveals one interesting fact that over the period of ten years the level of trade between the two countries has increased significantly. Irrespective of the fact that India and Pakistan has gone through many a ups and down in their political relationship. The trade in some select goods has been consistently increasing over the period of time.

For a fast developing economy, an increase in the level of concentration in agricultural sector exports is not a good indicator. Whether, it is the export to Pakistan or to the rest of the world. However, small the increase may be. It is advisable to take some measures to reduce the level of concentration.

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Problem and Point of View of Unorganised Women Labour in India

Introduction

India is known for its huge geographical spread and magnitude of its populations. It has a huge working population of 406 million (based on NSSO Survey of 1990-2000). Almost 92 per cent of this workforce is in the unorganised sector. There are numerous occupational groups pursuing economic activities from generation to generation without formal schooling and scattered all over the country with diffused employer-employee relationship. The occupation wise distribution of employment indicates that 62 per cent of the workers are engaged in agriculture, 11 per cent in industry and 27 per cent in the services sector. A characteristic feature of the employment situation in the country is that the percentage of workers employed on regular salaried employment 16 per cent is small.

The centrally funded social assistance programmes include the employment oriented poverty alleviation programmes such as Swarnjayanti Gram Swarojgar Yojana, Jawahar Gram Samridhi Yojana and Employment Assurance Scheme. National Social Assistance Programme (NSAP) comprising old age pension, family benefit and maternity benefits to address the social security needs of the people below poverty line. The social insurance schemes include several schemes launched by the Central and the State Governments for the benefit of weaker sections through the Life Insurance Corporation of India and General Insurance Corporation of India. Several public institutions and agencies are also imparting various kinds of social security benefits to the selected groups of workers. Among these Self Employed Women's Association (SEWA) has made significant achievement in promoting social security through the formation of cooperatives.

Organised and Unorganised Sector Employment in India

In India, a major chunk of labor force is employed in the unorganized sector. The unorganized / informal employment consists of causal and contributing family workers; self employed persons in unorganized sector and private households; and other employed in organized and unorganized enterprises that are not eligible either for paid, sick or annual leave or for any social security benefits given by the employer.

According to the results of the National Sample Survey conducted in 1999-2000, total work force as on 1.1.2000 was of the order of 406 million. About 7 per cent of the total work force is employed in the formal or organized sector (all public sector establishments and all non-agricultural establishments in private sector with 10 or more workers) while remaining 93 per cent work in the informal or unorganized sector. The NSS 55th round, 1999-2000 also covered non-agricultural enterprises in the informal sector in India. As per that survey, there were 44.35 million enterprises and 79.71 million workers employed thereof in the non-agricultural informal sector of the economy. Among these 25.01 million enterprises employing 39.74 million workers were in rural areas whereas 19.34 million enterprises with 39.97 million workers in the urban area. Among the workers engaged in the informal sector, 70.21 million are full time and 9.5 million part times. Percentage of female workers to the total workers is 20.2 percent.

The largest numbers of informal workers are in agriculture. In fact, 98.84 percent of the employment in agriculture is informal. In the non-agricultural sector, the highest numbers of informal employees are in retail trade, construction, land transport, textiles etc. Thus, the unorganized sector plays a vital role in terms

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of providing employment opportunity to a large segment of the working force in the country and contributes to the national product significantly. The contribution of the unorganized sector to the net domestic product and its share in the total NDP at current prices has been over 60%. In the matter of savings the share of household sector in the total gross domestic saving mainly unorganized sector is about three fourth. Thus unorganized sector has a crucial role in our economy in terms of employment and its contribution to the National Domestic Product, savings and capital formation.

Prospective of Women Workers

These issues of gender sensitization and women empowerment remained one of the most pressing issues of our time and will continue well in time to come. The emancipation of women from the age old partriarchal structure of the society has been one of the cherished objectives of social reformists, political thinkers and feminist institution. In this epoch making process, the campaign for gender quality in all walks of life have achieved some of the historic landmarks in getting equal socio-economic and political rights and liberties. However Women are still far behind in the actual distribution of social status, economic value and political authority. Women contributes almost half (49.7 per cent) of the global total population. The actual participation of women in all spheres of human interactions has been extremely poor. Similarity, the percentage of women work force is highly negligible. Women contributes to the 66 percentage of the world work, produce 50 percent of the global food, but receive only 10 per cent of the income output and own 1 percent of the property (UNICEF 2007).

In the case of India, the scenario is quite pathetic as the participation of women in socio-economic and political domain is extremely minimal and marginalized. According to the statistical analysis presented by the registrar general of India, the work participation of women which was 19.67 per cent in 1981 has increased into 25.63 in the year 2001 (GoI,MOLE,2009-2010). Women are more employed in unorganised sector than organised sector. The highly restrictive culture of Indian society has been a major factor for low participation of women in public sector. Consequently 90 per cent of female forces are engaged in unorganised sector (The World Bank, 1991). Women are predominately, engaged in agricultural and informal household labour. According to the latest analysis of Ministry of labour 30.79 per cent total women workforce is employed in rural area mostly engaged on agriculture activities (Golf, MoL&2007-2008).

Presently, unorganised sector women workers are well organised under the aegis of Self Employment women's Association (SEWA), A Non Government Organisation (NGO) of poor, self-employed women workers fighting for their basic socio-economic and political rights. The organisation was established in 1972 by the noted gandhian and civil right leader year 2008 (SEWA, 2008).

Problems of Women Workers

One of the two main tasks entrusted to our Commission is to propose umbrella legislation for workers in the unorganized sector. We have also been asked to see that the legislation, and the system that will be built around it, will assure at least a minimum protection and welfare to workers in the unorganized sector. We are deeply conscious of the urgency and importance of this task. In fact, both the main tasks entrusted to our Commission are urgent and difficult. But in a sense, it can be said that visualizing a system of effective protection and welfare for the unorganized sector is a shade more difficult and complicated, if only because of the dimensions and variety of the workforce in the sector, and the various factors that have to be taken into consideration.

Conclusion

The predicament is more pathetic with the labour forces engaged in agrarian sector. There are abundant numbers of landless farmers working under the aegis of big land owners in a scything and torturous environment. More importantly, the conditions of female house-workers which has a huge stake in providing agricultural work-forces, attracts all attentions and concerns. The merciless exploitation of women without being adequately rewarded for their services is exceedingly unjust, inhuman and unethical.

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It is therefore, important to make a nation free from all kinds of exploitation and injustice. The distribution of values of values should be fair, equitable, adequate and just, so that, the society could live in harmony. It can be expected that, the government of India would take further initiatives for the welfare of unorganised sector workers who are the back-bone of India economy.

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Real Estates Boom and Agriculture: Evidences from an Indian Village

Introduction

Indian economy is predominantly an agrarian economy and its prosperity depends upon the the progress of agriculture (Inderpal Kaur et.al 2009). Although agriculture accounted for only 14 per cent of the Gross Domestic Product (Economic Survey 2011-12) the sector provides employment opportunities to the rural masses and income for more than two-thirds of the nation's population. The land under cultivation during fifties and nineties were considerable one, but recently the land under cultivation is declining. One reason inter alia for this decline is land put for non-agricultural purpose. And more importantly the conversion of farm land for real estate. The population is increasing with the passing of every hour. For instance in India, population has increased from 102 corers in 2001to 121 corers in 2011 (Census, 2011). Thus, there arose the requirement of more and more land for housing and other purposes. Urbanization accelerated the requirement further. Land conversion thus became a necessity in a country like India. Real estate gained momentum in India after 2001. Real estate is the second largest sector which provides employment to people in India next only to agriculture. The GDP from real estate sector along with business services witnessed a growth of 7.5 percent in the year 2009 -10 (Economic survey 2009-10). Land can after all be converted for multiple uses. Globally, it has been forecast that 24 million hectares of crop land will be transformed to urban use by the year 2000. This is only about 2 per cent of the world's total crop land but it provides the equivalent present-day food supply for some 84 million people. The loss of agricultural land is most severe in low and middle-income nations. One estimate suggested that by 2000, more than 476,000 hectares of land a year will be built up in low and middle-income nations. Some specialists have expressed considerable concern about the loss of agricultural land to urban development. In this context, an attempt is made in this paper to show that real estate boom causes decline in availability of agricultural land and a serious problem in terms of food security by analyzing data and evidences at India level and data obtained at a village level.

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Objectives

- To assess the extent of of the conversion of agriculture for non-agricultural purpose especially towards real estate at village level
- To analyze the consequences of real estate boom on Indian agriculture.

Methodology

The present study is of analytical nature. The study makes use of secondary as well as primary data. The secondary data are collected from reports of Ministry of Agriculture, Government of India to give macro picture the data pertain to the period of 1951-2011. The data so collected have been tabulated to facilitate analysis and to draw the meaningful inferences. In order to look into micro situation primary data pertaining to a village, Kothapulli in Reddiarchatram block of Dindigul district, Tamilnadu. The data and information were collected from the block level records, and through interviews, observation and focus group discussion with farmers. Besides using these data the evidences from earlier works have been used in appropriate context for analysis.

Conversion of Farm Land for Non-agricultural Purposes in India

Area under non-agricultural uses is defined as all lands occupied by buildings, roads, and railways or under water and other non-agricultural purposes (Suresh Kumar, 2011). Urbanization and industrializa-

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tion were found to be more important driving forces behind the conversion of farmland (Zhang et al 2004). While the percentage of people in urban areas has been growing, the size and number of urban settlements is also increasing rapidly. Urban settlements cover a relatively large part of the earth's surface. The loss of agricultural land to urbanization is most severe in low and middle-income nations. The loss of agricultural land to human settlements is far more serious in India. Now-a-days demands for land continues grow, while the land use alternative becomes more important. It is in this context, important to assess the trends in the extent of land utilized for non-agricultural purposes in India.

Conversion of Agricultural Land for Real Estate: Micro Evidences

This analysis based on data pertaining to Kothapuli village. The study village is situated in Reddiarchatram block of Dindigul district, Tamilnadu. The total population of this village is 5400. Of which 2950 are male and 2400 are female. The main occupation of this village is agriculture and quarrying. The major crops are cotton, corn, paddy, groundnut and vegetables.

It may be noted that the land area under cultivation has increased from 660 hectares in 1991 to 725 hectares in 2001 in Kothapulli village, but it drastically reduced to 513 hectares in 2011. The proportion of the land area under cultivation to total geographical area has reduced by 16 percent between 2001 and 2011. The decline in extent of agricultural land could be arrtibuted to reduction in agricultural activities in recent years. Interview with Village Admistrative Officer and discussion with farmers revealed that farmers have given up cultivation in certain holdings or entire holding in some cases mainly due to scarcity of water for irrigation and shortage of labour and increase in the cost of cultivation. Another important reason (may be the off shoot of the above reasons) is that conversion of agricultural land in to real estate plots. While some lands have been already converted the rest are kept ideal with a view to converting them in to real estates. The main aim of the paper is to assess to what extent real estate has replaced agriculture and the consequences on agricultural activities.

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It is very clear from the that between1991 and 2001, the land area under real estates more than doubled (from 10.1 hectares in 1991 to 23 hectares in 2001). The land under quarrying also increased by 80 percent. It is to be noted from the that the area under real estates tripled between 2001(23 hectares) and 2011 (70 hectares). Thus these data suggest that the agricultural lands have been converted in to real estates in recent times in the study village. This was further confirmed with the village records. At this point it is to be recalled that 212 hectares of land has been left out of cultivation in 2011 as compared to 2001. During the same period only 47 hectares were converted in to real estates. But it is in fact most lands are kept ideal (even if irrigational facilities are available) with the view to converting them in to real estates or are being converted, because the increase the market value of the land as a result of opening of national highways enroute this village. Most farmers have started thinking of selling their lands as real estate plots and generating income rather than sticking on to the non-viable agriculture.

Causes and consequences of conversion towards Real Estates

In India presently the real estate sector is growing very fastly, it and because it is the second biggest employment generating sector in India. It covers various activities such as land development, appraising and selling of buildings (GOI 2012). Therefore it stimulates the demand in over 250 ancillary industries of cement, paint, bricks, building materials,consumerdurables and so on(Ashish Mittal 2009). The huge demographic shift being witnessed in the country in the last decade is one reason behind the sector's exponential growth (Ashok et al 2011).

There are both external pressures outside agriculture and internal pressures leading to changes in land use patterns in agriculture. As could be seen from the above micro situation analysis conversion of agricultural land towards real estates is due to scarcity of water for irrigation and shortage of labour and increase in the cost of cultivation. Another important reason increasing land value and demand for land sites. Boom in service sector and remittances seem to be facilitating forces of real estate sector boom.

As noted already, the percentage of people in urban areas has been growing, the size and number of urban settlements is also increasing rapidly. Hence, there is growing demand for housing and other requirements in urban areas. The demand for land for urban development is set to rise as well. There is demand for habitation, commerce and industry in urban areas. Improved infrastructure is necessary to connect the urban areas (Shashanka Bhide 2011).

With rapid urbanization and the extension of urban areas, combined with continuing population growth, both agricultural and social scientists have long expressed a concern as to whether India will be able to feed its population (Shahab Fazal 2000). It is also reported that urbanization warrants constructing more houses and bricks is a main material, which are produced from fertile land causing further damage to good agricultural land. Population pressure together with increasing urbanization and industrialization has noticeably reduced the land available for agricultural production, and promoted negative consequences for rural land scape and agricultural environment (Alauddin and Quiggin, 2008).

Conclusion

Based on the data the paper shows that there has been rapid conversion of agricultural areas to non-agricultural uses in India. The paper has made an attempt to show that real estate is a constraint to Indian agricultural development. With the data collected from a Tamilnadu village, the paper reveals that the conversion of agricultural land into real estate takes place vigorously. The causes for real estate boom are inadequate irrigation, shortage of labour, increasing cost of cultivation and question of viability and increasing land value from the supply side. The demand side forces include increase in population, urbanization, infrastructure development, service sector boom and remittances. The paper, has argued, with the help of data and evidences from earlier researches, that real estate prompts negative consequence to agriculture. The main negative consequences are reduction in land available for cultivation, food security concern, deteriorating soil fertility and agricultural environment. Reduction in agricultural operation due to conversion leads to further migration and results in labour shortage in agriculture. Given the situation, the farmer has his incentives reduced for cultivation. As the real estate boom prompts negative consequences to agriculture, the real estate market is to be regulated and controlled with vigil so that agricultural development is not affected.

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Impact of Primary Agricultural Co-operative Society on Crop Cutivation in Tamil Nadu

The co-operative movement, which is the largest socio-economic movement in the world, has contributed significantly to the alleviation of poverty, creation of employment as well as the enhancement of social integration in the country. The co-operative movement in India, particularly in Tamil Nadu, has taken deep roots in various sectors and is making a significant contribution towards economic development and social progress of the people. The cooperative sector is mainly concerned with agricultural credit, marketing of agricultural produce and distribution of fertilizers and pesticides and other essential commodities.

Objectives

1. To examine the various types of the loan's provided from PACB in Karudyampalayam Village.
2. To measure the credit structure of PACB in this study area.
3. To suggest suitable measure for the development of PACB in the study region.

Methodology

To analyse the performance of agriculture credit of the PACB,Karudiyampalayam Village, AravakurichiTaluk, Karur Districthas selected. Data has collectedfor five years from 2006-07 to 2010-11.This Study was the selected for using simple random sampling methods.The major PACB data is concentrated on types of deposits loan, amount of overdue, types of membership, types of share capital etc., The present study makes an extensive use of secondary data from the bank records, files, annul report by laws of the bank were also collected from the publication of the Co-operative Union of Tamil Nadu and Reserve Bank of India (RBI) publication. The primary information collected from District Statistical Office in Karur District, Revenue Office, Village Administrative Office and various report from Government of Tamil Nadu and India. Simple statistical tools such as percentage, bar diagram and Pie chart have been applied for the analytical purpose of the study.

Results of the Study

There is a stable movement in the enrollment of the members during the study period. The membership has decrease from 792 in 2006-07 to 638 in 2010-11. Finally the average bank membership has declined over the period of 2006-07 to2010-11.

Membership of the PACB Karudiyampalayam

There is a stable movement in the enrollment of the members during the study period. The membership has decrease from 792 in 2006-07 to 638 in 2010-11. Finally the average bank membership is decline over the period of 2006-07 to2010-11.

Net profit

The details of profit during the study period from 2006 - 07 to 2010 – 11. Net profit arrived from received and interest paid and the administrative cost. The main aim in any business is to maximize profit. The net profit of the PACB shows an increasing trend because performance of the PACB in KarudiyamPalayam village is appreciated well.

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Beneficiaries of jewel loan

The number of farmer's beneficiaries' loan has increased from 90 to 131. And 7.9 percentage to 8.8percentage of the amount sanctioned increase. Farmer is 547 to who were benefited by means of jewel loan by the PACB during the study period.

Beneficiaries of short term loan

The number of beneficiaries of short term loan increased from 130 to 847. There are 2386 farmers were benefited by means of short term loan. Unfortunately 2007- 08 year having members of short term loan having 48 farmers, because due the financial crisis the government provides the short term loan is rest righted.

Beneficiaries of medium term loan

The medium term loans given for a period ranging from over 12 months to five year for purpose such as reclamation of land, building and other land improvements, purchase of live-stock machinery and other implements

Fixed deposit

Fixed deposits is one which is repayable after the expiry of the percent determined period fixed deposits are accepted for minimum period of 15 days. Generally fixed deposit enjoys more interest than any other types of deposits. The rate of interest payable by the PACB is as follows.

Saving deposits

This is another type of deposit, which is similar to current deposits but is more popular among traders, merchants and businessmen due to comparatively high rate of interest offered on it. The objective of this deposit scheme is to improve saving habit among people. The Depositor can withdraw money from saving bank account any time during working hours through the cheque. Always there must have a minimum balance of Rs.100/- on SB account. There is no maximum limit for SB account. The current interest rate is 4 per cent.

The average period of deposits is increasing at same time rate of interest also increasing from 6.5 per cent to 10.5 per cent in the duration 2006-07 to 2010-11. The percentage of fixed deposits to total deposits has been increasing continuously except in the year 2006-07 to 2010-11. The percent of current deposits was in a mixed trend. It was a minimum of 5.2 percent in the year 2006-2007 and maximum of 7.9 percent in the year 2008-2009. Total deposits have reached the maximum level in the year 2009-10 and minimum year 2010-11.

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Suggestion

- Ø Farmers are not having the responsibility to repayment their loan. They should come forward to repay their loan only the bank use strict measures to collect dues.
- Ø Consultant units maybe started in each bank to give advice and guidance to the farmers in using their loan amount properly.
- Ø The bank should provide more jewel loan because it is safe to bank for avoiding over dues.
- Ø The bank should go at the time of harvest period for recovery of to the farmers.
- Ø The Primary Agricultural Co-operative Bank wants to reduce the rate of interest for Agricultural loan. Because the farmer is constrain the overdue of loan amount from Karudiyampalayam village in Karur district.

Conclusion

The study observes that farmers who live nearer by the PACB tend to utilise the credit significantly more than those who live away from the society. The farmers who live at a distance from PACB misutilise the credit more than others who reside nearer to the PACB. The farmers with small amount of loan utilise the credit significantly more than those farmers who borrowed large amount of credit. Misutilisation is also found significantly more among the farmers who borrowed low amount of credit. Purchase of agricultural inputs and implements, and social and religious ceremonies are noted as major purposes (both productive and unproductive) of credit utilisation among traditional and moderate farmers. The PACB to assess the credit utilization of farmers were productive or unproductive. The government should take action against the agricultural banking sectors to reduce the rate interest for various loans for farmers. Hence, the PACB have to be ready to compensatethe credit holders to save the farmers from the heavy blood and droughts period.

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Agriculture Crisis in India

Introduction

Twenty first century India has emerged as a major economic power in the world, with the growth rate of the Gross Domestic Product reaching impressive levels and poverty ratio coming down significantly. The Structural Adjustment Programme in 1991 that the policy of globalization was concretely introduced in India Based on this policy and the directives of the World Bank. International monetary Fund and World Trade Organisation, the Indian economy was substantially overhauled. The Export –Import policy was liberalized; the import and customs duties of many products were drastically lowered or totally dropped so that they could be imported without any restriction. The government started reducing its investment in agriculture and the industrial sector allowing the private sector to take over. The restructuring of the public distribution system really affected the availability of food grains to the poor at subsidized rates. All such measures had implications for the farm sector.

The Root Cause and Consequences

1. Dependence on Rainfall and Climate

Unlike other sectors, articulate depends largely on the natural climate including rainfall. Nearly 60% of India's farmers depend on rains for irrigation and a failed monsoon means crops such as rice, wheat, soya bean, sugarcane and cotton take a severe hit. To protect the fall in prices during times of harvest, the government has hiked the minimum support price for paddy and pulses, and increase then time to time. These support prices are beneficial to farmers, only if they could harvest the crop. If the crop failed due to adverse climatic conditions and poor rainfall, the risk is more felt by the farmers. Though the initiatives such as modem irrigation system and energisation of wells make agriculture less dependent on monsoon, it cannot completely do away with the nature and climate.

2. Liberal Import of Agricultural Products

The fall and fluctuations in the prices of agricultural products is directly related to the liberalisation policy of the government. The policy of removal of quantitative restrictions and lowering of import duties adopted in India were according to the agreements of the World Trade Organisations (WTO). The main reason for the crash of prices of agricultural products, especially of cash crops, in India was removal of all restrictions to import these products. For example, when the Government of India reduced the import duty on tea and coffee from Sri Lanka and Malaysia, their prices in the domestic market got reduced drastically. Similarly, liberal policy of importing silk has affected the domestic mulberry cultivators and silkworm readers. Thus cultivation of such products became unprofitable and so their production was fully or partly stopped.

3. Reduction in Agricultural Subsidies

In order to encourage crop cultivation, the Government of India announced several subsidies time to time. Providing subsidies were unavoidable as the cost of cultivation was increasing and any modenisation required huge additional cost and burden for cultivators. Moreover, to raise the output of agriculture and to improve the productivity levels additional investment were encouraged upon. In the post-reform period, the government reduced different types of subsidies to agriculture, and this has increased the production cost of cultivation. No doubt that this move has adversely affected the agricultural sector. It has increased the input cost and made agriculture less profitable.

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4. Lack of Easy Credit to Agriculture and Dependence on Money Lenders

In general, the lending pattern of commercial banks, including nationalised banks, to agriculture is not simple. It is part of the policy of privatisation that banks, even nationalised banks, look for profit over their social responsibilities to the people. This has forced the farmers to rely on moneylenders and thus pushed up the expenditure on agriculture. The National Commission for Agriculture, headed by Dr M.S. Swaminathan, also pointed out that removal of the lending facilities and concessions of banks during the post reform period have accelerated the crisis in agriculture (cited in Mathew Aerthayil;2008).

5. Decline in government investment in the agricultural sector

An unfortunate trend over the past two decades has been that expenditure control efforts following fiscal shocks such as the Pay Commissions awards have led to cutbacks in agricultural investment and extension. During the period between 1976-80 and 2001-03 public investments in agriculture declined from over 4% of agriculture GDP to 2%. Most of the subsidies are on fertilizer, power, and irrigation water and these have actually contributed to the degradation of natural resources. Further, a considerable amount of Plan expenditure on agriculture is not on investment but on subsidies not accounted for in the above list. Simplistic fiscal rules such as protecting Plan expenditures more than non-Plan expenditures add to the problem (For details refer, Eleventh Plan Document).

Decline in public investment on agriculture IS based on the policy of minimum intervention by the government enunciated by the policy of globalisation. The expenditure of the government in rural development, including agriculture, irrigation, flood control, village industry, energy and transport, declined from an average of 14.5 per cent in 1986-1990 to six per cent in 1995-2000. When the economic reforms started, the annual rate of growth of irrigated land was 2.62 per cent; later it got reduced to 0.5 per cent in the post-reform period.

6. Input cost of market price

(i) Seeds (ii) irrigation (iii) input supplies (iv) production credit

7. Conversion of Agricultural Land for Alternative Uses

On the one hand, the demand on land for non-agricultural uses has been steadily increasing. On the other hand farmers are unable to cultivate any crop due to the unviable nature of agriculture. This makes the conversion of cropland for nonagricultural purposes easy and effective. In addition to the above fact, as part of the economic reforms, the system of taking over land by the government for commercial and industrial purposes was introduced in the country. As per the Special Economic Zones (SEZ) Act of 2005, the government has notified more than 400 such zones in the country. Since the SEZ deprives the farmers of their land and livelihood, it is harmful to agriculture.

Conclusion

The production of food grains, oilseeds, pulses and other commercial crops is increasing continually in India. But capital formation level is decreasing in the agricultural sector due to the unfavorable policy of the government regarding investment promotion. Globalization is a necessary but not a sufficient condition for high growth of production, India has undertaken economic reforms, both internal and external. The agricultural sector in India is facing a crisis today. The solution of the problem is not in a few packages but in drastic changes in the present economic policies related to agriculture. All famers, Agricultural labourers, Societies, government and people's organizations should work collectively to revive agriculture and "save India from agrarian crisis "

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Financial Crisis in Indian Agricultural Sector

Introduction

"Agriculture is the backbone of Indian economy" this is a statement which epitomizes and defines the importance of agriculture in India. It is the driving force of the Indian economy. **Indian Agriculture** is one of the most important sectors in the economy of the country. Agriculture in itself produces more than 18.5 percent of the Gross Domestic product of the country and more than 60 percent people out of Indian population are involved in this sector. Agricultural output and productivity strongly increased and over 60 million people moved out of poverty in the region. The recent financial crisis risks reversing the region's recent gains and exposes the region to significant adverse economic and social impacts as the economies in Eastern Europe and Central Asia are forecast to experience the deepest contraction among all emerging and developing economy regions.

The financial crisis affected the region with some delay. In the second half of 2008, as risk premiums for emerging countries rose and cross border lending decreased, the position of the countries in Eastern Europe and Central Asia particularly worsened, also by the collapse of commodity prices. In general, the crisis affected the economy in the region through reduced capital flows, including a decline in investments, a decline in domestic production and exports, and a decline in remittances. By mid 2009, international financial markets recovered and confidence indicators stabilized. However, the ripple effects of the crisis on industry and households became clear, with significant effects on unemployment, exchange rates and non-performing loans.

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Effect of the Agricultural Sector on Financial Crisis

The liberalization of the sector in the beginning of the 1990s caused a dramatic decline in agricultural output and productivity, but recently output and productivity increased again. The crisis will have a negative impact on this recovery. First, one could expect an overall decrease in investments, because banks provide less credit to individual households and (foreign and domestic) investors reduce their investments in the sector. This could cause stabilization in the recent productivity growth, depending on the extent to which the sector depends on formal credit. Second, the financial crisis is expected to lead to a decrease in demand for higher value agricultural products and a switch to basic products due to a decrease of the household's disposable income. Finally, governments in some countries reacted to the crisis by increasing their expenditures on agriculture. These government interventions could be positive if they boost investments. However, one should be careful it does not lead to a (partial) reversal of reforms in the agricultural sector, which could have a negative effect on efficiency.

Enhance Investments

Increased investments have been a major driving force behind the recent economic growth. In the agri-food industry, Indian investments have been one of the, if not the, main engine behind productivity growth, quality improvements, and enhanced competitiveness. The task of the government will be to provide a favorable institutional and regulatory environment for stimulating more FDI. This can be done by promoting R&D in the agricultural sector and by enhancing the rural infrastructure, but in this perspective it will also be important to continue the process of reforms.

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Agricultural Production in India

India is known to be the largest producer of milk and milk products, coconuts, cashew nuts, tea and other crops. Indian Agriculture after India has the largest output in farming and it also comes second in producing crops like rice, wheat, rice and some other crops as well. In producing fruits like Banana and Sapota, Indian Agriculture is ranked one in the world.

There are some factors that stop India from producing more crops in their fields:

· The farmer does not have enough land for themselves due to various reasons and the lands are also getting fragmented due to the ceiling acts and also due to family disputes.

· Illiteracy and the backwardness in the socio economic sphere also are responsible in stopping Indian Agriculture form growing more agricultural products.

· The use of technology is also not enough and unlike China, the farmers of India are not comfortable in using various agricultural technologies.

The Indian Farmers are very much dependent on rain falls as there is not enough facility available for irrigation in most part of the country. So whether the crops would be good or bad depends entirely on the amount of rainfall in the country

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Agricultural Credit From Institutional

India's financial integration with the outside world is deep. As a result, the Indian financial market-equity market, money market, forex market and credit market has come under the pressure of liquidity squeeze, with its global financial sources drying up. the problem has got further accentuated with the reversal of capital flows away from the domestic market. the intervention of Reserve Bank of India in the forex market to manage volatility in the rupee has further added to tightening of liquidity (Subbarao, 2009). However, the extent of permeability of these factors having an adverse impact on the flow of institutional credit to the agricultural sector is to be looked at closely. the Government of India has taken special care in ensuring adequate availability of credit to the agricultural sector in recent years. a number of policy measures like farm credit package and Special Agricultural Credit Plans (SACP), have been initiated to improve credit flow to this key sector. the overall farm credit has increased from Rs. 69,560 crore in 2002-03 to Rs. 2,92,437 crore in 2008-09 . the total credit flow to agriculture during 2009-10 was expected to be order of Rs.3,25,000 crore, of which 51 per cent (Rs. 165439 crore) of which has already been distributed till October 31, 2009. the target for the year 2010 is still higher at Rs.3,75,000 crore. Because of this mandated priority sector lending, it is likely that the farm sector may remain insulated from the unleashing credit crunch at least in the short-term. Moreover, the Reserve Bank of India's policy packages starting midSeptember, 2008 to keep credit delivery to important sectors on track, would also work in favour of the agricultural sector.

Solution of Financial Crisis

Some of the suggestions are being listed here.

1. Quantitative restrictions should be imposed on import of agricultural products. Since the import policy was the major reason for the crash in prices of many agricultural products, there should be restrictions on the quantity and customs duty of such products. Necessary import duty and quantitative restrictions should be imposed on imported goods to protect our farmers who should be given priority to the discipline of the WTO.

2. Subsidy and concessions given to agriculture but removed in the post-reform period should be restored. This is a must to make agriculture remunerative. One of the main disputes in the Doha Round of talks at the WTO is the high subsidy given by the United States and European Union to their farmers in spite of the WTO regulation. India should assert its right to give sufficient subsidy to its farmers to offset the rising cost of cultivation and protect their livelihood.

3. Bank loans should be easily made available to the farmers, especially since the input cost of agriculture has gone up. The government should seriously think of restoring the low rate of interest to farmers given by banks and other financial institutions as it had done before the reform period. In fact, the M.S. Swaminathan Commission for Agriculture has recommended a low rate of four per cent interest for the farmers.

4. The government should augment its investment and expenditure in the farm sector. One reason for the agricultural stagnation is low government expenditure. Investment in agriculture and its allied sectors, including irrigation, transport, communication and farm research, should be drastically increased, and the government should aim at integrated development of the rural areas. Effecting Implementation of National Rural Employment Guarantee Scheme can also become a means of revival of the rural economy.

5. There is a need for periodic revision of the procurement prices for farm produce making those remunerative. This will help the farmers to meet the increasing expenses for farm inputs and ensure at least remunerative income. According to the Swaminathan Commission, unless agriculture is made a profitable enterprise, its present crisis cannot be solved. The Commission has suggested 50 per cent more of the total production cost as supportive price for foodgrains.

6. The government should revise the policy on Special Economic Zones as it goes against the interest of farmers and the agricultural sector. It should not acquire fertile agricultural land for SEZs. When it does take over land for essential public utilities, it should give just compensation and initiate comprehensive rehabilitation measures.

7. Bold steps should be taken to implement land reforms which were not implemented in most States. Feudal structures and landlordism based on large holdings of land by high caste and class people even now tend to keep a majority of the people, especially Dalits and backward castes, in the rural areas under their control and domination. Neo-liberal policies with privatisation will only reinforce and strengthen these unjust and exploitative structures.

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Conclusion

The financial crisis in Indian agricultural sector in all aspects of life. We study the real economy spillovers of the financial crisis in the aforementioned three countries. In particular, we provide an in-depth analysis of the key channels through which this crisis was transmitted to slowdown in economic growth and its components in Indian. It is existence of the human race and in this regard, we also report the estimated impact of financial crisis on poverty and employment in the region. Agriculture and self-sufficiency of countries in terms of food is of paramount importance. Government of India is not sleeping over this crisis. National Commission on farmers has been constituted. Government has announced financial package for those districts in country where maximum farmer suicides have been reported. The financial packages include; interest waiver, rescheduling of loans, and advancing of more capital etc. Government in Union Budget has made provisions for cheap loans for agricultural sector.

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A Study on Small Onion Cultivation in Pullambadi Block of Tiruchirappalli District

Introduction:

Onion is a major agriculture commodity for domestic consumption and exports. So it is widely grown in different parts of the country mainly by small and marginal farmers. India has been the dominant player in the onion trade and has pioneered the onion processing and exports.Andhra Pradesh, Karnataka and Tamil Nadu are the three important small onion producing States in India. Karnataka is a major competitor for small onion and the arrivals from Karnataka decide the small onion price in Tamil Nadu.

Perambalur district in Tamil Nadu occupies 24 per cent of the area under onion cultivation. The other districts cultivating onion are Tiruchirapalli, Tirupur, Dindigul, Tirunelveli,Namakkal, Erode, Thoothukudi, Virudhunagar, and Coimbatore. Among these districts Perambalur, Tiruchirapalli, Tirupur and Dindigul contribute for more than 60 per cent of the onion area and production.The onion cultivation is not only famous in the country level ,it is famous at village level also. In pullambodi block onion cultivation plays import role in socio-Economic conditions of the people. This study going to analys problems faced by farmers while cultivating onion ,their relation with various institutions and their marketing and cultivating strategy.

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Objectives:

1. To study the marketing aspects of the onion in this study area.
2. To identify the problems and prospects of onion cultivators

Methodology:

The study is based on both primary and secondary data. The data are collected with help of standard questionnaire. The random sampling method is used in selecting the onion cultivators The secondary data have been collected from pullambadi union agricultural office journal and records. The study on onion cultivation in pullambadi block from four revenue village namely P.K.Agaram, Neikulam, Nedungur and Oottathur have been selected by choosing as a whole 100 respondent of onion cultivators as sample.

The collected data from primary sources and secondary sources have been classified, tabulated and appropriate statistical tools like percentage bar and pie diagram are applied.

Data Analysis:

The table no-1 explains selling strategy of farmers. It is clear that most of the people tendency to sell their product within 2-4 months. Only less number of people i.e, 8 per cent would like to sell their product next season.

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TABLE NO - 1

Marketing Strategy

Sl.No	Particulars	No of respondents	Percentage
1	Same month	18	18
2	2-4 months	54	54
3	4-6 months	20	20
4	Next season	8	8
	Total	100	100

Source: Compiled from the primary data

The table no-2 explains to whom farmer would like to sell their product, Most of the people tendency to sell their product directly in the market and 35 per cent to whole seller.

TABLE NO – 2(SELLING METHOD)

Sl.No	Particulars	No of respondents	Percentage
1	To Direct	60	60
2	To commission agents	5	5
3	To whole seller	35	35
4	To retailers	-	-
5	To government	-	-
6	To export	-	-
	Total	100	100

Source: Compiled from the primary data

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TABLE NO – 3 (PROBLEM OF ONION CULTIVATORS)

S. No	Problems	No. of Respondent	Percentage
1	Scarcity of labour	14	14
2	Increase in input cost	61	61
3	Monsoon failure	15	15
4	Problem of Storage	10	10
	Total	100	100

Source: Compiled from the primary data

The table no-3 shows that 14 per cent are said that the scarcity of labour, 61 per cent are said that increase in input cost, 15 per cent are said that monsoon failure, 10 per cent are said that storage problem.

Findings:

1. Most of the people tendency to sell their product directly in the market and 35 per cent to whole seller.

2. Most of the people tendency to sell their product within 2-4 months. Only less number of people 8 per cent would like to sell their product next season.
3. Scarcity of labour remain the major concern as felt by the medium farmers, the cultivators should mobilize the unused labour force and offer them incentives along with normal wage.

Suggestion:

1. The farmers should form cooperative selling.
2. The farmers should be more informed and get in touch with market information.
3. The farmers should store their onion till the best price and sell them to gain more profit.
4. As storage facility remains the major problem for the marginal farmer, they should get storage hire or try to find out other means to store.
5. As the rising input cost is main problem for smallholdings, the cultivators should try to use natural manures, which is available in rural areas.
6. Scarcity of labour remain the major concern as felt by the medium farmers, the cultivators should mobilize the unused labour force and offer them incentives along with normal wage, it is also possible to share the workload with peer group farmers.
7. In general, there exists a high degree of dissatisfaction towards the role of intermediaries in onion marketing. Therefore the government through its marketing committee should supervise the role of intermediaries.
8. The farmers themselves can participate in direct selling of onion in a small scale in periodic markets.

Conclusion:

Indian agriculture today is facing challenges in many aspects. The shortage of labour and increase in input cost are the problems that the cultivators find it cope with. Onion is commercial crop with certain advantages. Though the role of intermediaries cannot be totally eliminated, but the onion cultivators should choose the timing of sales carefully watching the market condition. They should make use of the banking facilities and reduce their financial burden. Though there can be many researches in agricultural fields, but this research is throws a light on the problems and prospects of farmers in pullampadi block. So the research of this kind is the need of the hour as most of the people rely on agriculture and related activities and will serve the betterment of the rural cultivators.

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Technological Crisis in Indian Agriculture

"AGRICULTURISTS ARE (AS IT WERE) THE INCH- PIN OF THE WORLD, FOR THEY SUPPORT ALL OTHER WORKERS WHO CANNOT TILL THE SOIL."

THIRUKKURAL.

Introduction

"Agriculture is the backbone of the Indian Economy" said Mahatma Gandhi.

Agriculture and economy Agriculture contribution in the gross domestic product is declining in India, which in 2008-09 touched at 15.7% from about 30% in 1990-91. During the last two decades, the average annual growth of agriculture sector was less than half (around 3%) of the overall average growth of the economy (6 - 7%) (NAAS, 2009). Industrial and service sectors have outpaced performance of agriculture sector during the last two decades. But the proportion of workforce engaged in agriculture did not commensurate with the decline of its share in the gross domestic product. At present also, agriculture sector provides employment to about 52 % of the workforce that used to be about 61% in 1990-91. These starkly different trends reveal that incomes in non-agriculture sector are growing faster than agriculture sector. And a sizable workforce from agriculture is needed to be shifted to non-agriculture sector for income and livelihood opportunities. Hence, in the country the research and development focus needs to be reoriented in a way to develop and promote those technologies that raise agricultural income and ensure employment opportunities in the agriculture-supply chain to a vast majority of the workforce.

Agricultural mechanization, one of the great achievements of the 20th century (NAE, 2000), was enabled by technologies that created value in agricultural production practices through the more efficient use of labor, the timeliness of operations, and more efficient input management with a focus on sustainable, high-productivity systems. Historically, affordable machinery, which increased capability and standardization and measurably improved productivity, was a key enabler of agricultural mechanization. Figure 2 shows some major developments since the mid-1800s by John Deere, a major innovator and developer of machinery technology.

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Mechanization

The mechanization of agriculture, we mean the use of power operated machines to do various agricultural operations such as irrigation, ploughing, sowing and harvesting in place of human and animal power. It implies the replacement of animal and human power by machinery. J.B. Bhattacharjee defines mechanization of agriculture and farming process as "application of medium power to work on land, usually performed by bullocks, harses and other draught animals or by human labour."

Some Aspects of Modernization of Indian Agriculture.

Since the inception of National Economic Planning in India in 1951, sustained efforts have been made by the planners to accelerate the pace of agricultural development in the economy. However, the main emphasis during the early stages of planning was on broadening the industrial base through rapid development of basic and capital goods industries. It was only in mid-Sixties, when the economy suffered a major setback due to two consecutive years of drought, that a shift in the development strategy focusing on rapid agricultural development became necessary.

In fact, the impact of two consecutive drought years (1965-66 and 1966-67) was so severe that it almost nullified the effect of more than a decade of agricultural development and in its aftermath brought

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about a severe industrial recession. As a result, planners were forced to have a 'plan holiday' for a period of three years from 1966 to 1969. It was during this period that a new strategy of agricultural development focusing on modernization of agriculture and improvement in farm productivity was launched. This strategy for modernization of agriculture, widely referred to as the 'Green Revolution', has been pursued vigorously in Indian economy since 1967. The term 'Green Revolution' indicates a package for modernization of agriculture consisting of "large scale application of modern science and technology to agriculture" involving "extensive and intensive use of improved production technology and high yielding varieties of seeds" (CSSC, 1974). The main components of the green Revolution technology are the introduction of high yielding varieties of seeds for several major crops, creation and utilization of energized well irrigation and lift irrigation facilities, use of high doses of fertilizers and pesticides, and extensive use of farm machinery directed at improving farm productivity.

To examine some aspects of modernization of Indian agriculture, it would be useful to divide the post-Independence period into two sub-periods:

(a) The period of planned economic development preceding Green Revolution (1950-51 to 1966-67); and (b) the period of Green Revolution from 1966-67 to 1988-89, the last year for which the relevant data are available. Moreover, since there has been a significant acceleration in the overall rate of economic growth in

Indian economy during the Eighties, we may further divide the period of Green Revolution into two sub-periods: 1966-67 to 1980-81 and 1980-81 to 1988-89. The basic data on the relevant aspects on Indian agriculture relating to the four benchmark years, viz., 1950-51,1966-67,1980-81 and 1988-89, are presented in Appendix 2, while some indicators of extent of modernization and improvement in farm productivity was launched. This strategy for modernization of agriculture, widely referred to as the 'Green Revolution', has been pursued vigorously in Indian economy since 1967.

The term 'Green Revolution' indicates a package for modernization of agriculture consisting of "large scale application of modern science and technology to agriculture" involving "extensive and intensive use of improved production technology and high yielding varieties of seeds" (CSSC, 1974). Stated briefly, the main components of the Green Revolution technology are the introduction of high yielding varieties of seeds for several major crops, creation and utilization of energized well irrigation and lift irrigation facilities, use of high doses of fertilizers and pesticides, and extensive use of farm machinery directed at improving farm productivity.

To examine some aspects of modernization of Indian agriculture, it would be useful to divide the post-Independence period into two sub-periods: (a) the period of planned economic development preceding Green Revolution (1950-51 to 1966-67); and (b) the period of Green Revolution from 1966-67 to 1988-89, the latest year for which the relevant data are available. Moreover, since there has been a significant acceleration in the overall rate of economic growth in Indian economy during the Eighties, we may further divide the period of Green Revolution into two sub-periods: 1966-67to 1980-81 some indicators of extent of modernization in Indian agriculture. It is evident from the information given in Appendix 2 that the period of Green Revolution was marked by spectacular increases in the area under high yielding varieties (HYV), extent of fertilizer use and extent of irrigation. Thus, during the period 1966-67 and 1988-89, the area under HYV increased from less than two million hectare. To more than 62 million hectare, the extent of fertilizer use increased from around one million tonnes to 11 million tonnes, the extent of irrigation increased from less than 27 million hectare. To around 60 million hectare. The number of tractors increased from 54 thousand to 1,205 thousand and the extent of double cropping increased from 15% to 25% of net area sown. By 1988-89, more than one-third of the gross cropped area was covered by irrigation and use of HYV, while the average dose of fertilizer had increases from less than 7 kg. Per hectare. In 1966-67 to more *than* 62 kg. Per hectare. Such large scale modernization of agriculture led to significant improvements in the productivity of land as well as labour. Land productivity, which had in-

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creased at an average rate of only 0.8% per annum during the pre-Green Revolution period, increased at an average rate of 2.5% per annum during the subsequent Period. Similarly, labour productivity, which had been more or less stagnant till 1966-67, increased at an average rate of 1.12% per annum during1966-67 to 1988-89. The period of Green Revolution was also marked by a significant increase in capital investment in agriculture, with the capital investment per ha. Increasing at an average rate of 2.9% per annum during 1966-67 to 1988-89, as compared to the average growth rate f 1.7% observed during the earlier period.

Definition of biotechnology

The term biotechnology was first coined by Hungarian engineer, Karoly (Karol) in 1919. Biotechnology is derived from two words, biology and technology. So in simple words, biotechnology can be defined as the use of technology in the advancement of biology. In broader meaning, biotechnology is the branch of biology which exploits the biological processes to produce various products which are useful to human beings. Duce high yielding crops but nowadays its use is broadened to many fields such as in pharmaceutical industries, biodegradation of wastes and diagnosis of many diseases.

Scope of biotechnology in Indian

Biotechnology industry is growing with very rapid rate in India. Apart from the basic qualification in biotechnology, biotechnologist should possess a scientific aptitude, Strong practical hand, good analytical power and should have thorough knowledge of the subject. Basically biotechnology finds its application in agriculture, health industry, environmental science and teaching.

Scope of biotechnology in agriculture

Biotechnology is used for the development of novel crops which have better yield, better immunity, better nutritional benefits and better resistance to the environmental stresses. As we all know India is an agriculture dependent country so there always an ample scope for the biotechnologists for finding new better crops. New improved varieties help to decrease the expenses of farmers as they use less fertilizer and give better yield.

Conclusion

The strategy of modernizing agriculture is likely to succeed only to the extent to which the individual farmers actually use modern agricultural inputs. In Indian government, therefore, adopted the policy of providing a wide range of incentives to the farmers in the form of specific subsidies on modern agricultural inputs. Thus, the subsidies have been provided to the farmers to encourage the use of chemical fertilizers, irrigation facilities, and electricity facility and also to avail credit facilities.

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An Over View of Indian Agriculture

Introduction

Agriculture is the backbone of Indian Economy. About 65% of Indian population depends directly on agriculture and it accounts for around 22% of GDP. Agriculture derives its importance from the fact that it has vital supply and demand links with the manufacturing sector. During the past five years agriculture sector has witnessed spectacular advances in the production and productivity of food grains, oilseeds, commercial crops, fruits, vegetables, food grains, poultry and dairy. India has emerged as the second largest producer of fruits and vegetables in the world in addition to being the largest overseas exporter of cashews and spices. Further, India is the highest producer of milk in the world.

Objectives

1. To indicate Agriculture in Indian Economy
2. To point out Trends in Agriculture
3. To point out Problems currently face by the farmers
4. To highlight recent government policies affecting Indian Agriculture

Methodology

Collection of data of the present work is carried on by making use of and Secondary data. Secondary data is collected from the books journals, magazines and newspaper, published and unpublished research works.

Problems currently face by the farmers

The problems of farmers are as follows:

- No proper price for agricultural produces.
- Farm-labourers migrating to other industries.
- Depletion of ground water.
- Disputes between states over sharing of river waters.
- Natural calamities like cyclone, flood, torrential rain, earth quake, tsunami, etc.,
- Duplicate Bio-fertilizers.
- Lack of provisions for the farmers to fix the prices of commodities on their own.
- Farmers and consumers never enjoy much profit.
- Middlemen make huge profits.

W.T.O. & Indian agriculture

India, and other developing countries have been insisting that special and differential treatment for developing countries must be integral to all aspects, including to negotiated outcome, on agriculture under

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the Doha Round in the WTO. Mitigating the risk facing the low income, resource poor, and subsistence farmers associated with price declines, price volatility, and predatory competition and other market imperfections, including the huge amount of production and trade-distorting subsidies provided by some developed countries to their agricultural sector, remains paramount. Therefore, along with other developing countries, particularly it's alliance partners in the G- 20 and G-33, India has been emphasizing that the Doha agricultural outcome must include at its core:

1. Removal of distorting subsidies and protection by developed countries to level the playing field, and
2. Appropriate provisions designed to safeguard food and/or livelihood security, and to meet the rural development needs in developing countries.

India has also taken the stand that governments must able to foster stable and remunerative prices for domestic producers in order to increase productivity and gradually move away from dependence on low productivity agriculture. For these, meaningful and effective instruments i.e. Special Products and the Special Safeguards Mechanism is important for developing countries like India. At Hong Kong, where 6th ministerial meeting of the WTO took place it has been argued that Special Products and Special Safeguard Mechanism shall be an integral part of the modalities and the outcome of the negations in agriculture. Moreover, developing countries shall have the right to self designate an appropriate number of special products, guided by indicators based on the three fundamental criteria of food security, livelihood security, and/or rural development needs. These designated products will attract more flexible treatment. Developing country

members will also have the right to have recourse to a Special Safeguard Mechanism based on import quantity and price triggers, with precise arrangements to be further defined.

National Commission on Farmers

To improve the condition of Indian farmers, National Commission on Farmers have been set up by the Government of India. It has been submitted five reports between December 2005 and October, 2006Key recommendations of the commission have been incorporated in the Revised Draft National Policy for farmers. These include: asset reforms covering land, livestock and bio reserves, farmer friendly support services covering extension, training and knowledge, connectivity, credit and insurance, assured and remunerative marketing, inputs and delivery systems, and curriculum reforms in the agricultural universities.

Recent government policies affecting Indian Agriculture

In the recent Union Budget (2007-08), agriculture has got considerable attention with the various policy initiatives from the side of finance ministry. Some of the imp0ortant policies are:

§ During 2006-07 (until December 2006), 53.37 lakh new farmers were brought into the institutional credit system. A target of Rs. 225,000 crore as farm credit and an addition of 50 lakh new farmers to the banking system have been fixed for the year 2007-08. The two per cent interest subvention scheme for short-term crop loans will continue in 2007-08, and a provision of Rs.1,677 crore has been made for that purpose.

§ A special purpose tea fund has been launched for re-plantation and rejuvenation of tea. Government soon plans to put in place similar financial mechanism for coffee, rubber, spices, cashew and coconut.

§ Accelerated Irrigation Benefit Programme (AIBP) has been revamped in order to complete more irrigation projects in the quickest possible time. As against an outlay of Rs.7,121 crore in 2006-07, the outlay for 2007-08 has been increased to Rs.11,000 crore.

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§ Rs.17,253 crore had been budgeted for fertilizer subsidies in 2006-07. However, according to the Revised Estimates, this will rise to Rs.22,452 crore.

§ The National Insurance Scheme (NAIS) will be continued for Kharif and Rabi crops during the year 2007-08.

§ The two per cent interest subvention scheme will continue in 2007-08.

§ Rs. 100 crores have been allocated to new Rain fed Area Development Programme, set up for coordinating all schemes for watershed development.

Conclusion

Thus, the agricultural productivity in India can be improved with the adoption of aforesaid measures in the agricultural sector of the country. Hence, from the above analysis it can be well concluded that although the Indian agricultural sector is subject to certain limitations, it has got enormous potential of growth & development with some changes in certain fields, including methodology of agricultural production. In the recent decades, there is an increasing demand of organic foods in the developed world. Organic farming is an important pillar of sustainable agriculture, which is beneficial for producers and consumers both. India has a great potential for organic farming using traditional wisdoms prevailing in the villages of India. In fact, a large section of Indian agriculture uses more or less organic method of farming using minimum level of chemical inputs. Promotion of organic farming in India could prove beneficial to increase share of Indian agricultural export in the world export.

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Agricultural Crisis- a study on declining trend and patterns of agricultural growth and its Contribution to GDP of India

Since the introduction of Green Revolu-tion, Indian agriculture is undergoing rapid trans-formation. The agricultural modernisation has been opened up, due to the recent policy of liberalisation and globalisation. Despite a fall in its share from 55.1 per cent in 1950-51 to 17.0 per cent in 2008-09, the importance of agriculture has not diminished for two major reasons. They are:

1) The country achieved self-sufficiency in food production at the macro level, but still is a food deficit country facing massive challenges of high prevalence of malnourished children and high incidence of rural poverty. The pressure on agriculture to produce more and raise farmers' in come is high.

2) The dependence of the rural workforce on agriculture for employment has not declined in pro portion to the sectoral contribution to GDP. This has resulted in widening the income disparity between the agricultural and non-agricultural sectors (Chand and Chauhan, **Agriculture Performance**

India is the second largest producer of food in the world: more than 200 million tonnes of foodgrains, 150 million tonnes of fruits and vegetables, 91 million tonnes of milk, 1.6 million tonnes of poultry meat, 417 million livestock, and 6.05 million tonnes of fish and fish products. The Indian agriculture has made great strides over the years. The foodgrain production has increased more than four fold - from 51 million tonnes in 1950-51 to 212 million tonnes during 2003-04 growing at an annual average rate of more than 2.4 percent per annum. The recent trends in performance of Indian agricultural productionhowever presents a dismal picture. During the 1990s, there has been a deceleration in production of all the principal crops.

The growth in production of 'all principal crops' decelerated from 3.19 percent per annum during the decade of eighties to 2.29 percent per annum during the decade of nineties. During the first four years of the current decade the growth rate so far has been a mere 0.70 percent. It is not only the growth at the aggregated level that has decelerated, similar pattern has been observed in the case of growth rates of almost all the crops. While the growth in production of foodgrains has fallen from 2.85 percent in eighties to 2.02 percent in nineties and a mere 0.27 percent in the current decade so far, the growth of non foodgrains during the corresponding periods has declined from 3.77 percent to 2.69 percent to 1.35 percent. The growth in yields of principal crops notably rice and wheat have also decelerated.

Agriculture Export and Import Trends of India

India's agricultural exports after growing at a rate of only 0.78 percent per annum during the period from 1961 to 1971, registered a steep hike and during the period between 1971 to 1981 increasing at an annual average growth rate of 18.36 percent. During the decade of 1980s the growth rate of exports again plummeted to 2.24 percent per annum. The economic liberalization and trade reforms introduced in 1991, helped India accelerate the growth rate of exports to 7.42 percent per annum (Bhalla: 2004). While during the first half of the 1990s India's agricultural exports performed extremely well, however since 1995-96 these have shown extreme fluctuations. Although the World Trade

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Organization (WTO) Agreement on Agriculture in 1995 was expected to improve India's agricultural exports, this does not seem to have happened. There have recently been some signs of a turnaround during 2002-03 and it is expected that this trend will continue (MTA). Bhalla (2004) however opines that this sudden surge in Indian exports has to some extent been the result of existence of large stocks and transport subsidy made available to exporters.

In 1990-91, agricultural exports constituted about 18 percent of the total exports which in 2000-01 went down to 14 percent. In 2003-04 agricultural exports constituted only 12.4 percent of all exports. Further not only the share of agricultural exports in the total merchandise exports has come down steadily over the years but the share of agricultural exports (including processed food) in agricultural GDP has also declined from 7.6 percent in 1995-96 to 6.3 percent in 2001-02 and recovered to 6.9 percent in 2003-04. The experience of India since 1971 confirms that growth of agricultural exports from India is highly correlated with the growth rate of international trade in agricultural commodities. The recent slow down in Indian exports since mid nineties can also be attributed to a slow down in international trade in the latter half of the nineties. A complementary factor for rapid growth of agricultural products during the early 1990s was high prices of agricultural commodities prevailing in the international markets duringthat period and steep devaluation of Indian rupee. The deceleration in growth after mid 1990s was also on account of fall in international prices for most of the commodities and simultaneous steep increase in domestic administrative prices making Indian products non competitive.

In the post 1995-96 periods, the fluctuations in imports have varied in the range of 58 per cent to (-) 29 per cent. The percentage share of agricultural imports in total imports also has shown very high volatility, having moved in the range of 28 per cent to less than 2 per cent during the same period. There was, in fact, a negative growth of 29 per cent in 2000-01 but since then, agricultural imports have grown at a relatively high rate of about 23, 22 and 27 per cent in 2001-02, 2002-03 and 2003-04 respectively. In recent years, imports of only two items, namely, pulses and edible oils have recorded consistently high volumes. The percentage of Plan outlay in agriculture and allied sectors to total outlay varied in between 11.3 per cent to 14.9 per cent from the First Plan to the Fifth Plan. This sector includes animal husbandry, special area programme, rural development and forestry and wildlife. From the Sixth to the NinthPlans, the share of agriculture and allied sectors to total varies between 4.9 per cent and 5.9 per cent. Here, agriculture and allied sectors include animal husbandry and research and education only.

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Conclusion

The cropping pattern in India has undergone significant changes with a significant shift from the cultivation of food grains to commercial crops. The area under coarse cereals, which is generally cultivated in dry regions, has declined by 13.3 per cent between TE 1970-71 and TE 2007-08. Nevertheless, increase in crop yield has been a major factor for accelerating crop production in the country since late 1960s. The use of modern varieties, irrigation and fertilisers were important aspects of higher growth in crop production in the country. The crop output growth model indicates that the enhanced capital formation, better irrigation facilities, normal rainfall and improved fertiliser consumption will help to improve crop output in the country. However, technological and institutional support for a few crops like rice and wheat has significant changes in crop area and output composition in some regions.

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Agrarian Crisis in India: It's Impact on Production and Export

Introduction

Twenty-first century India has emerged as a major economic power in the world, with the growth rate of the Gross Domestic Product reaching impressive levels and the poverty ratio coming down significantly. The Structural Adjustment Programme in 1991 that the policy of globalisation was concretely introduced in India. Based on this policy and the directives of the World Bank, International Monetary Fund and World Trade Organisation, the Indian economy was substantially overhauled. The Export-Import policy was liberalised; the import and customs duties of many products were drastically lowered or totally dropped so that they could be imported without any restriction. The government started reducing its investment in agriculture and the industrial sector allowing the private sector to take over. The restructuring of the public distribution system really affected the availability of food grains to the poor at subsidised rates. All such measures had implications for the farm sector.

Over View of Indian Agriculture

Agriculture plays a crucial role in growth and development of a country's economy. Besidesproviding food to nation, agriculture releases labour, provides saving, contributes to market of industrial goods and earns foreign exchange. Agricultural development is an integral part of overall economic development. In India, agriculture was the main source of national income and occupation at the time of Independence. Agriculture and allied activities contributed nearly 50 percent to India's national income. Around 72 percent of total working population was engaged in agriculture. These confirm that Indian economy was a backward and agricultural based economy at the time of Independence.

After the institution of planning in India, the share of agriculture has persistently declined on account of the development of the secondary and tertiary sectors of the economy. From 55.3 Percent in 1950-51, the share of Agriculture and allied activities in GDP at factor cost declined to 37.9 percent in 1980-81. The share of agriculture and allied activities in GDP at factor cost was 14.6 percent in 2009-10. In 1951, 69.5 percent of the working population was engaged in agriculture. This percentage fell to 66.9 percent in 1991 and to 56.7 percent in 2001. In 2004-05, agriculture provided employment to 52.1 per cent of the work force. However, with rapid increase in population the absolute number of people engaged in agriculture has become exceedingly large.

Agriculture provides raw materials to various industries of national importance. For a number of years the three agriculture - based of India- cotton textile, jute and tea- accounted for more than 50 per cent of export earnings of the country. The share of agriculture in total exports rose to around 70 per cent to 75 per cent. With economic progress and consequent diversification of production base, the share of agricultural goods in total exports has consistently fallen

Agricultural Exports during the Reform Periods

India's foreign trade is deeply associated with agriculture sector. Agriculture accounts for about14.7 % of the total export earnings. Besides goods made with the raw materials of agriculture sector also contributes about 20% in Indian exports. In other words, agriculture and its related goods contribute about 38% in total export of the country.

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The Reasons for Agrarian Crisis:

Liberal Import of Agricultural Products:

The main reason for the crash of prices of agricultural products, especially of cash crops, in India was removal of all restrictions to import these products. The removal of quantitative restrictions and lowering of import duties were according to the restrictions of the World Trade Organizations (WTO), the crash in the prices of agricultural products is directly related to the liberalisation policy of the government.

Cutback in Agricultural Subsidies:

In the post-reform period the government reduced different types of subsidies to agriculture, and this has increased the production cost of cultivation. Cutback in Agricultural subsidy and control of fertilizers over the last few years has adversely affected the agricultural sector. It has increased the input cost and made agriculture less profitable.

Lack of Easy and Low-cost Loan to Agriculture:

After 1991 the lending pattern of commercial banks, including nationalized banks, to agriculture drastically changed with the result that loan was not easily available and the interest was not affordable. This has forced the farmers to rely on moneylenders and thus pushed up the expenditure on agriculture.

Decline in Government Investment in the Agricultural Sector:

After the economic reforms started, the government's expenditure and investment in the agricultural sector have been drastically reduced. This is based on the policy of minimum intervention by the government enunciated by the policy of globalisation. The rate of capital formation in agriculture came down, and the agricultural growth rate was also reduced.

Restructuring of the Public Distribution System (PDS):

As part of the neo-liberal policy, the government restructured the PDS by creating two groups- Below Poverty Line (BPL) and Above Poverty Line (APL)-and continuously increased the prices of food grains distributed through ration shops. As a result, even the poor people did not buy the subsidised food grains and it got accumulated in godowns to be spoiled or sold in the open market.

Special Economic Zones:

The economic reform, the system of taking over land by the government for commercial and industrial purposes was introduced in the country. As per the Special Economic Zones Act of 2005, the government has so far notified about 400 such zones in the country. Very often it is fertile land which has been acquired. The SEZ deprives the farmers of their land and livelihood, it is harmful to agriculture. In order to promote export and industrial growth in line with globalisation the SEZ was introduced in many countries.

Conclusion:

The production of food grains, oilseeds, pulses and other commercial crops is increasing continually in India. But capital formation level is decreasing in the agricultural sector due to the unfavorable policy of the government regarding investment promotion. Globalization is a necessary but not a sufficient condition for high growth of production, India has undertaken economic reforms, both internal and external. The agricultural sector in India is facing a crisis today. The solution of the problem is not in a few packages but in drastic changes in the present economic policies related to agriculture. All farmers, agricultural labourers, societies, Government and People's Organisations should work collectively to revive agriculture and "Save India from Agrarian Crisis".

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Crisis in Price Fixation of turmeric in Taml Nadu

Introduction:

Indian agriculture was backward in every respect on the eve of Independence in 1947. It was characterized by feudal land relations primitive technology and the resultant low productivity per hectare.

The First Five Year plan (1951-56) accorded the highest priority to the agricultural sector to tide over the difficult food problem created by the partition of the country. Since then, agriculture has occupied an important place in every successive plan. The nation has invested huge resources for the development of agriculture under various Plans. Two major components of agricultural development strategy have been:

Subsidies on inputs and Minimum support price for output

Indian Agricultural Sector plays a pivotal role in the Indian Economy. According to Economic Survey (2009), agriculture and allied activities account for 17.1 per cent of gross domestic product (GDP) and it contributes to 52.1 per cent of the employment opportunities and shares 12.2 per cent of the export. However, its growth has come down to 1.6 per cent in 2008-09 from 4.1 per cent in 1990-91(Third concept).

Turmeric obtained from the underground rhizome of the plant Curcuma Longa, belongs to the family Zngiyberaceae. The Origin of turmeric known as Indian saffron is believed to be south-East Asia.

Turmeric is largely consumed as a spice in India and it is highly utilized as a food adjunct in many vegetables, meat and fish preparations in most of the Asian countries. Turmeric is also used to flavor and add color to butter, cheese, pickles, liquor, fruit drinks and cakes. Earlier times in India turmeric was largely used for dyihg wool, silk and cotton to impact a yellow shade.

In India turmeric is cultivated in the states of Andhra Pradesh, Tamil Nadu, Kerala and Karnataka. Turmeric production in the states of Andhra Pradesh and Tamil Nadu jointly accounted for 76 per cent of the total turmeric production in India.

Spices constitute an important group of agricultural commodities, which are indispensable in the culinary art. India is the largest producer, consumer and exporter of spices. "India produces 94 per cent of the world's supply of turmeric."

Agriculture provides the principal means of livelihood for over 58.4 per cent of India's population. It contributes approximately one-Fifth of total gross domestic product (GDP). Turmeric has been cultivating in Tamil Nadu 33 lack hectors in the year2012 nearly 158.67 lack tones producered every year in Tamil Nadu.

Turmeric (Curcuma Longa) is an important commercial crop cultivated in various part of Tamil Nadu. Turmeric is in the ginger family. It is rhizomes are the source of a bright yellow spice and dye. Turmeric is a main ingredient of curry powder. The rhizomes are cooked, dried and then ground to produce the strongly coloured aromatic powder. Anti ageing turmeric has traditionally been used to counteracted many conditional including the ageing process in Ayurvedic medicine.

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Challenges and Issues of Indian Agricultural Sector

Introduction

Agriculture is a large sector to providing employment. It play very important role in the nation's economic development. It supplies food and raw materials. Now agriculture has become a sick industry because of some problems dominate the agriculture. Over the past five years, due to low productivity of agriculture production, 3737 farmers have suicide themselves in India. The challenges for Indian agriculture are to increase production, while minimizing environmental impact. This includes conserving and protecting the quality of the resources that determine the performance of agriculture like land, water and air. Agricultural growth has a multiplier effect on the entire economy. So need improvement and implication in agriculture sector.

The Major Problems of Indian Agriculture

Population Pressure

India has a huge population of over one billion and it is increasing at a very fast rate. According to 2011 census figures the overall density of population is 382 persons per sq. km. This is likely to increase further in future. This has created great demand for land. Every bit of land has been brought under the plough. Even the hill slopes have been cut into terraces for cultivation.

Small and Fragmented Land Holdings

The pressure of increasing population and the practice of dividing land equally among the heirs has caused excessive sub divisions of farm holdings. Consequently, the holdings are

small and fragmented. The small size of holdings makes farming activity uneconomical and leads to social tension, violence and discontentment.

Inadequate Irrigation Facilities

By and large the irrigation facilities available in India are far from adequate. So far half of the total area under food crops has been brought under irrigation and the remaining half is left to the mercy of monsoon rains which are erratic in time and space.

Depleted Soils

Indian soils have been used for growing crops for thousands of years which have resulted in the depletion of soil fertility. With de4forestation the sources of maintaining natural fertility of soil has been drying out. Lack of material resources and ignorance of scientific knowledge have further depleted the soils of the natural fertility. Earlier only animal waste was enough to maintain sol fertility.

Storage of Food Grains

Storage of food grains is a big problem. Nearly 10 per cent of our harvest goes waste every year in the absence of proper storage facilities. This colossal wastage can be avo9ded by devel9oping scientific ware-housing facilities. The government has taken several steps to provide storage facilities.

Farm Implements

Although some mechanization of farming has taken place in some parts of the country, most of the farmers are poor and do not have enough resources to purchase modern farm implements and tools. This hampers the development of agriculture.

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With a population of just over 1.2 billion, India is the world's largest democracy. In the past decade, the country has witnessed accelerated economic growth, emerged as a global player with the world's fourth largest economy in purchasing power parity terms, and made progress towards achieving most of the Millennium Development Goals. India's integration into the global economy has been accompanied by impressive economic growth that has brought significant economic and social benefits to the country. Nevertheless, disparities in income and human development are on the rise. Preliminary estimates suggest that in 2009-10 the combined all India poverty rate was 32% compared to 37% in 2004-05. Going forward, it will be essential for India to build a productive, competitive, and diversified agricultural sector and facilitate rural, non-farm entrepreneurship and employment. Encouraging policies that promote competition in agricultural marketing will ensure that farmers receive better prices.

Progress of Productivity

India has shown remarkable progress in recent years and has attained self sufficiency in food staples, the productivity of Indian farms for the same crop is very low compared to farms n Brazil, the United States, France and other nations. Indian wheat farms, for example, produce about a third of wheat per hectare per year in contrast with wheat farms in France. Similarly, at 44 million hectares, India had the largest farm area under rice production in 2009 yet, the rice farm productivity in India was less than half the rice farm productivity in China. Other food staples productivity in India is similarly low. If India could adopt technologies and improve its infrastructure, several studies suggest India could eradicate hunger and malnutrition within India, and be a major source of food for the world.

Within India, average yields for various crops vary significantly between Indian states. Some Indian states produce two to three times more grains per acre of land than the grain produced in same acre of land in other Indian states. compares the statewide average yields for a few major agricultural crops within India, again for 2001-2002 agricultural year.

Reason for Low Productivity

· The average size of land holdings is very small (less than 2 hectares) and is subject to fragmentation due to land ceiling acts, and in some cases, family disputes. Such small holdings are often over manned, resulting in disguised unemployment and low productivity of labour.

- Adoption of modern agricultural practices and use of technology is inadequate, hampered by igno rance of such practices, high costs and impracticality in the case of small land holdings.
- According to the World Bank, Priorities for Agriculture and Rural Development, India's large agricultural subsidies are hampering productivity-enhancing investment. Overregulation of agriculture has increased costs, price risks and uncertainty. Government intervenes in labour, land, and credit markets. India has inadequate infrastructure and services. The allocation of water is inefficient, unsustainable and inequitable.
- Illiteracy, general socio-economic backwardness, slow progress in implementing land reforms and inadequate or inefficient finance and marketing services for farm produce.
- Inconsistent government policy. Agricultural subsidies and taxes often changed without notice for short term political ends.
- Irrigation facilities are inadequate, as revealed by the fact that only 52.6% of the land was irrigated in 2003-04, which result in farmers still being dependent on rainfall, specifically the Monsoon season.

Policy Measure to Sustainable Agricultural Development

The required level of investment for the development of marketing, storage and cold storage infrastructure is estimated to be huge. The government has not been able to implement various schemes to

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raise investment in marketing infrastructure. Among these schemes are Construction of Rural Godowns, Market Research and information Network, and Development / Strengthening of Agricultural Marketing Infrastructure, Grading and Standardization.

In the summer of 2012, the subsidized electricity for pumping, which has caused an alarming drop in aquifer levels, put additional strain on the country's electrical grid due to a 19 percent drop in monsoon rains, and may have helped contribute to a blackout across much of the country. In response the state of Bihar offered farmers over $100 million in subsidized diesel to operate their pumps.

Other Implications

1. Agri-Extension Services

Agri-extension services involve bridging the knowledge gap through farmer awareness campaigns. For effective service delivery, networking with different stakeholders, like development institutes, extension officers, agri-input and service providers, donor agencies, government departments and prominent state level NGOs.

2. Training and Entrepreneurship Development

The training primarily focusing on skill up-gradation, entrepreneurship development and domain knowledge on commodity futures and trading.

3. Market Linkage Program the fosters market linkages between buyers and sellers for various agriculture, horticulture crops and their allied products. Some of the national / international events, are:

- ü Apple and Temperate Fruits at Shimla (HP) and Srinagar (J & K).
- ü Banana Conference & Festival, New Delhi.
- ü Dairy Value Chain Meet, Chennai.
- ü Honey Meet, New Delhi.
- ü International Buyer and Seller Meet on Medicinal & Herbal Plants, New Delhi.
- ü International Conference on Commodity Supply Chain Management, New Delhi.
- ü Pulses Meet, New Delhi.

4. Project Planning and Development

To strategies intervention components and implementation mechanism for agricultural and rural development programmes, Project Planning and Market research services to various clients including central and states governments. The focus areas are:

- ü Agribusiness Development
- ü Cluster / Market Mapping for Agro-Based Products
- ü Impact Assessment / Baseline Surveys
- ü Monitoring and Evaluation
- ü Project Planning and Feasibility Studies

5. Industry Support

It acts as Chamber of Commerce for the benefit of exporters of agricultural produce, processed foods and also other items. The services include the following:

- ü Issue of Certificate of Origin – Non Preferential (NP) for shipments from India.
- ü Special CCO (NP) for shipments to Mexico.

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ü Certifying translations of legal documents for sending to buyers abroad.

Conclusion

Indian agriculture associated with environmental problems has brought about recognition that future agricultural growth and productivity will have to occur simultaneously with environmental sustainability. To address the problems, policies have laid emphasis on promoting sustainable agriculture including organic farming. At present we can say that India is a comfortable position in food production. But in future India's population might increase to 1300 million approximately by the year 2020. At that time with efficient management of natural resources and by adopting modern technology in farming, food supply will be adequate to meet the increasing demand.

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A Study on Agrarian Crisis: The Current Status of Production Processing and Utilization of Millets in Fortified Foods

Introduction

Agriculture is the lifeblood of the Indian economy. Agriculture and allied sectors, contribute nearly 15 per cent of Gross Domestic Product of India. About 65-70 per cent of the population depend on agriculture for their livelihood. Agricultural development is a precondition not only to provide food and nutritional security for the growing population but also inevitable for overall economic development of the state. It is essential, not only to achieve self-reliance but also to get household food security. Attainment of self-sufficiency in food grains at the national level was one of the marked achievements made in the post-independence period. Food grain production in the country increased from about 50 million tonnes in 1950-51 to around 218.11 million tonnes in 2009-10. The demand side analysis indicated that consumer spending on food grains remains around 39 percent of total food expenditure and about 21 percent to total monthly expenditure of rural households (National Sample Survey Organization [NSSO] 2006). Food grain supply situation in India is deplorable and it might be very difficult to sustain the food supply in consonant with the current level of per capita consumption and nutrition and other demand arising from different consuming industries.

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Cereals constitute more than 85 per cent of the total food grain production in India and paddy is the most important crop among cereals apart from rice and wheat, the coarse cereals such as Maize, Sorghum, Pearl millet, and Finger millet also find a place in the staple food and serve as the principal source of energy, protein, vitamins, and minerals for millions of the poorest people at a lower cost compared to rice and wheat. These coarse cereals are used as important ingredients in livestock feed and also used as raw materials for many food processing industries. In an agriculturally important country like India, agriculture-led growth is pivotal for overcoming hunger and poverty. And, food-based nutrition is the most important way to fight under nutrition, especially in the vast rainfed arid and semi-arid resource poor settings. Millets, possessing superior nutritional attributes and adaptability to drought and low-input conditions, are thus a boon for agro-ecological and socioeconomic regimes of rainfed areas. Moreover, millets as the main feed and fodder resource, greatly complement the livestock industry in such ecologies. It is gratifying that in recent years the Government of India has initiated programmes to promote millets as nutricereals. The National Academy of Agricultural Sciences (NAAS), towards strengthening this initiative, organised a Brainstorming Session to analyse the current status of production, processing and utilization of millets in fortified foods, especially the blends with dairy products to promote functional foods. As detailed in this research paper recommended certain policy options and actions for enhanced production, processing and consumption of millets and millet products. It is hoped that the recommendations will be effectively implemented at different levels to augment the national nutritional and income security, especially of resource-poor people inhabiting rainfed areas.

Why Eat Millets ? Millets are highly nutritious, non-glutinous and non-acid forming foods. They are particularly high in minerals like iron, magnesium, phosphorous and potassium. For example,

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Finger Millet (Ragi in India) is the richest in calcium content, about 10 times that of rice or wheat. Millets are soothing and easy to digest. They are considered to be the least allergenic and most digestible grains available. Compared to rice, especially polished rice, millets release lesser percentage of glucose and over a longer period of time. This lowers the risk of diabetes.

Status and Scope of Millets Processing

As mentioned, India is the largest producer of millets including pearl millet, finger millet, foxtail millet and *kodo* millet. Millets can be grown under diverse agro-climatic conditions with lesser inputs and possess unique nutrients and bioactive components that may promote health of consumers, particularly those from the less privileged groups. Most of the produce is consumed locally in the form of traditional foods and majority of the nutrients remain unavailable to consumers because of the presence of anti-nutrients.

Certain anti-nutrients present in millets like tannin, phenolic, oxalate, phytate, protease and amylase inhibitors minimize the nutritional virtues of millets by adversely affecting their bio-availability. Studies need to be addressed on balancing the proportion of these compounds in millet products. The awareness about the high nutritive values of millets is very low both among the producers and consumers. Besides, being small seeded and low price commodity, the produce is not properly cleaned, graded and dried before they are brought to the markets, fetching low price to the farmers and poses storage problems. Grains stored with high moisture content often develop mycotoxins/aflatoxins which is highly poisonous both for human and livestock. The shelf life of flour of millets is also low because of high fat content in the grains.

Processing and utilization of these crops are largely confined to home scale that renders many of these valuable nutrients unavailable to human beings on wider scale. Several primary processing equipments like pearler have been developed for dehulling of millets as dehulled grains can be more effectively utilized. Millet flours may complement wheat or maize flour in formulation of several processed foods. Preliminary investigations indicate that 50% replacement is possible in majority of food products. Fine-tuning and optimization of the proportion of the millet and wheat to make it suitable for making biscuits, pasta, noodles and bread etc., would certainly help the food industry to make use of millet flour on par with wheat and corn flour.

Harnessing the Nutritional and Therapeutic Virtues of Millets

1. Millets, very rich in micronutrients Zn, Fe, Ca & P, which are often deficient in diet of most Indian population, are undervalued as far as their nutritional potential is concerned, and this gap should be bridged.
2. Post-harvest handling of millets is most crucial in the entire value-chain system. Extension of millet flour shelf-life is one of the most important considerations. The problem may be addressed for each millet crop and variety-wise. As millets milling requires specific considerations, flour Millers may be provided incentive to take up millets processing. The problem of low palatability of millets also needs to be addressed properly.
3. The MMM - marriage of millets with milk (integration of milk and millet) has been found to provide the best nutritional synergy. Currently available products must be tested for large scale consumer acceptance and must also be validated for their nutritional and therapeutic attributes through Inter-Institutional linkages.
4. Primary processed products of millets should also be utilized in formulation of consumer products such as bakery, composite grains and snack foods in place of wheat or rice. The technological hurdles must be addressed with all logical interventions including use of additives and modification of millet constituents.

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Policy Initiatives for Enhancing the Consumption of Millets

1. Farmers should be made aware of Government initiatives for millets. They should be provided with inputs and financial support from funds allocated for millet.
2. The "Millets Mid-day Meals" initiative of Government is a welcome development. But still millets are missing in Public Distribution System (PDS). Locally produced millets must be procured by the Government and channeled through PDS.
3. Minimum Support Price (MSP) for millets and its effective implementation is urgently required, as it will encourage farmers to grow more millet. The shrinking acreage under millets can thus be reversed.
4. The "awareness campaign for millets" should become a national movement. Now it has been established that millets are not merely to be called coarse gains or minor millets, they are "Nutricereals", and their nutritional values must be publicized through "Millets Network of India".

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Growth and the Extent of Globalization in the Agricultural Sector in India

Introduction

Agriculture is the backbone of Indian economy as major chunk of population of the country is engaged and dependent on agriculture. It provides employment to large number of people, raw materials to industrial units and food for survival to all. The introduction of scientific farm technology during mid-sixties has increased the agricultural production and the country turned out from a position of deficit in food grain production to surplus one. The food grain production increased from about 74 million tonnes is 1966-67 to about 130 million tonnes in 1980-81. It further increased to 176 million tonnes in 1990-91 and then to 212 million tonnes in 2003-04. India is the second largest producer of wheat and rice in the world. It's share in case of rice and wheat is about 22 per cent and 11 per cent of the world rice and wheat production, respectively[1].

Globalization of the economy implies universalization of the process of production and trade. Globalization demands the formation of more open competitive society. It also means shedding primarily domestic orientation and adopting a more global out look. Globalization of agricultural sector opens the free market forces through free exports and imports of agricultural commodities. Globalization of Indian agriculture on the one hand, will provide it with opportunities to share the international market and on the other hand, will expose it to competition from foreign supplies in the domestic production to adopt more efficient techniques of production[2].

The main feature of WTO-AoA is opening up of world market for agricultural products. This agreement provides for abolishing non-tariff barriers and restrictions, reduction in import duty, significant reduction in subsidies, price support and other measures of protection of domestic agriculture and rationalization of export subsidies and assistance. AoA contains provisions in the broad areas of trade and agricultural policies, market access, export subsidies and domestic support.

Objectives of the Study

1. To study the growth of agricultural output in India
2. To examine the extent of over all globalization in the agricultural sector of India.
3. To give measures from the analysis of data

Extent of Over-all Globalization

The growth of agricultural output (expressed in constant prices), the extent of overall globalization, extent of globalization in the agricultural sector and the share of agricultural sector in the overall globalization have been analysed in this section. To study the extent of over all globalization, globalization in the agricultural sector, and the contribution of agricultural sector in the globalization process, macro economic data on GNP, total exports, total imports, imports and exports of agricultural commodities have been used. To compare the present position and position before the implementation of AoA of WTO, time series data for a period 25 years from 1985-86 to 2009-10 have been used. This period is divided into two sub-periods consisting of first ten years prior to the implementation of AoA of WTO, from 1985-86 to 1994-95 and the second ten years period, after the implementation of AoA of WTO from 1995-96 to 2009-10.

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GNP in current prices increased by 2.67 times and trade increased by 3.83 times during 1995-96 to 2009-10. In the earlier decade, that is during 1985-86 to 1994-95, GNP in current prices increased by 3.64 times and trade increased by 5.64 times visibly, GNP and trade have registered a less growth in the period under WTO regime.

Changing Capital Formation in Agriculture and Allied Sectors

Capital is a crucial input for the proper development of any sector. During 1960-61 to 2002-03, it is not positive in case of agriculture sector. The decline in capital formation in agriculture sector is more pronounced during 1960-61 and 1990-91. During 1960-61, the stress was laid on heavy industries and agriculture was ignored as far as capital formation was concerned. Afterwards during 1970-71 and 1980-81, a slight upward shift was noticed in public sector investment because of foodgrain and export requirements of agricultural commodities. Since 1990-91, in the era o economic reforms, the proportion of capital formation in agricultural sector is on decline.

The share of agriculture in total capital formation declined from 8.5 per cent during 2000-01 to 6.5 per cent during 2002-03. Moreover this decline was observed more in the case of private sector investment from 9.7 per cent to 6.4 per cent during the above mentioned period. The decline in public sector investment was set in during the early eighties. The declining trend continued for most of the years after eighties. Several studies shown that public investments have strong effect on agricultural productivity and growth in India (Chand 2001; Gulati and Bathal 2001). Therefore, public investment in agriculture sector should be encouraged to put the economy on higher growth path. India's agricultural exports consist of pulses, wheat, nice, cereals, tobacco, sugar and molasses, poultry and dairy products, fruits, vegetables and so on[3]. It is equally important to remember that India's exports of manufactured goods form over 75 per cent of India's total exports (Government of India, 2000).

The major reason of low export growth of agricultural products from India is the relatively high cost of agricultural production and poor quality of output. The cost of production is high and it is rising since the production of local varieties of rice and wheat has suffered a self-lack and are being increasingly replaced by HYV crops, which require the application of costly imported inputs. With rising prices of inputs, particularly imported fertilizers frequent and larger use of such inputs, for raising agricultural productivity has rendered many of India's farm products highly cost inefficient and their export internationally uncompetitive.

Conclusion

Even developed countries are very keen to seek self sufficiency in food and oil, whatever is the cost. Hence, India also need not give up its objective of self sufficiency in food and it becomes the responsibility of the government to safeguard the interest of the farmers and design policies to make farming activities economically viable. Agricultural sector in India does not gain much from the reform process and globalization policies.

As a matter of fact, WTO rules permit quantitative restriction to be retained in case of balance of payments difficulties. Out balance of trade is not showing any surplus for the post several years since out imports exceed exports. Under this situation, using the provisions of WTO rules, India can very well use quantitative restrictions also in cases where they are required. Moreover, the WTO agreement requires a reduction is Aggregate Measure of Support and export subsidies only and support under all other categories and exempted. Hence, the government should provide all possible support under permissible different categories of AoA to the agricultural sector, to promote the development of this sector.

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Crisis in Agricultural Sector – Review in India

Introduction

India is an agricultural country. Agriculture forms the backbone of the Indian economy and despite concert industrialization in the last decades; agriculture occupies a place of pride. Even while India's industrial and services sectors are growing by leaps and bounds and where growth rate of agriculture as below 2% the fact remains that India still lives in villages. Over 70% of India's population is supported by agriculture. Even industrial and services sectors are invariably entangled with the fortunes of agriculture due to various intricate forward and backward linkages.

There is an ongoing debate in country regarding the state of agriculture. There is a general agreement that the Indian agriculture is in crisis but there is intense debate about the causes which led to such crisis and various way to manage the crisis and put agriculture on healthy footing. Agriculture in India is undergoing a structural change leading to a crisis situation.

The root cause of the crisis is the income-deficit of the sector. This may sound too simple, or even simplistic, but most seemingly complex situations do have a simple causation at their core. The term income-deficit needs clarification. At a basic level, it means that the income derived from the activity is not sufficient to meet the consumption needs of the recipient.

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Objectives and Methodology of the study

The main objectives of the study are:

1. To find out the recent trends in agricultural sectors in India
2. To find out the reasons for the crisis in agricultural sector in India
3. To view the suggestions for the improvement of agricultural sectors.

Indicators of agrarian crisis during the post-reform period

The root cause of the crisis in agriculture is that agriculture is becoming an economically unviable activity when compared to other enterprises. It means that the profitability of agriculture is low or nil or negative, and therefore, the income derived from these activities are not sufficient enough to meet the expenditure of the cultivators. The poor farmer is squeezed between high input costs and low returns.

The problem of income deficit in agriculture arises from three basic causes: first, adverse terms of trade; second, low productivity of resources engaged in agriculture leading to low level of production, and third, the excessive use (dependence) of inputs such as labour, fertilizers, pesticides, etc., causing the cost of cultivation shooting up compared to that of the final sale value of the crop output.

Reasons for Agricultural crisis

Dependence on Rainfall and Climate

Despite the economic reforms initiated in 1991, Indian agriculture is still gamble with the monsoon. Unlike other sectors, agriculture depends largely on the natural climate including rainfall. Nearly 60% of India's farmers depend on rains for irrigation and a failed monsoon means crops such as rice, wheat, soya bean, sugarcane and cotton take a severe hit. **Liberal Import of Agricultural Products**

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The fall and fluctuations in the prices of agricultural products is directly related to the liberalization policy of the government. The policy of removal of quantitative restrictions and lowering of import duties adopted in India were according to the agreements of the World Trade Organizations' (WTO). The main reason for the crash of prices of agricultural products, especially of cash crops, in India was removal of these restrictions to import these products.

Rise in Input subsidies and fall in public Investment in Agriculture

Subsidies at both a global and local level have played a part in the current crisis. Well known are wealthy-country subsidies to commodities such as cotton, which have driven down world market prices. Federal and state level subsidies in India are also responsible for this. Farm subsidies in India has been rising from 1980s onwards, without raising the productive capacity, this is also distortionary in nature.

Lack of Easy Credit to Agriculture and Dependence on Money Lenders

In general, the lending pattern of commercial banks, including nationalized banks, to agriculture is not simple. It is part of the policy of privatization that banks, even nationalized banks, look for profit over their social responsibilities to the people. This has forced the farmers to rely on moneylenders and thus pushed up the expenditure on agriculture. **Conversion of Agricultural Land for Alternative Uses**

All the politicians say that development in village is the way of development in the country. The village will develop only by the development in agricultural sector. But the conditions of agriculture are not a profitable so the agricultural labourers are force to need another job.

Farmer's Suicide

The year 1997 witnessed the first emergence of farm suicides on a mass scale in India. More than 25,000 farmers have taken their lives since 1997, according to experts who have analyzed government statistics. Most suicides occurred in states of Andhra Pradesh, Maharashtra, Karnataka, Kerala and Punjab. Study shows that the majority of suicide victims were small and marginal farmers and the majority had high levels of indebtedness. Yet debt is not identified as a factor leading to suicide. However, more than 90% of suicide victims were in debt. Two factors have transformed the positive economy of agriculture into a negative economy for peasants - the rising costs of production and the falling prices of farm commodities.

Reform measures to Remove Agrarian Crisis in Indian Agriculture

1. Government to actually implement the various money-lending Acts that already exist to prevent the alienation of the farmers land-holding
2. To make the crop Insurance Scheme more farmer friendly, with lower premia and less red-tape
3. Renewal of the land's biodiversity to ensure the health of land and enable the farmer to cope with market ups and downs
4. Better health facilities in the locality since expenditure on health has been one of the most important financial drain in the village
5. Better education facilities at school level in the villages to enable better coping with a more techno logically oriented agriculture
6. Quality checks on agricultural inputs like seeds, fertilizers and pesticides to prevent cheating of the farmer by unscrupulous suppliers of industrial inputs for agriculture
7. Reliable agricultural advisories for farmers on farm related practices better access to markets for agricultural produce to get higher rates for farm produce

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Conclusion

The performance of agriculture by crop categories also clearly indicates the slowing down process of agriculture in India. The onset of deceleration in agriculture began from early nineties and it became sharp from the late nineties. The only remedy to the crisis is to do all that is possible to make agriculture a profitable enterprise and attract the farmers to continue the crop production activities. As an effort towards this direction, the government should augment its investment and expenditure in the farm sector. Therefore, without a serious effort to confront and address these remedial measures, realizing the target of 4 per cent sustained growth in agriculture will remain a dream. Hence, there is urgent need for redresser.

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A Study on Agricultural Growth in India

Introduction

India is being recognized as the global power in key economic sectors with consistently high economic growth. The economy has performed well on the growth front, averaging 8.2 percent in the first 4 years of the Eleventh Five Year Plan. Even though the economy has slowed down somewhat in 20011-12, we are still likely to average a gross domestic product (GDP) growth of around 8.2 percent over the Eleventh Plan period, according to the Approach Paper to the 12th Five Year Plan. India and the other emerging markets have seen an increased influx of foreign capital partly aided by the continuing economic problems in Europe and the United States. The political and

economic stability have also contributed to the inflow of foreign capital. Of course, the capital requirements for Indian industry remain high given the raped expansion of the economy, which means FDI investments are easily absorbed. Portfolio investment in India in the 2009-10 fiscal years broke all previous records resulting in a steep rise in the equity markets. Between April 1, 2009 and November 8, 2010, the BSE Sensex zoomed from 9,901 points to an all-time closing high of 21,004 points. That index has been doing a roller coaster and is now hovering around the 17,000 mark.

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Agricultural Growth in Last Two Decades

THE Eleventh Plan had sought to reverse the deceleration of agricultural growth which occurred in the Ninth Plan and continued into the Tenth Plan. It has had some success in that food grain production touched a new peak of 241 million tones in 2010-11 and growth in agriculture in the Eleventh Plan is likely to average 3.3 per cent per year as compared to 2.2 per cent in the Tenth Plan. However, we need to redouble our efforts to ensure that 4 per cent average growth, if not ores achieved in the Twelfth Plan period.

Although rural incomes have increased and rural poverty has reduced over the years, the gap between urban and rural incomes has widened quite sharply because agriculture has grown slower than the other sectors and because employment growth in non-agriculture has not been enough to sufficiently reduce the population dependent on agriculture. Productivity gains from the green Revolution reached a plateau by the end of Eighth Plan, causing per capita food grain production to decline thereafter. Agriculture did diversify towards horticulture, animal husbandry and non-food crops, but agricultural GDP growth averaged only 1.9 per cent during 1997-98 to 2004-05. Farm incomes increased even less since terms of trade turned against agriculture during this period, indicating inadequate demand and lack of rural purchasing power. This prevalence of an agrarian crisis, particularly in the rain-fed areas of the country, established that, in addition to stressed natural resources and very inadequate rural infrastructure, there was clear evidence of technology fatigue, rundown delivery systems in credit, extension and marketing services and of insufficient agricultural planning at district and lower levels.

A few significant schemes like Rashtriya Krishi Vikas Yojana (RKVY), National Food Security Mission (NFSM), and Mahatma Gandhi National Rural Employment Guarantee Act (MNREGA) were introduced as a structural response by the Union Government and are being implemented with support from the State Governments. There has been a positive response as agricultural GDP growth accelerated to average 3.7per cent growth during 2005-06 to 2010-11, partly because of the initiatives taken since2004. This, however, is still below the 4 per cent target set in successive plans from Ninth Plan onward and has

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not been sufficient to prevent unacceptably high food inflation in the context of very volatile world prices and in the wake of a severe drought in 2009. Nonetheless, although high food price are clearly a setback for inclusive growth, this has improved agriculture's forms of trade and prevented further fall in farm incomes relative to overall GDP (agriculture's share in nominal GDP in 2010-11 was about the same as in 2004-05). While this has restored confidence to some extent, inflation itself is causing concern among farmers who are not only facing higher costs but also adverse effects of certain policies adopted to cope with inflation, e.g., export bans. Moreover, there are some farmer concerns arising from the effect on wage of MGNREGA. Higher wages and assured availability of jobs have resulted in scarcity of farm labour at least in some seasons. The Twelfth Plan should explore the feasibility of synergizing the activities of MNREGA with agricultural operations. Since introduction of MNREGA has taken a paradigm shift in the rural sector, we need to explore possibilities of innovations and application of most suitable mechanization and technology for Indian conditions.

India's agriculture growth to remain positive for 2012-13

India's agricultural growth for the 2012-13 is expected to be positive, largely on the back of normal monsoon prediction. The Gross Domestic Product (GDP) growth in the agricultural sector is forecast at 3% for coming year, according to the National Council of Applied Economic Research (NCAER). India's agricultural growth for the past three has remained in the positive regime and it is expected to continue for coming years too. The positive prediction by NCAER is on the basis of following reasons. Normal monsoon forecast from the Indian Institute of Tropical Meteorology for 2012-13. Surplus food grain stock is expected for next year on the back of record harvest in 2011-12 and food grain stocks with the government may reach 75 million tons by July end. But presently, one of the major problems faced by India is lack of proper storage facility for storing agricultural produces. The inflation rate of the country has dropped but the price hike in milk, crude oil, eggs, meat and oilseeds creating problems for the policy makers.

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Conclusion

Since more than half of workforce is still engaged in agriculture for their livelihoods and employment, agriculture continues to be a predominant sector of Indian economy, even though its share in national Gross Domestic Product has declined in recent years. Rapid growth of the non-agriculture sectors, particularly services, in post-reforms period has failed to accelerate agricultural growth or poverty reduction. During the last two decades Indian agriculture has been facing major challenges like deceleration in growth rate, degradation of natural resources, inter-sectoral, inter-regional equity, declining input efficiency, etc. However, the 11th Plan had some success in reversing the deceleration of agricultural growth witnessed during the 9th and 10th Plan. The growth in agriculture in the 11th Plan is likely to be around 3.2 percent per year, which is higher than 10th Plan growth rate but lower than the target for 11th Plan. The 12th Plan target growth rate for agriculture is 4 percent with foodgrains growth at about 2 percent and non-foodgrains sector (horticulture, livestock and fisheries) growing at about 5-6 percent.

However, looking at the growth in agricultural sector in general and high-value agriculture, particularly, horticulture, fisheries, dairy and meat sector during the 11th Plan, there is a need to put additional efforts to achieve between 4 and 4.5 percent growth in agriculture. The failure to achieve targeted growth in agriculture sector has resulted from the inadequacies of the provision of the critical public goods on which agricultural growth thrives. There is a need to address some of these inadequacies which would also have large multiplier effect of the higher farm incomes on demand for other sectors of the economy. The slowdown in agriculture growth could be attributed to the supply side factors such as public investment, irrigation water management, rural credit, technology, land management, agricultural research and development including extension services, rural infrastructure like roads, electricity, marketing, post-harvest management and so on. Reforms are needed to address these issues in order to achieve 4 - 4.5 percent

growth in agriculture, equity in terms of higher growth in disadvantageous regions like rainfed and tribal areas, small and marginal farmers and women and sustainability.

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Crisis in Agricultural Sector in Tamil Nadu

Agriculture in Tamil Nadu is undergoing a structural change leading to a crisis situation. The rate of growth of agricultural output is gradually declining in the recent years in 2011. The relative contribution of agriculture to the GDP has been declining over time steadily. The performance of agriculture by crop categories also clearly indicates the slowing down process of agriculture in Tamil Nadu. The onset of deceleration in agriculture began from early nineties and it became sharp from the late nineties. The trends in the area, input use, capital stock and technology also reflect the agricultural downfall and the farmer's response accordingly. It is alarming that India is moving towards a point of no return, from being a self-reliant nation of food surplus to a net importer of food. All these trends indicate that the agricultural sector in Tamil Nadu is facing a crisis today. It is argued that the root cause of the crisis was that agriculture is no more a profitable economic activity when compared to other enterprises. It means that the income derived from these activities is not sufficient enough to meet the expenditure of the cultivators. And therefore, unless agriculture is made a profitable enterprises, the present crisis cannot be solved. The related factors responsible for the crisis include: dependence on rainfall and climate, liberal import of agricultural products, reduction in agricultural subsidies, lack of easy credit to agriculture and dependence on money lenders, decline in government investment in the agricultural sector and conversion of agricultural land for alternative uses.

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It is argued that the consequence of agricultural crisis in is very vast and likely to hit all the other sectors and the national economy in several ways.

In specific, it has adverse effects on food supply, prices of food grains, cost of living, health and nutrition, poverty, employment, labour market, land loss from agriculture and foreign exchange earnings. In sum, it revealed that the agricultural crisis would be affecting a majority of the people in India and Tamil Nadu and the economy as a whole in the long run.

And therefore, it can be argued that the crisis in agriculture is a crisis of the country as a whole. The only remedy to the crisis is to do all that is possible to make agriculture a profitable enterprise and attract the farmers to continue the crop production activities. As an effort towards this direction, the government should augment its investment and expenditure in the farm sector. Investment in agriculture and its allied sectors, including irrigation, transport, communication, rural market, rural infrastructure and farm research, should be drastically increased, and the government should aim at integrated development of the rural areas. The solution of the problem is not in a few "packages" but in drastic changes in the present economic policies related to agriculture. No other sector's growth and development must be at the cost of agriculture. All farmer, agricultural labourers, societies, Government and People's Organisations should work collectively to revive agriculture and "Save India from Agriculture Crisis".

Agricultural Production and Productivity

High Productivity on the limited land resources available for feeding the rapidly increasing population can be achieved only by intensification of cultivation, viz., maximization of yield rates and increasing the harvests to the maximum number. The initial propelling source to support intensification is irrigation and then come other inputs. Much advance has been made towards developing an adequate number of irrigation systems and the highly efficient specified means of production. In this context it would be worthwhile to examine the impact of these measures on agricultural production and productivity in the State.

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Systems and Sources of Irrigation

Irrigation is one of the major planks in agricultural economy since it stabilizes agricultural productivity rates and serves as an essential prerequisite for the success of high yielding strategy and multiple cropping.

All the available irrigation sources in the State are broadly grouped under four categories i.e. 1) Government canals 2) tanks 3) wells with sole irrigation, and 4) other sources including private canals.

It would be seen from the table that (a) the Government canals have been the major source of irrigation in Tamil Nadu, but these are being supplanted by wells now, which account for well over one-third of the total irrigated land in Tamil Nadu, and (b) the progress of well irrigation has been uniformly maintained in the State.

TamilNadu is situated on the eastern side of the southern tip of the Indian peninsula. It is bounded in the east by the Bay of Bengal. in the west by the Arabian Sea and the States of Kerala and Karnataka. in the north by Karnataka and Andhra Pradesh. The earlier name of the State was Madras, its capital city was also known by the same name. On January 14,1969, the Madras State changed its name to Tamil Nadu the capital city is still known by its old name, Madras.

Agricultural Development in Tamil Nadu

Agriculture in Tamil Nadu, as in the rest of the country, is the dominating sector of the State's economic progress. In the matter of agricultural development, the objective all along has been to make this sector contribute Its most to the general economic progress of the State. Steps taken to ensure a proper utilization of land, an increased use of chemical fertilizers, expansion of irrigation and high yielding variety seeds, etc. have resulted in a substantial increase in agricultural production in Tamil Nadu, Commenting on this development, the State Planning Commission's Task Force on Agriculture reported in 1972: "Agriculture in Tamil Nadu took big strides during the last two decades towards definite transformation from a stage of chronic stagnancy to that of sustained growth, resulting in Green Revolution which has been spreading in the State during the past five years."

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The primary sector, of which agriculture is the backbone, has been in a crisis through the period 1993-94 to 2005-06. The contribution of the primary sector to the GDFP originating in agriculture and allied activities at constant (1993-94) prices in the year 2005-06 was Rs. 13,060 crore, slightly higher compared to the figure of Rs. 12,873 crores in 1993-94. Throughout the period of 1993 to 2006, the value addition from agriculture and allied activities was fluctuating; the contribution of this sector was the highest in 1998-99 and the lowest, between 2002-03 and 2003-04. Although the decline was attributable to the drought conditions, which prevailed in the State during the latter period, the sector as a whole is yet to fully emerge from the crisis to attain even the value addition of Rs. 23,170 crores in 2000-1. In fact, the total food grains production even in 2004-04 at 61.46 lakh tonnes was just about 80% of the production in 2001-02, when the State produced 76.89 lakh tonnes.

The agricultural sector in Tamil Nadu has some special features which make the sector and the lakhs of families dependent on it extremely vulnerable to any adverse developments that impact the sector. Increasing urbanization in the State is creating a competition for resources like land, labour and water, which has impacted the agricultural sector. The net sown area showed a decline from 42.8% of the total area during the Triennium Ending (TE) 1979-80 to 37.05% in TE 2003-04. The decline was partly because of the severe drought situation in the State, but is also attributable to the increasing conversion of agricultural land for other purposes. In addition to this, the area under current and other fallows crossed 20 lakh has during the last two decades, accounting for more than 15% of the area of the State.

The distress among agriculturists can be better conceived in the context of the following facts: one, the average size of holding has declined from 1.25 hectare in 1976-77 to less then 1 hectare now, resulting in increasing marginalization of farmers; secondly, the high level of indebtedness of farmers and the inad-

equate flow of credit, particularly to small and marginal farmers, from organized financial institutions, as borne out by the survey of indebtedness in the 59th round of NSS data.

Government of India is not sleeping over this crisis. National Commission on farmers has been constituted under the eminent Scientist Dr. M.S. Swami Nathan. He has recommended a comprehensive national policy for farmers to given an all round boost to the sector.

Government has announced financial package for those districts in country where maximum farmer suicides have been reported. The financial packages include; interest waiver, rescheduling of loans, and advancing of more capital etc. Government in Union Budget has made provisions for cheap loans for agricultural sector.

In the decade of liberalization, privatization and Globalization i.e. the last decade or 20th century, the agricultural landscape of the country was dismal and full of contradiction agricultural growth was stagnant. Condition of farmer remained the same through out the country i.e. he fought hard to earn his livelihood (except in the areas of) Agriculture to this date remains a gamble against the monsoon. This statement sums up the level of infrastructural support available to Indian farmers.

Studies point out that choice of crops by farmers has not been correct and they grow crops, which are less well suited to the condition of cultivation. Water intensive crops are cultivated in water scare areas. As a consequence crop risks increases. Long term solution lies in the policies that will induce farmer to cultivate crops. Which offer best return and have low risk? This will be accompanied by better irrigation and marketing support.

Government should introduce such cropping patterns which would ensure that there is market for product in global markets. For example Green revolution belt can produce fruits, vegetables and flowers for export to the markets of developed world..

Dry land regions consisting of those areas where assured irrigation facilities are non extent can specialize in the production of organic produce. The subsistence farming prevalent in such regions ensures that farmers cannot afford to put chemical fertilizers and insecticides in their fields; hence there is natural advantage for organic farming.

The demand for agricultural credit in Tamil Nadu is met by both non-institutional sources, the more important are the co-operative societies and commercial banks. The institutional credit which was roughly 7 per cent of the total credit in the year 1951 - 52 is steadily increasing. The process has been facilitated by the nationalization of 20 commercial banks and the establishment of the regional rural banks in the state.

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Impact of Economic Recession on Indian Agriculture

Introduction

Twenty-first century India has emerged as a major economic power in the world, with the growth rate of the Gross Domestic Product reaching impressive levels and the poverty ratio coming down significantly. The Structural Adjustment Programme in 1991 that the policy of globalisation was concretely introduced in India. Based on this policy and the directives of the World Bank, International Monetary Fund and World Trade Organisation, the Indian economy was substantially overhauled. The Export-Import policy was liberalised; the import and customs duties of many products were drastically lowered or totally dropped so that they could be imported without any restriction.

The government started reducing its investment in agriculture and the industrial sector allowing the private sector to take over. The restructuring of the public distribution system really affected the availability of food grains to the poor at subsidised rates. All such measures had implications for the farm sector. In the present paper an attempt has been made to assess the impact of economic recession on Indian agriculture and trends in agricultural exports.

The root cause of the agriculture crisis

Indian farmers are hardly alone in this behaviour. Native American Indians sold their land at throw-away prices to white settlers to pay for the blankets, pots and pans, and firewater. The burning issue of today's global economic crisis, the subprime meltdown, is of the same origin. Stephen Roach of Morgan Stanley Asia perceptively observed in *The New York Times* (March 5, 2008): "Over the past six years, income-short consumers made up for the weak increases in their pay checks by extracting equity from housing bubble through cut-rate borrowing that was subsidised by the credit bubble."

A change of only a few words in this statement would make it relevant to Indian agrarian indebtedness today. Low incomes on one side and relatively inflexible consumption needs on the other squeeze the farmer into a situation of overdue payments and possible defaults on loans, with suicides as a horrifying extreme response. The distinction between borrowings from institutions and private lenders is to an extent pointless, because most rural families borrow from both.

Similarly, a distinction between loans for cultivation and asset creation, or in cash and kind is also somewhat redundant, because there is a great deal of fungibility in these transactions. Borrowings from one source being used to repay loans from another, or converting material supplies into cash through their distress sale, are not exactly uncommon occurrences. What they point to is the paramount place of consumption and a possible recourse to desperate actions to meet their needs. This has been going on for generations, as document after document on the subject dating back over 150 years would testify.

The government response has ranged from reducing or deferring interest, rescheduling, extending, and twice in the last 20 years, waiving the overdue. These measures have invariably acted as palliatives, with the problem recurring periodically and almost predictably, with a greater magnitude each time. Paracetamol can only break the fever, but not make the basic disease go away. With the waiver scheme and its own self-congratulatory mood, this time the government, which ought to know better, has joined the farmers in confusing stocks with flows. One could argue that institutional loans do make allowances for consumption needs.

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If there is lower income in an adverse year, there would be compensatory increases in a good year and loan and repayments are based on averages. Therefore, defaults or overdue in one period could be made good potentially in another, presumably good, period. Reality works differently. Certainly farmers have no ability to meet their repayment obligations in a bad year. But the surpluses in good years do not wholly compensate for these shortages. Deferred consumption expenses, even rites and ceremonies, take priority and the income surplus diminishes or vanishes altogether, without any attribution of malafides.

The simple truth of rural India is deficits are cumulative, surpluses are not. The borrower never escapes the debt trap, and not only because of the usurious practices of private money-lenders. Under the circumstances, the current loan-waiver is what such measures have always been: a palliative, if a much-needed one at that, but not the panacea it is made out to be.

The crisis of indebtedness will recur, because of basic structural factors and not what some critics of waivers call the "default culture" they are supposed to encourage. This will happen sooner rather than later, one hopes (likely in vain) not in as severe a fashion as now, requiring yet another infusion of relief. This is only one, and possibly a minor, element of the Sisyphean challenge of Indian agriculture.

The problem of income deficit arises from three basic causes: first, adverse terms of trade (which means farmers pay more in real exchange terms for the goods and services they buy than what they get for those that they sell); second, low productivity of resources engaged in agriculture, and third and possibly most important, the disproportionately large dependence of population on agriculture for its livelihood.

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Impact on Indian Agriculture

India has opened its market since the beginning of the past decade (more precisely since July 1991) by lowering tariff and non- tariff barriers, as well as liberalising investment policies. Still Indian agriculture is far less vulnerable to the external economic shocks than agriculture in many developing countries. Agricultural trade still accounts for less than 10 per cent of agricultural gross domestic product (Ag. GDP). However, Indian agriculture cannot be completely insulated from the global and domestic economic recessions.

The impact of economic crisis is transmitted through three distinct channels, viz., financial sector, exports and ex-change rates, and the impact manifests itself in several direct and indirect ways. Some of the implications of the economic crisis are discernible in the short-run, while others may be visible only in the long run. It is difficult to gauge the impact of economic crisis on Indian agriculture in the short run. However, the trends in some broad parameters may indicate its implications and the possible options can be worked out to mitigate its adverse impact.

Agricultural Exports

Two remarkable developments have taken place in India's agricultural exports during the post-liberalisation period. one, the agricultural exports have grown at a much faster rate since the initiation of liberal economic policies where agricultural exports in value terms have grown annually from 18.9 per cent during 1990s to 15.2 per cent during 2000s but after 2000 it reduced gradually.

Agricultural GDP

The trend in agricultural GDP during the past two decades suggests that the sector has been growing slowly and steadily, but with occasional slumps. The reasons for slow growth during the 1990s and early 2000s are many, ranging from poor monsoons to depressed agricultural commodity prices in the world market.

The current crisis is expected to have a modest effect on the GDP of agricultural and allied products. Recent trends indicate that the sector is not witnessing similar growth achieved during the previous year. Agricultural GDP is declined by -0.1 per cent in 2008-09 as compared to 5.8 per cent in 2007-08. In

2009-10 and 2010-11 GDP growth rate for agriculture sector was 0.4 percent and 6.6 percent respectively, Economic survey of India (2011). The trends in Ag.GDP seem to have weak links with the present recession.

Agricultural growth has been accorded priority to improve the distributional aspects by which several schemes like National Food Security Mission, Rashtriya Krishi Vikas Yojana (RKVY), substantial increase in the flow of agricultural credit, waiving off agricultural loans, etc. have been launched to foster growth in this sector. These schemes are likely to taper off the adverse impact of the economic recession on agriculture to a large extent.

However, the economic crisis may put downward pressure on farm production in the short-run. Even though the government provides a shield to the farmers by intervening in the agricultural markets to realise stabilised income, its intervention is limited to a few commodities in some states. Therefore, in spite of government's efforts, farm income is expected to have slightly adverse impact due to economic recession. It is important to note that rainfall and other weather parameters influence agricultural growth significantly.

Conclusion

The production of food grains, oilseeds, pulses and other commercial crops is increasing continually in India. But capital formation level is decreasing in the agricultural sector due to the unfavourable policy of the government regarding investment promotion. Globalization is a necessary but not a sufficient condition for high growth of production, India has undertaken economic reforms, both internal and external. The agricultural sector in India is facing a crisis today. The solution of the problem is not in a few packages but in drastic changes in the present economic policies related to agriculture. All farmers, agricultural labourers, societies, Government and People's Organisations should work collectively to revive agriculture and "Save India From Agrarian Crisis".

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Livestock in Indian Agriculture: An Analysis

Introduction

This paper looks at trends in India's livestock population from 1982 to 2007 and production of important livestock products during 1980s and 1990s and 2000's. India's livestock sector is one of the largest in the world. It has 56.7% of world's buffaloes, 12.5% cattle, 20.4% small ruminants, 2.4% camel,1.4% equine, 1.5% pigs and 3.1% poultry. In 2010-11 livestock generated outputs worth Rs 2075 billion (at 2004-05 prices) which comprised 4% of the GDP and 26% of the agricultural GDP. The total output worth was higher than the value of food grains.

Objectives

The following are the objectives of the present study.

1)To examine the trends of livestock population in India.

2)To analyze the production of important livestock products in India

Methodology

The study is based on only secondary data. The data were collected from books, journals, Government reports, such as Annual Report of Department of Animal Husbandry, Dairying &Fisheries, Government of India, New Delhi,Tamilnadu-An Economic Appraisal, Government of Tamilnadu and publications of Food and Agriculture Organization of the United Nations. Besides , the data and literatures were downloaded from the websites.

Livestock Population

India has huge population of different species of livestock . In 2007 there were 199 million cattle, 105 million buffaloes, 72 million sheep, 141 million goats, 11 million pigs and 649 million poultry birds(Table 2.1). The cattle population after reaching a peak of 204.6 million in 1992 declined until 2003, but again showed an increasing trend in 2007. The decline in cattle number was largely confined to the male cattle – an important source of draught power in Indian agriculture. Their number declined from 101 million in 1992 to around 83 million in 2007. This was due to declining size of land holding and increasing mechanization of agricultural operations. The population of adult female cattle, on the other hand, kept on increasing— their share in total cattle population increased from 30% in 1982 to 37% in 2003. Except in Punjab, Haryana, Uttar Pradesh, Rajasthan, Gujarat and Andhra Pradesh, cattle outnumber buffaloes. Within the cattle population there was marked shift in favour of crossbreds, whose share in the total cattle population increased from4.6% in 1982 to 16.6% in 2007. Further, among adult females the share of crossbreds increased substantially from 8% in 1982 to 36% in 2007. The southern states of Andhra Pradesh, Kerala, Karnataka and Tamil Nadu account for one-third of the total crossbred cattle in the country.

Population of buffalo increased steadily during the last 25 years. The share of adult female buffaloes in the total buffalo population increased from 46% in1982 to 52% in 1992 and remained unchanged thereafter. In fact, females account for more than 81% of the total buffalo population. Buffaloes are now reared

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in almost all the states. Buffaloes outnumber cattle in Uttar Pradesh,Andhra Pradesh, Rajasthan, Gujarat, Punjab and Haryana which account for two-third of country's total buffaloes as against 30% of the total cattle. Interestingly, crossbred comprise over half of the total cattle in the buffalo dominated states, Punjab and Haryana

The number of goat and sheep increased continuously. Between 2003 and 2007, the number of goats increased by 13% and of sheep by 16%. In sheep the crossbred comprised 5.2% in 2007. In fact, the number of crossbred sheep declined from 5.73 million in 2003 to 3.73 million in 2007. More than 75% of the sheep are found in Andhra Pradesh, Rajasthan, Karnataka and Tamilnadu.

Production of Important livestock Products in India Milk

Milk production in India has increased tremendously during the last four decades, from around 20 million tons in the 1960s to 32 million tons in 1980-81 and further to 116 million tons in 2010-11.It grew at an annual rate of 4.4% during 1990s, which however decelerated to 3.8% during 2000s. Nonetheless, the per capita availability of milk more than doubled during this period, from 128 g/day in 1980-81 to 267 g/day in 2010-11. The significant growth in milk production during 1980s and 1990s was due to Operation Flood which emphasized introduction of improved breeding technology and germ plasm, along with development of dairy cooperatives and horizontal integration of milk markets.

Meat and Eggs

Meat production from registered slaughter houses increased from 3.6 million tons in 1992-93 to 4.5 million tons in 2010-11 at an annual rate of around 1%. During 2000-01 to 2009-10, the meat yield of cattle, sheep, goat, and poultry grew at an annual rate of 1.5-2.0% and of pig 0.8%, while meat yield of buffalo remained almost constant. Poultry, small ruminants, pigs and cattle and buffalo contributed about 16,.17, 11 and 55% to the total meat output.Andhra Pradesh,Maharashtra and Tamilnadu contribute about half of the total poultry meat. Uttar Pradesh produces about one-third of the buffalo meat, followed by Maharashtra and Andhra Pradesh. Andhra Pradesh, West Bengal, Maharashtra, Bihar, Orissa and Rajasthan are important states for small ruminant meat. About 70% of the pork is produced in the eastern and northeastern states.

The number of eggs produced almost trebled between 1992-93 and 2010-11 from 22 billion to 62 billion. Per capita egg availability almost doubled from 26 eggs to 51 eggs in 2010-11. Andhra Pradesh and Tamilnadu with a share of 32% and 18% in the total eggs produced respectively are the leading states. Haryana, Punjab, West Bengal, Maharashtra and Karnataka each contribute 5-6% to the total egg output. Egg production grew at an accelerated rate from 4.2% a year during 1990s to 5.6% a year afterwards primarily because of rapid growth in Tamilnadu, Haryana, Gujarat, Bihar and Orissa. In many states including Andhra Pradesh and Maharashtra growth in egg production decelerated.

There has been a significant technological transformation in the poultry sector. Between 1992-93 and 2009-10, the share of improved layers in the total layers increased from 45% to 70% and in egg production from 64% in 1992-93 to about 85%. During this period, average yield of desi layers increased from 108 to 117 and of improved layers from 237 to 273 eggs per year. The adoption of improved layers is lower in eastern, northeastern and western states.

Wool

Wool production in the country, after reaching a peak of 51 million kg in 2002-03, declined to 43 million kg in 2010-11. It increased at an annual rate of about 2.5% during 1990sand declined at a rate of about 1.6% a year thereafter. Rajasthan with a share of about 30% in the total wool output is the leading state, followed by Karnataka and Jammu & Kashmir (17% each) and Andhra Pradesh (11%). It may be noted that the decline in wool production is largely because of significant decline in Rajasthan—from 19 million kg in 1992-93 to 13 million kg in 2009-10. Haryana and Delhi. Punjab has the highest average milk yield of a crossbred cow (10.54kg/day) and buffalo (8.51kg/day).

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Conclusions

The study clearly reveals that the growth of livestock population is not satisfactory as there is a large gap between the demand for livestock and the supply of livestock in the market.The annual growth of milk is low during 2000's as compared to 90.s.In case of wool product the annual growth rate is negative during 2000's.

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Rural Indebtedness And The Agrarian Crisis: A Macro Level Analysis

Introduction

Agricultural sector not only plays an important role in improving the growth of rural economy but also the overall growth of the economy in India. 60 per cent of our rural population derive their sustenance from it. It is no doubt that agricultural growth will reduce the rural poverty and unemployment. Studies reveal that growth in agriculture sector also impacts substantially the growth of industrial sector. However, at present day the agricultural sector of India has been facing severe crisis ever since the independence. While the overall growth of the economy has been in the range of five to nine per cent since the introduction of economic reform, the agricultural growth is almost stagnant or decelerating. At present time growth of agriculture is declined (In 2005-06 5.2 per cent to 0.2 per cent 2009-10). peasant lives in debts and dies in debts. This particular argument still holds good even today. Therefore, the current phase of agrarian crisis has also raised many such questions. In view of this, the present piece of study made an attempt to find out state-wise and rate of incidence of indebted farmer households in different social groups with a help of NSS data.

The paper is organized into five sections. Following the introductory section, the second section of the paper provides evidence about the present agrarian crisis across the country. Third section of the paper details the data and methodology employed for the study while section Four analyses state-wise indebted farmer households in India and rate of incidence of indebted farmer households in different social groups. The final section of the paper presents concluding remarks and suitable policy suggestions are summed up in it.

Objectives

1. to analyse the state-wise indebted farmer households in India; and
2. to compute the indebted farmer households by different social groups.

Database and Methodology

The study is mainly based on secondary information. The NSSO 59th round survey data is the data source for the present study. Number of farmer households and percentage of indebted farmer households has been computed with the help of NSS data. The same has been used to work out the indebted farmer households by different social groups. Simple form of table with the percentages calculated and the same have been explained through descriptive analysis and narrative procedure.

Results and Discussion

reveals the estimated number of rural households, farmer households, indebted farmer households and percentage of indebted farmer households in each of the states. The incidence of indebtedness was highest in Andhra Pradesh (82.0 per cent) followed by Tamil Nadu (74.5 per cent), Punjab (65.4 per cent), Kerala (64.4 per cent), Karnataka(61.6 per cent) and Maharashtra (54.8 per cent). Moreover, Haryana, Rajasthan, Gujarat, Madhya Pradesh and West Bengal each had about 50 to 53 per cent farmer households indebted. The remaining of these states having percentage lower than the All India average of

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48.6 per cent. The lowest indebted farmer households were in the three states Kerala (6.26 per cent), Orissa (19.47 per cent)and Tripura (22.47 per cent).The present study found that the remaining 42 per cent of farmer households indebted depends on the non-institutional sources like money lenders etc.,where the rate of interest is not only exorbitant but the terms and conditions of the loan are often exploitative(charge interest rate varying between 24 per cent to 60 per cent per annum). Studies carried out in rain fed regions where farmers have committed suicides at large scale have attributed that the inadequate supply of institutional credit is one of the major reasons for present agrarian crisis. Studies by Narayanamoorthy et al(2005) pointed out that due to inadequate income from crop cultivation, farmers were not able to repay the loan in time that they borrowed mostly from non-institutional sources which in many instances forced the farmers to commit suicides. Another empirical research study conducted by Dhandapani (2010) traces out that the shortage of institutional credit is one of the reason behind the causes for the low Production and Productivity of agriculture in Tamil nadu. In addition to this the reduction in public investment may have affected the diffusion of agricultural technology, efficient allocation of resources and also have increased the transactions costs for farmers.

The percentage share of all estimated farmer households in different social groups was 13.3 per cent in STs, 17.5 per cent in SCs, 41.5 per cent in OBCs and 27.7 per cent in Others. At all-India level, 48.6 per cent farmer households were indebted. The prevalence rate of indebtedness of farmer households in different social groups was 36.3 per cent in STs, 50.2 per cent in SCs,51.4 per cent in OBCs and 49.4 per cent in Others. Thus, excluding farmer households belonging to STs, around half of the households in all other social groups were indebted. Among 100 indebted farmer households, it was observed that 10 households belonged to STs, 18 households to SCs, 44 households to OBCs and 28 households to Others. Between the two states, namely, Andhra Pradesh and Tamil Nadu where a vast majority of farming community was indebted,it was observed that in Andhra Pradesh 11 per cent belonged to STs, 17 per cent to SCs, 47 per cent to OBCs and 25 per cent to Others, whereas the percentages were 4 per cent, 22 per cent , 73 per cent and 1 per cent respectively in Tamil Nadu.

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Concluding Remarks

Development should consider voiceless people or marginalized. No strategy of socio-economic development for India that neglects agricultural community can be successful which is the sine qua non of development of India. It is clear from the foregoing analysis that the farmers in India have been facing a serious crisis in recent years. As evident, the 48 per cent of farmer households indebted in India. It is a matter of serious concern. One more interesting observation is made by present study. The rate of indebtedness of farmer households in different social groups was 36.3 per cent in STs, 50.2 per cent in SCs,51.4 per cent in OBCs and 49.4 per cent in Others. The solution of the problem is not in a few "packages" but in drastic changes in the present economic policies related to agriculture. Policy makers should recognize the fact that the economic conditions of millions of farmers community.

Policy Suggestions

- The policy of doubling credit to agricultural sector with reasonable rate of interest should be implemented through programmes such as "credit widening" and "credit deepening" policy.
- Government should pay more attention to improve the rural infrastructure which are expected to enhance the resource use efficiency and reduce transactions costs for farmers society.
- Efforts are needed to overcome the present agrarian crisis through increasing Public investment and rural employment schemes.

- Producers market should be strengthened (to cut down the role of middle men and improve in come level of the farmers, studies show that farmers were not able to get even 40 per cent of the money that the consumers pays for various agricultural commodities in the market)
- To empower the Small and Marginal farmers, with appropriate changes in the technology front and institutional front.

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Agricultural Investment for Food Security

Introduction

Agriculture is the primary sector in India. Hence, it has a crucial role to play in the economic development of the nation. Agriculture contributes the largest amount of the national income of a country. Agriculture supplies food for the rapid growing population, about 63 percent of the total population the country dependent on agriculture for living. Agriculture is the most dominant sector of such an economy. India has made a lot of progress in agricultural sector since independence in terms of growth in output, yield and area under many crops. The food grains in India has increased from 51 million tones to 178.5 million tones during 1950-51 and 1992-93. it remained at a level of 150 million tones during 1984 -85 and 1986-87 and then declined to 138.41 million tones during 1987-88. A significant rise in food grains production was observed during 2006-07 recording 209 million tones. The production of other agricultural commodities also increased significantly, although much is yet to be achieved. But one remarkable achievement is that the agricultural economy is substantially changed from one of substantially changed from one of substantially changed from one of subsistence to a market oriented economy over large areas in the country. Both production and marketing technology are essential for reinforcing each other for the development of agriculture. If marketing technology fails to keep pace with production technology, the former would tend to constrain the latter. With the growing of commercialization and specialization of agriculture along with increasing trend of migration and concentration of population in urban area's marketing has a distinct role to play. Further the adoption of more scientific technologies increased labour, farm specialization and the geographic separation of production and consumption, population rise, changing food habits, purchasing power consumption. Population, rise, changing food habits, purchasing power and changing consumer's mobility, and appropriate marketing technology and agricultural price policy assume crucial importance.

Although India's population has more than tripled since its independence, the country has evolved from a state of net importer of food graing in the fifties to an evitable position of self sufficiency and surplus in food grains. The country has achieved a record food grain production of 212.85 million tones during 2001-2002. The green revolution technology playing the major role this advance possible. To day, we are the second largest producer of wheat, rice, fruits and vegetables, and the largest produce of milk, fruits and sugarcane. Never the less we still face daunting challenges of hunger, poverty and malnutrition.

Investing to increase production

Most of the investments needed to feed a rapidly growing population will be made on the farm investment include:-

Irrigation and efficient water use

Irrigation development has slowed in recent years, as high costs and environmental problems have discouraged investment. Investment will need to be increased and directed toward less costly approaches to water control, such as rehabilitation of existing irrigation, and drainage systems, small – scale, privately owned pump irrigation and water harvesting.

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Mechanization and animal traction

Mechanization and animal traction to replace human labour have dramatic potential to increase productivity. In future, emphasis must be placed on improving the utilization of village- level renewable energy sources.

Delivering food safely and affordably to whose who need it will require significant investment in most production systems and rural infrastructure. The urban population in developing countries will almost double by the year 2010, greatly increasing pressure on systems for food handling, storage, transport, marketing and processing. Investments in promoting better food quality and safety are usually quickly recovered through reduced food losses and better consumer acceptance.

Roads, electricity, telecommunications and other infrastructure services are limited in rural areas, even though they are of key importance to stimulate agricultural investment and growth.

Impact on agriculture

The magnitude of projected changes in temperature, rain- fall and carbon dioxide in future of different parts of the world including India has been complied by inter – government panel an climate change (Watson et al., 1998). The projected level of 605 -755 ppm by 2070 of Co_2 from the level of 368 ppm in the year 2000 is simply frightening.

Impact on forest Eco – systems

The response to forests to climatic change is complex and is uncertain and involves dynamic interactions among various plant species in an eco system. The impact of climate change on bio-diversity of tropical forest is quite speculative plants are stressed and become vulnerable to pest attacks under increased temperature and low soil water availability. The diversity of tropical forests however, provides some protection against wide spread attack of pests and diseases.

Impact on Water Resources

Climatic changes affect water supply, quality and its demand has ramifications for decision makers water demand generally increases with time as population and per capita consumption increases. Water availability, on the otherhand, has been considered relatively constant. Climate change may either increase or decrease water availability through precipitation, temperature, cloudiness and humidity, increasing the level of incertainty, which can result in increased recurrence of hydraulic hazards such as floods and droughts.

Indian Scenario

Food security and provision of food grains to its teeming population constituted the most important elements of agricultural policy in India.

Food availability and demand

The per capita availability of food is a function of population and food production with adjustment made for exports, imports, wastage, livestock feed, seeds and stocks at the beginning of the year. The population of India has tripped since independence and almost doubled since 1980. The growth rate is showing down from 2.2% per year in the 1980's to 1.9% in 2000's. The population is projected to reach 1.3 billion by 2020.

Conclusion

Climate change effecting adversely the quality of the natural resources of out country retards the economic prosperity of India. A reduced GDP results in India owing to constant changes in the climate. In the process, the economically disadvantaged people are likely to be affected the more, and are constrained to experience severe water scarcity, and degradation, desertification, droughts and floods. Unable to cope with the current environmental stresses such as drought and water stress, they find their life miserable.

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Farmers' Suicides in India: Issues and Concerns

1.1 Introduction

Agriculture has always been celebrated as the primary sector in India. India is an agrarian economy, which means, agriculture is the pre-dominant sector of the Indian economy. True to this, even to this day, in spite of the Indian economy opening out to the world and globalization, close to 70% of the population still depends on agriculture for its livelihood. The secondary and tertiary sectors in India are growing at rapid rates, still a vast majority of Indians continues to depend on agriculture. Every plan for the growth of the Indian economy aims at agricultural development, which is justified because to achieve the growth rates that the economy aims at, it is important to first address the growth rate of the major sector of the economy. Since the first Five year plan, India's focus has been on agriculture and after 50 years of Five year plans, Thanks to the Green Revolution, India is now self-sufficient in food production, gone are the days when India had to import even food grains for daily consumption. Indian agriculture has been making technological advancement as well. he worst cases of farmers committing suicides come from the states of Andhra Pradesh, Karnataka and Maharashtra.

1.2 Causes of farmer suicides

Indian agriculture is predominantly dependant on nature. Irrigation facilities that are currently available, do not cover the entire cultivable land. Any failure of nature, directly affects the fortunes of the farmers. Secondly, Indian agriculture is largely an unorganized sector, there is no systematic planning in cultivation, farmers work on the lands of uneconomical sizes, institutional finances are not available and minimum purchase prices of the government do not in reality reach the poorest farmer. The farmers normally resort to borrowing from money lenders, in the absence of institutionalized finance. The money lender is the only source of finance for the farmers. Should the crops fail, the farmers fall into a debt trap and crop failures piled up over the years give them no other option other than ending their lives. The input - output ratio in agriculture is very meager due to rising cost of inputs and insufficient support prices from the government.

Agriculture works out profitably where the size of the land is medium to large to benefit from the economies of large scale production. The fact is that the majority of the farmers in India own as little as 2 acres of land, cultivation on such small sized lands is not feasible, in many cases, the farmers are not even the owners of the land, which makes profitable cultivation impossible because a significant portion of the earnings go towards the payment of the lease for the land. At times, even the middle to large land owners are faced with the difficulties of the vast majority of farmers, however, they are able to atleast realize their investment for each crop.

There are various economic, social, political, individual and environmental causes of farmer's suicide in India. The causes of this crisis are complex and manifold; they are dominantly related to public policy and economic strategy.

- Ø Absence of adequate social support infrastructure at the level of village.
- Ø Uncertainty of agricultural enterprise in India.
- Ø Indebtedness of farmers. Rising cost of cultivation.
- Ø Lack of credit availability for small farmers. There has been minimal financial support from the

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- Ø Government for small farmers.
- Ø Lack of irrigation facilities.
- Ø Lack of Government Vision and clarity of intention to benefit the poor and small farmers.
- Ø Reduction of agriculture subsidies.
- Ø Environmental pollution.
- Ø Exploitation of natural resources (water, forest)
- Ø Unfavorable international policies.
- Ø Public expenditure on rural development fell during this period from 14.5 percent to G.D.P. In 1991 to 5.9 percent I 2004 (P. Sainath, the Hindu -2/2/2010

1.3 Consequences

The government must amend laws that are governing the farmers in the Indian agricultural sector. If the government does not make any urgent recommendations or legal provisions to offer relief to the trend of farmer suicide in the affected states, the whole country will suffer the consequences.

The large number of suicides by farmers in various parts of the country is perhaps the most distressing phenomenon observed in India over the last decade. These suicides, which reached almost epidemic proportions in certain pockets of the country, were first picked up and reported by an alert press around the late 1990s. The public concern that these reports led to forced some of the state governments like Karnataka, Andhra Pradesh and Maharashtra set up inquiry commissions to go into this phenomenon in the respective states. As for the factors underlying farmers' suicides – like issues underlying any suicide – they would be extremely complex, involving socioeconomic, cultural and psychological factors.

1.4 Numbers and Trends in Farm Suicides in India

In the ten year period between 1997 and 2006 as many as 166,304 farmers committed suicide in India. If we consider the 12 year period from 1995 to 2006 the figure is close to 200,000: the exact figure (190,753) would be an underestimation since a couple of major states like Tamil Nadu and Rajasthan and a number of smaller states like Pondicherry did not report any farmers' suicides for one or the other – or both - of these two years. Thus, going by the official data, on average nearly 16,000 farmers committed suicide every year over the last decade or so.

1.5 Conclusion

There cannot be one single solution to end the woes of farmers. Giving monetary relief is not an effective solution. The solutions should aim at the entire structure of agriculture. Here are some solutions that could help in improving the state of the farmers:

1. The dependency of agriculture on nature should be reduced. This calls for effective management of water during seasons of good monsoons. Prevention of crop failure should be the primary aim of the Government. It was only after several agitations by the farmers' organizations that the Government relented and allowed the second crop. Water management should be made more effective through inter- state co-operation on water resources, where surplus water from perennial rivers can be diverted to those regions facing drought, as it is always seen in India, where in state there is severe drought, another state has to face worst floods, such regional imbalances can be managed by effective utilization of water resources throughout the country.
2. Making institutional finance available to every farmer is another important solution to save to the farmers from debt traps of money lenders. Where institutional finance is available, it should be made easily accessible to the poorest farmers. This calls for removing of elaborate formalities and

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procedures for obtaining the loans. Monitoring is also needed to ensure that the farmers are using the funds for the right purposes.

3. Farmers need to be advised and guided on economical methods of cultivation which would save finances for them. The technological advancement in agriculture should be passed down to the small farmers. Where the existing crops would not do well under current drought and weather conditions, the farmers could be helped to shift to the cultivation of crops that would be easy and economical to cultivate in adverse conditions. Agriculture should be approached professionally and not as a traditional occupation.
4. The government could also explore the possibility of pooling of the lands of small farmers and making a bigger chunk of economically cultivable land.
5. Small farmers should be encouraged to develop alternative sources of income and the government should provide training to the farmers to acquire new skills.
6. Provision of relief facilities alone is not sufficient as it has been observed in the case of Andhra Pradesh where farmers committed suicides just to avail the benefits of relief packages. Social responsibility also goes a long way to help the farmers. The big land owners in most places do not lend a helping hand to struggling farmers, in most cases, they grab the benefits which are other wise meant for the poor farmers. General public, NGOs, Corporates and other organisations too can play a part in helping farmers by adopting drought affected villages and families and helping them to rehabilitate. The solution to the farmer's plight should be directed towards enabling the farmers to help themselves and sustain on their own. Temporary measures through monetary relief would not be the solution. The efforts should be targeted at improving the entire structure of the small farmers wherein the relief is not given on a drought to drought basis, rather they are taught to overcome their difficulties through their own skills and capabilities. The Government needs to come up with pro-active solutions and the nation has to realize that farmers' suicides are not minor issues happening in remote parts of a few states, it is a reflection of the true state of the basis of our economy.

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Betel Leaf: The Neglected Green Gold of India

Introduction

The deep green heart shaped leaves of betelvine are popularly known as Paan in India. The scientific name of betelvine is (Piper – betel Linn). It belongs to the family of piperaceae i.e. the black pepper family. It is cultivated intensively for the sake of its leaves, which are consumed by about 15-20 million people in the country. There are about 100 varieties of betelvine in the world, of which about 40 are found India and 30 in West Bengal. Betelvine is an important medicinal and recreational plant in South East Asia. The most probable place of origin of betelvine is Malaysia but today the lants are also cultivated in India, Srilanka, Burma and Nepal. Chewing of betel leaves is an ancient habit of the people residing in the subtropical countries. Betelvine plays a significant role in the social and cultural aspects of India.

Cultivars or Varieties

There are mainly five cultivars of betelvine viz. Kappori, Bangla, Meetha, Sanchi and Maghai grown in India. Paan is one of the major economic sources of rural Bangladesh. Betel leaves are exported from Tirur in Kerala are Famous in Pakisthan as "Tirur Pan". In Tamilnadu, betel leaves are cultivated in Madurai, Dindugal, Dharmapuri and Erode Districts. "Anthiyur Betel" is mostly prepared by the consumer himself.

Crisis of Betelvine Cultivation

- Ø Betelvine yard is always threatened by pest and disease attack. More than 15 insects pests attack betelvine yard.
- Ø The most important constraint is price fluctuation because of volatile seasonal fluctuation in the production of betel leaf.
- Ø Inadequacy of finance and high cost of labour are the limiting factors for the cultivation of betelvine leaves.
- Ø Involvement of too many middlemen and non-existence of regulated market.
- Ø The betel leaf is a very perishable commodity and therefore, always subjects to wastage by quick spoilage.
- Ø Poor infrastructural facilities and other constraints.

Prospects of Betelvine Cultivation

- Ø The betel farming activities can generate employment opportunities for throughout the year. Fur ther, as far as the national employment generation is concerned, about 20 million people derive their livelihood directly or indirectly from production, processing, handling, transportation and marketing of betel leaves in India. It is the most important cash crop.
- Ø The cultivation of betelvines provide a continuous source of income to the farming family unlike the major crops, which provide income only once in a year or so. That apart, most of the major crops require some sorts of post–harvest processing for making the produce marketable but the betel leaves do not require any such processing at all. Moreover, the leaves may also be retained on the vines for about six months without any visual signs and symptoms of deterioration. This again provides an opportunity to escape the dull markets.

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- Ø Wastage of betel leaves may also be reduced by extracting essential oil from the stranded or unsold leaves be it fresh or stale or dechlorophiled. The useful properties of the oil indicate a promising industrial future for it as a raw material for manufacturing tooth–pastes, perfumes, soaps, face creams, tonics and medicines etc.

Conclusion

In India, betelvine is grown as an important cash crop. Betel leaves has good export potential and India exports betel leaves to the other countries. This adequately justifies its nomenclature as the "GREEN GOLD OF INDIA". A well coordinated effort by the farmers, traders, scientists, administrators and policy makers is required to be initiated to boost up the national economy through proper exploitation of this green gold.

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An Anayysis of Agriculture in India in The Post National Agriculture Policy (Nap 2000)

Introduction

In the post-Independence development scene in India, the agricultural sector witnessed a break-through in production described as the Green Revolution. Particularly gratifying has been the growth in the production of food grains enabling the nation to put an end to the frequent occurrence of famines marking the history of Indian economy until the middle of last century. Another manifestation of the dynamic agriculture has been the emergence of rural areas and strata showing remarkable measures of economic and social change.

Rice and wheat are the two most important food grains in our country. Before we started our planned economic development in 1950-51 we produced 20.6 million tonnes of rice and only 6.4 million tonnes of wheat. In 1983-84 the production of rice increased to 59.8 million tonnes and wheat 45.1 million tonnes. Region-wise, Punjab, Haryana and western UP have gained from the Green Revolution. This has been possible due to availability of water. A substantial proportion of the area under wheat cultivation in this zone is irrigated mainly due to large government investment in dams and canals. We are self-sufficient in food in spite of a large population and a high population growth rate

The stagnation of our economy during the first half of the century is reflected in the stagnation in food output—the latter increased only at 0.3 per cent per annum. The growth rates in the three decades from 1950 to 1980 ranged from 2.3 per cent to 2.7 per cent per annum. Increases in food grains production from 129.6 million tonnes in 1980-81 to the record level of 151.5 million tonnes in 1983-84 and a slight dip to about 148 million tonnes in 1984-85 clearly suggest the growing strength and resilience, which our agricultural economy has acquired over the past few years. In fact, food economy has moved from deficit to a position of surplus. This can be seen from the fact that even in the case of an acute drought situation during 1982-83 which was worse than 1979-80, the level of production did not fall below 129.5 million tonnes. The other notable development during the Sixth Plan is that the growth rate of about 6.2 per cent, the agricultural production for the first time overtook the growth of industrial, production which was just about 5.5 per cent.

Over the next two decades, it aims to attain:

- A growth rate in excess of 4 per cent per annum in the agriculture sector ; Growth that is based on efficient use of resources and conserves our soil, water and bio-diversity ;
- Growth with equity, i.e., growth which is widespread across regions and farmers ;
- Growth that is demand driven and caters to domestic markets and maximises benefits from exports of agricultural products in the face of the challenges arising from economic liberalization and globalization :
- The policy seeks to promote technically sound, economically viable, environmentally non-degrading, and socially acceptable use of country's natural resources – land, water and genetic endowment to promote sustainable development of agriculture.

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Objective of the study

- To examine the aggregate demand for Agricultural products in India after 2000 (NAP)

The objective tries to find out the aggregate demand for agricultural product in India in the post NAP. .

Scope of the study

The study is concerned with India's demand for agricultural sector. It is very important for the emerging market economics like India that the sustenance of economic growth lies primary in its agricultural sector. The government has taken so many measures in its plans to increasing the quantity of output, particularly in the post-liberalisation period. The central government in the year 2000 has come out with a new agricultural policy Called National Agricultural Policy (NAP) to make a structural change in agricultural mainly to increase the growth of agricultural to 4 per cent so as to contribute to India's Economic growth to sustain at a higher trajectory. In this direction the study tries to examine the impact of NAP in the growth of agriculture in the India's Economy.

The study takes the objective into analysis to find out the impact of NAP in the Indian agriculture sector. The objective deals with the growth of demand for agricultural production after NAP in India.

The objective may help us understood the performance of Agriculture sector in the period and reveals the effectiveness of NAP in India. It also helps us to understand that there is any gap in between demand and supply of Agricultural products among the major food and non-food crops in Indian agriculture.

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Analysis and findings

The objective deals with the demand for agricultural production in India for time periods which is distinguished by National Agricultural Policy (NAP) came into effect from July 2000. The time periods consists of 10 years from 2000-01 to 2009-10.

To find out the aggregate demand for agricultural production the study has used three major variables. The variables are India's population from 2000 to 2010, per capita income of India from 2000 to 2010 and income elasticity of demand for agricultural production in India from 2000 to 2010 and then obtained the growth rate for the variables.

The growth of population in each year is added to the growth rate of per capita income multiplied with income elasticity of demand for agricultural commodities to get the growth rate of the demand for agricultural products. With this method it is possible to get the aggregate demand for agricultural commodities each year from 2000-01 to 2009-10. The income elasticity of demand for agricultural product is derived through percentage change in demand for agricultural products by the percentage change in income.

The model frame is

$$D = P + Y_{ed} (PCI)$$

'D' stands for growth rate of demand for agricultural products. 'P' is growth rate of population in India from 2000-01 to 2009-10. ' Y_{ed} ' is income elasticity of demand for agricultural products, 'PCI' is growth rate of per capita income of India for ten years from 2000-01 to 2009-10. Along with this averages of growth of population and growth of aggregate demand for agricultural products have been calculated to understand the requirement of agricultural products to the increase in

Concluding remarks

The niggardly rate of agricultural growth, the people at large expected to take path-breaking and innovative steps to make farming at least marginally remunerative if not an attractive investment destination.

The Government starts with the economy's accomplishments highlighting GDP growth, and glossing over the miserable performance of the agricultural sector.

No note has been taken of the recommendations of the various commissions to reduce the rate of interest on crop loans from 7 per cent to 4 per cent, to establish a network of quality testing laboratories, to set up an information network encompassing all villages, as also use retail trade to shorten the time between harvest and the kitchen.

With the right government incentives and scientific support, the crisis on the pulses, paddy, wheat and other food grains and non food grains whose production is sore point of Indian agriculture, could have been transformed into a basket of opportunities-a trigger to sustaining farm sector growth.

India has by now had the benefit of half a century of planning on the farm front. One important way of assessing a country's true independence is to critically examine how independent it is in terms of food security.

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Indian Agriculture Sector in the New Economic Regime: A Study Based on Cobb-Douglas Production Function

Introduction

Agriculture forms the backbone of Indian Economy. It is the largest sector of the economic activity and has a crucial role to play in the country's economic development by providing food and raw material, employment to a very large proportion of population, capital for its own development and surplus for national economic development. Indian Agrarian sector occupies a place of pride. Agriculture sector in India employs about 59.2 per cent of the work force, contributes 17.8 per cent of GDP. However, in recent years, because of the concerted industrialization the significance of agriculture is going down.

India is the second largest producer of food in the world: more than 215 million tonnes of foodgrains, 74.87 million tonnes of fruits, 121 million tonnes of milk, 63029 million nos. of eggs, 417 million livestock, and 8.29 million tonnes of fish and fish products. The Indian agriculture has made great strides over the years. The foodgrain production has increased more than four fold - from 50.82 million tonnes in 1950-51 to 218.20 million tonnes during 2009-10.

The importance of agriculture sector in the process of economic development is indispensable. With the recognition of this fact, Indian planners have emphasized on the development of agricultural and allied sector right from the beginning of the economic planning process in India. Since India's Independence and in the planning period Indian agriculture has passed through various phases experiencing a lot of policies and programmes for raising productivity and contribution. In 1991 India chose to open her economy to global economic forces and formulated the New Economic Policy (NEP). Under the structural adjustment and reform programmes, the NEP aimed at promoting growth by eliminating supply bottlenecks that hinder competitiveness, efficiency and dynamism in the economic system. Now more than two decades were over and it is the right time to evaluate the impact of new economic reforms on Indian agriculture sector.

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Objective

This paper makes an attempt to track the status of Indian agriculture sector before and after the introduction of new economic reforms.

Data

The study is based on secondary data for the last 34 years, i.e. from 1974-75 to 2007-08. The main source of data for this paper is based on the Handbook on Indian Statistics published by Reserve Bank of India, Mumbai and Agricultural Statistics at a Glance 2011, published by Department of Agriculture & Cooperation, Ministry of Agriculture, Government of India. This study is made for the period for which latest data is at hand at the respective sources. The period 1974-75 to 2007-08 has been divided into three sub-periods, viz. period I (Pre-reform Period: 1974-75 to 1990-91); period II (Post-reform Period: 1991-92 to 2007-08); and period III (Overall Period: 1974-75 to 2007-08).

Methodology

This study adopts the Cobb-Douglas production function in estimating the effects of new economic reforms adopted in India. The Cobb-Douglas production function is widely used to represent the relationship between outputs and inputs. To unearth the determinants of agricultural production before new eco-

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nomic reforms and after new economic reforms we used Cobb Douglas (CD) Production Function Methodology based on Ordinary Least Squares (OLS) for the above mentioned periods.

The relationship between agricultural inputs and output is documented in the various studies. Most of the earlier Indian and cross-country studies use Cobb Douglas (CD) production function to know the contribution of a particular input in the total production. Studies made earlier in India about the agriculture production function used inputs like land, labour, irrigation, fertilizers. For instance Kata (1990), Chadha (1979), Bagi (1980), Mathur, Pattnayak and Nayak (2005), Das and Sircar (2006) and Kamat et al., (2007) are the most well received studies in which agricultural production function is empirically tested using the same methodology. In line with earlier studies, we use CD production function to trace the contribution of individual input in the production function. This methodology enables us to check the presence of Indian agricultural sector in the phase of production during the different periods.

In our empirical study we used the following model:

$$Y_i = \beta_1 + CR_{2_i}^{\beta_2} + IR_{3_i}^{\beta_3} + FE_{4_i}^{\beta_4} + PE_{5_i}^{\beta_5} + AR_{6_i}^{\beta_6} + EC_{7_i}^{\beta_7} + e + \mu^i \Lambda \quad (1)$$

Where, Y_i = Agricultural GDP, $\hat{a}_1$ = Constant representing technological change, CR = Institutional Credit to Agriculture, IR = Net Irrigated Land, FE = Consumption of Fertilizer, PE = Use of Pesticides, AR = Net Area Sown, EC = Consumption of Electricity, e = Base of Natural Logarithm and ì = Stochastic Disturbance term.

From the equation 1.1 relationship between output and input is nonlinear; however after log-transforming this model, we can have following linear model:

$$\ln Y_i = \ln \beta_1 + \beta_2 \ln CR_i + \beta_3 \ln IR_i + \beta_4 \ln FE_i + \beta_5 \ln PE_i + \beta_6 AR_i + \beta_7 EC_i + \mu_i \Lambda \quad (2)$$

Where $\beta_0 = \ln \beta_1$ thus equation 2 is linear in the parameters β_0, β_1, β_2, β_3, β_4, β_5 and β_6 is therefore Linear Regression Model and all parameters are the respective Elasticities. This model is also known as Log-Linear Model. The summation of above parameters gives information about returns to scale; it means that, the response of the output to proportionate change in inputs. If sum of these parameters is 1, then it is assumed that there is a Constant Return to Scale, if the sum is less 1 it means there is Decreasing Returns to Scale and if the sum is greater than 1 it means there is Increasing Returns to Scale.

The variables used in the study are defined as follows. Institutional Credit to Agriculture (CR) comprises of direct (short-term and long-term) credit issued by Cooperative, State governments, Scheduled Commercial Banks and Regional Rural Banks to agriculture and allied sector in Crore Rupees. Irrigation Facility (IR) is the Net irrigated area under cultivation in million hectares. Consumption of Fertilizers (FE) includes $N+P+K$ in lakh tones. Use of Pesticide (PE) is the consumption of pesticides (technical grade material) in thousand tones. Net Area Sown (AR) Net Area brought under cultivation of the crops in million tones in used for framing this variable. Use of Electricity (EC) is the Consumption of Electricity in GWh., and Agricultural Gross Domestic Product (AGDP) is employed as Dependant variable (Y) which acts as proxy for productivity of Indian agriculture. We use the GDP at constant prices in Rupee (Crores) available at source of the data.

Results and Discussion

In order to check for the determinants of Agricultural GDP, the present study uses six explanatory variables to find out its relationship with output. These determinants are: institutional credit, irrigation facility, consumption of electricity, use of pesticides, net area sown and electricity consumption. These explanatory variables determine the Agricultural GDP is shown in the three different models viz., Model I (Overall period from 1974-75 to 2007-08), Model II (Pre-Reform period from 1974-75 to 1990-91) and Model III (Post-Reform period from 1991-92 to 2007-08).

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The Cobb Douglas production framework used in the empirical study to estimate the output elasticities of different variables. The value of elasticity measure the per cent change in agricultural gross domestic product (AGDP) with 1 percent change in explanatory variable. Each factor's (input) contribution in the total production function can be measured, holding other input constant. The sum of all $\hat{a}_2 + \hat{a}3$ .....(lnCR + lnIR.....) gives information about returns to scale, which is the response of output to a proportionate change in inputs. While measuring all â coefficients we assume that *á* (intercept) *i.e.* technology remains constant.

Our results point that institutional credit, net area sown and electricity consumption show positive and significant effect on the growth of Agriculture GDP. However the use of pesticides and fertilizers has negative impact and irrigation facility has a positive impact on AGDP but it remains statistically insignificant. The R square value of this model is 0.98 means that about 98 per cent of the variation in the log of the dependent variable is explained by the log of these six variables

The use of pesticides and electricity consumption has positive impact on AGDP but they remains statistically insignificant. The R square value of this model is 0.96 means that about 96 per cent of the variation in the log of the dependent variable is explained by the log of these six variables.

The variables institutional credit and net irrigated area sowed positive association with the dependent variable AGDP but it remains statistically insignificant. Other remaining variables like net area sown, use of fertilizer and pesticides and electricity consumption shows negative value of elasticity which is not statistically significant. Our result of model III shows that Indian agriculture sector had witnessed the decreasing stage. The results of this model match with the findings of the earlier studies conducted for the similar periods.

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Conclusion

There is widespread complaint and understanding that government of India has minimized the subsidy support to agriculture for reducing public expenditure under the pressure of WTO. Banking reforms have also forced the banks to curtail risk prone credit that banks give to the farmers. Against this backdrop we examined the elasticity values of various inputs and their respective contribution in agricultural growth. A finding of this model can be concluded as Indian agricultural sector had witnessed decreasing retunes to scale as the contribution of these variables are found to be insignificant. This might have resulted due to weak supply of inputs to agricultural sector during the period. Our results based on model III advocates that there is urgent need to build a capacity of all necessary inputs to meet the problem of food security and for all round development of this sector.

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Agrarian Distress, Suicides and Alleviatory Measures

Introduction

Agriculture has remained traditionally the most important economic activity in our country and hence known as the backbone of the Indian Economy despite concerted industrialization . Being the largest industry in the country, agriculture provides employment directly or indirectly to about 65% of the total workforce in India . The forward and backward linkages of this sector with industry and services are still significant. Being both a source of livelihood and food security for a vast majority of low income, poor and vulnerable sections of society, its performance assumes greater significance.

The poor performance of the sector after the mid 1990's and the distress of the farmers highlighted the need to focus and analyse the problems and steps needed to address the problems of the farmers with a sense of urgency.

Problems of Agricultural Labours:

1. Lack of Organization Among Agricultural Worker

Agricultural labour is unorganized. Unlike industrial units, agricultural workers need not work in unions. A lack of contact between workers makes it impossible to develop any meaningful organization. Industrial workers protect their interest by organizing themselves into trade unions, but agricultural workers could not organize themselves because they live in distant places and do not work in large number at one place.

2. Agricultural Workers Are Basically Unskilled

They may not be skilled even in the art of cultivation. Consequently, their supply is perfectly elastic, and therefore, whatever, they earn is in the nature of transfer earnings. The employer often uses this position to his personal gain by contracting to pay less than what the market forces would have warranted .

3. Employment And Working Conditions

For a substantial part of the year agricultural workers have to remain unemployed because there is no work on the farms and alternative source of employment do not exist. National Commission on Labour has pointed out that intensity of employment varies according to seasons. Shortage of labor is actually felt during peak agricultural seasons in several areas and a large proportion of labour remains unemployed or under-employed during the slack season.

4. No Regulation on Work Hours

The hours of work of agricultural labour are not regulated by legislation. Hours of work vary from place to place, crop to crop and season to season. It should be noted that the working hours of agricultural labourers are not very long. Generally, agricultural labourers work for about 8 hours a day with a break of two hours. There are few occasions when an agricultural labour has to work for longer hours, that is, during harvest season; but during this time he is also paid well. It has also been found that piece workers often work for lesser number of hours while they earn more.

5. Wages and Income

The Minimum Wages Act was passed in 1948, according to which every State Government was asked to fix minimum wages for agricultural labour within three years. The minimum wages are fixed

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keeping in view the total costs and standard of living. Since, conditions in various parts of the country are different and even within a state the law allows different rates of wages to be fixed. In practice minimum wages are very difficult to enforce effectively. In many states, the rates are fixed even below the current rates of wages. In practices, it has failed to increase the wages and earnings of agricultural labour. The average daily real wage rate rose by just 13.80% from Rs.21.50 in 1990-91 to Rs. 24.48 in 1998-99 an increase of only two rupees and ninety eight paise in eight years or about thirty seven paise on an average in a year.

6. Bonded Labour

Though bonded labour has been abolished in the country, ye news about the existence of this system in rural India keeps pouring in daily from different parts of the country. According to the NSS 32nd round, there are about 3.5 lakh bounded labourers in the country. There is no fixation of hours of work. At the time of sowing and harvesting, the agricultural workers have to work on the farms from dawn to dusk. Since they are employed on a daily basis, there is no question of any leave or other benefits for them.

7. Suicides

Suicides by farmers was not a recent phenomenon. After, 1995, the Home Ministry Records showed that of the one lakh suicides every year, the farming community accounted for 12% to 16%. Suicides takes place in every state but in the last few years incidents in six districts of Vidharbha in Maharastra, six in Karnataka, 3 in Kerala and 16 in Andhra Pradesh had been highlighted. (The Hindu dated August 25the 2006)

Measures Adopted By The Government

Since independence, the Centre as well as the State Governments has taken some measures to improve economic condition of Agricultural Labour.

1. Better Implementation Of Minimum Wages

The main difficulties of low productivity of agricultural labour, small size of holdings of many farmers, lack of organization among rural workers, excessive labour supply in many areas are some of the reasons for paying less wages to the labour.

The Minimum Wages Act was passed in 1948, according to which every State Government was asked to fix minimum wages for agricultural labour with in three years considering the total costs and standard of living.

2. Abolition Of Bonded Labour

Attempts have been made to abolish the evil of bonded labour because it is exploitative, inhuman and violative of all norms of social justice. In the chapter of Fundamental Rights in the Constitution of India it has been stated that the practice of slavery in any form is prohibited(i.e.) trading in humans and forcing them to beg is prohibited and can inivite punishment under law. A Legislation was passed known as the Bonded Labour system (Abolition) Act 1976. Under this Act, the bonded labour system was abolished and every bonded labourer was freed and discharged from any obligation to render bonded labour. Accordingly, all contracts for bonded labour, attachment for recovery of bonded debt, etc was declared null and void. As a consequence of this act, 2,55,608 bonded labourers were identified and freed in various parts of the country.

3. Land Reclamation And Settlement

The Government has distributed land to landless labourers with a view to improving their economic position priority in the distribution of land according to landless labourers belonging to SC and St.Land reclamation measures have been intensified in different parts of the country. Land so secured has been distributed among the landless agricultural labourers.

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1. Better Implementation of Legislative Measures

The Minimum Wages Act was passed as far back as in 1948, yet its implementation leaves much to be desired. There is no administrative machinery worth the name to implement effectively the provisions of the Minimum Wage Act. Even other wise, fixation of minimum wages in an era of continuous and exorbitant rise in prices carries no consolation for the starved masses of agricultural workers. Therefore, it is necessary to provide for periodical revision of minimum wages keeping the changing price trends in view.

2. Improving The Bargaining Position

Special efforts should be directed towards organizing agricultural workers. It is only such organisation that can improve their bargaining power and ensure better wages and better conditions of work for them. This is not easy because the large farmers and big landlords are economically and socially very powerful. Because of their unlimited power they have succeeded in pinning down whatever little attempts were made by agricultural workers to organize themselves in some parts of the country.

3. Resettlement of Agricultural Workers

The surplus land and newly reclaimed land should be allotted only to agricultural workers. However, there are physical limitations to this programme. The supply of land is very much limited in relation to the number of agricultural workers. To cope with this problem, steps can be taken to set up cooperative farms or state farms where employment at fair wages can be provided to the agricultural labourers.

4. Creating Alternative Sources of Employment

Because of the pressure on land of increasing population it is becoming more and more difficult to absorb additional labour on farms and unless other sectors of the economy create ample employment opportunities it will not be possible to solve the problems of agricultural workers. Perhaps, the best strategy would be to promote labour intensive industries in rural areas. For this purpose facilities of power, finance and training rural youth should be provided in the villages. This will reduce the dependence of agricultural workers on land and increase their incomes.

5. Improving The Working Conditions

It is necessary to improve the working conditions of agricultural workers. Their hours of work should be statutorily fixed and strictly enforced. Incase of work beyond the stipulated hours, overtime payments should be made. Child labour should be totally banned.

Conclusion

The first Prime Minister of Independent India, Shri Pandit Jawaharlal Nehru said, "Everything else can wait, but not agriculture". The National Commission on Farmers in its 4th report has pointed out that a business minded approach in agriculture, ignoring the above of our beloved Prime Minister exhortation, would have grave the following impacts on the backbone of Indian Economy.

Hence, the state should strengthen rural infrastructure and improve the standard of rural education. Apart from this, the strengthening of the cooperative movement, empowering Panchayat Raj institutions ans investing in rural Research and Development to invent and popularize appropriate technologies, are urgently required. To achieve these objectives the Government will have to show political will to collect revenue, control corruption, rein in bureaucracy, stop following populist policies appeasing undeserving section of society and end fiscal profligacy, if Agrarian Society is to be brought back on the rails.

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Agricultural Crisis in India

Introdution

Indian agriculture is at crossroads and one of the major challenges is to reverse deceleration in agricultural growth. Main reason for deceleration in agricultural growth is declining investment particularly public investment in agriculture research and development and irrigation, combined with inefficiency of institutions providing inputs and services including rural credit and extension. Other factors such as land fragmentation, out-dated tenancy laws, lack of modern market and rural infrastructure, inappropriate input pricing policies, etc. are also responsible for agrarian and ecological crisis in the country. The crisis of stagnation in agriculture needs urgent attention.

The Government has renewed focus on agriculture and promoting public-private partnership to accelerate growth in the rural economy. Twenty-first century India has emerged as a major economic power in the world, with the growth rate of the Gross Domestic Product reaching impressive levels and the poverty ratio coming down significantly. The Structural Adjustment Programme in 1991 that the policy of globalisation was concretely introduced in India. Based on this policy and the directives of the World Bank, International Monetary Fund and World Trade Organisation, the Indian economy was substantially overhauled. The Export-Import policy was liberalised; the import and customs duties of many products were drastically lowered or totally dropped so that they could be imported without any restriction. The government started reducing its investment in agriculture and the industrial sector allowing the private sector to take over. The restructuring of the public distribution system really affected the availability of food grains to the poor at subsidised rates. All such measures had implications for the farm sector.

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Objectives

To examine the issue of Agricultural Crisis in India, its root

cause, consequences of the crisis and to highlight the major suggestions for its development.

Trends in Indian Agriculture and Its Crisis

The root cause of the crisis in agriculture is that agriculture is becoming an economically unviable activity when compared to other enterprises. It means that the profitability of agriculture is low or nil or negative, and therefore, the income derived from these activities are not sufficient enough to meet the expenditure of the cultivators.

The problem of income deficit in agriculture arises from adverse terms of trade, low productivity of resources engaged in agriculture and the excessive use of inputs. When agriculture is not yielding remunerative income the life of the farmers become very desperate. Though the root cause of agricultural crisis could be attributed to the real economics of crop cultivation, several price and non-price factors have played major role for the agricultural crisis in India. A few such factors are:

Dependence on Rainfall and Climate

Unlike other sectors, agriculte depends largely on the natural climate includong rainfall. Nearly 60% of India's farmers depend on rains for irrigation and a failed monsoon means crops such as rice, wheat, soyabean, sugarcane and cotton take a severe hit. To protect the fall in prices during times of harvest, the government has hiked the minimum support price for paddy and pulses, and increase then time to time. These support prices are beneficial to farmers, only if they could harvest the crop. If the crop failed due to

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adverse climatic conditions and poor rainfall, the risk is more felt by the farmers. Though the initiatives such as modern irrigation system and energisation of wells make agriculture less dependent on monsoon, it can not completely do away with the nature and climate.

Liberal Import of Agricultural Products

World Trade Organisations (WTO). The main reason for the crash of prices of agricultural products, especially of cash crops, in India was removal of all restrictions to import these products. For example, when the Government of India reduced the import duty on tea and coffee from Sri Lanka and Malaysia, their prices in the domestic market got reduced drastically. Similarly, liberal policy of importing silk has affected the domestic mulberry cultivators and silkworm rearers. Thus cultivation of such products became unprofitable and so their production was fully or partly stopped.

Reduction in Agricultural Subsidies

In order to encourage crop cultivation, the Government of India announced several subsidies time to time. Providing subsidies were unavoidable as the cost of cultivation was increasing and any modenisation required huge additional cost and burden for cultivators. Moreover, to raise the output of agriculture and to improve the productivity levels additional investment were encouraged upon. In the post-reform period, the Government reduced different types of subsidies to agriculture, and this has increased the production cost of cultivation. No doubt that this move has adversely affected the agricultural sector. It has increased the input cost and made agriculture less profitable.

Conversion of Agricultural Land for Alternative Uses

On the one hand, the demand on land for non-agricultural uses has been steadily increasing. On the other hand, farmers are unable to cultivate any crop due to the unviable nature of agriculture. This makes the conversion of cropland for nonagricultural purposes easy and effective. In addition to the above fact, as part of the economic reforms, the system of taking over land by the government for commercial and industrial purposes was introduced in the country. As per the Special Economic Zones (SEZ) Act of 2005, the government has notified more than 400 such zones in the country. Since the SEZ deprives the farmers of their land and livelihood, it is harmful to agriculture.

The crisis would displace huge laboureres and farmers from agricultural employment.

These displaced labour forces will have limited opportunities of getting alternative employment and therefore, they would become unemployed and dependents. More over, the fall out actions such as migration from rural to urban for want of jobs and imbalance in the labour market would bring several social and economic set backs on the economy. As agriculture is not attractive to farmers, they discontinue their agricultural activities and shift the land for no-agricultural uses.

Suggestions

1. Input cost should be reduced .
2. Markets must be made available for agriculture produce.
3. A good market price must be provided for products.
4. For farmers, credit should made available at low interest rates.
5. The extension system should be revive to solve problems in the field.
6. There should be proper system to address the issue of water scarcity.
7. Adequate water for irrigation should be provided.
8. Conserve Agro Bio-Diversity in Gene and seed banks.
9. Increase budget outlay for Agriculture in every five year plan of the Government of India.
10. Agricultural land should not be given to SEZ.

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Conclusion

Agricultue in India is undergoing a structural change leading to a crisis situation. The rate of growth of agricultural output is gradually declining in the recent years. The relative contribution of agriculture to the GDP has been declining over time steadily. The performance of agriculture by crop categories also clearly indicates the slowing down process of agriculture in India. The onset of deceleration in agriculture began from early nineties and it became sharp from the late nineties. The trends in the area, input use, capital stock and technology also reflect the agricultural downfall and the farmer's response accordingly. It is alarming that India is moving towards a point of no return, from being a self-reliant nation of food surplus to a net importer of food. All these trends indicate that the agricultural sector in India is facing a crisis today. It is argued that the root cause of the crisis was that agriculture is no more a profitable economic activity when compared to other enterprises.

Investment in agriculture and its allied sectors, including irrigation, transport, communication, rural market, rural infrastructure and farm research, should be drastically increased, and the government should aim at integrated development of the rural areas. Implementation of National Rural Employment Guarantee Scheme can also become a means of revival of the rural economy.

The rural economy, particularly agriculture, will be greatly benefited through programmes meant for economically backward sections, including the Integrated Child Development Schemes, Public Distribution System, Mid-day Meals Scheme for schoolchilden, Rural Health Insurance and the National Rural Employment Guarantee Schemes. All these programmes would increase the purchasing power of the rural people and indirectly help agriculture itself. The solution of the problem is not in a few "packages" but in drastic changes in the present economic policies related to agriculture. No other sector's growth and development must be at the cost of agriculture. All farmers, agricultural labourers, societies, Government and People's Organisations should work collectively to revive agriculture and "Save India from Agriculture Crisis".

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Growth And Performance of Agricultural Sector in India During Planning Periods

Introduction

India is primarily an agricultural country 75 per cent of the population depends on agriculture. Approximately 27% of the GDP comes from agriculture and the allied sectors. Further agro-based industries depend upon agriculture for their raw-materials.

More than 21% of India's exports are agricultural products. The importance of agriculture to supply of food to the populace cannot be exaggerated. Agriculture promotes economic development of the country. Increase in agricultural production and productivity leads to increase in the income of the farmers. This increased income of the rural community will lead to more "Savings", which can be used for either further development of agriculture or for the establishment and development of non-agricultural occupation as well as industry.

Inspite of its growing importance, the attitude of the people towards agriculture remains backward. It presents dual picture of prosperity and plenty on one side, and poverty and misery on the other. It should be realized in the economic development of our country, the main thrust should be in the areas of agricultural finance and its allocation by planning commission is particular and also economic growth and development is general.

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Crises Of Agriculture Sector And Its Allied Activities

Indian agriculture is on a long term growth path not only in its growing. Steadily, it has become more diverse and resilient as compared to the past. This despite many challenges such as high dependence on monsoon rains, pressure on cultivable land and water resources, and climate change.

During the last five years, the central government has initiated a number of new schemes with focus on crops and areas with potential for high productivity. The approach has been to harness the unutilized potential by encouraging best practices, distributing quality inputs, bridging gaps and no less important constantly monitoring implementation.

The govt is striving to reach credit in adequate quantity and at low interest to farmers when they need it. These are special emphasis on bringing all farmers, especially small farmers under institutional credit.

Eleventh Five Year Plan (2007-2012)

The 11th plan aims at raising the rate of growth of the both industrial & agricultural sectors. 11th plan sets a target of 4% growth rate in agricultural sector and its special focus on promoting industrial growth & special focus to service sectors.

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Table 1

Outlays For The Centre, States And Uts

(Rs. in crores)

Planning Period	Total Plan Outlay	Agri & Allied Sectors	Irrigation & Flood Control	Total
First Plan (1951-56)	1960	291(14%)	310(15%)	601(30%)
Second Plan (1956-61)	4672	549(11%)	430(9%)	979(20%)
Third Plan (61-66)	7500	1068(14%)	650(8%)	1718(22%)
Fourth Plan (1969-74)	15902	2728(17%)	1087(6%)	3815(23%)
Fifth Plan (74-79)	39426	4865(12%)	3877(9%)	8742(22%)
Sixth Plan (80-85)	97500	11059(11%)	12160(12%)	23219(23%)
Seventh Plan (85-90)	180000	19430(10%)	16979(9%)	36409(20%)
Eighth Plan (1992-97)	853898	44194 (5%)	63979(7%)	108173(12%)
Ninth Plan (1997-2002)	1094541	54092 (4%)	70599(6%)	124692 (11%)
Tenth Plan (2002-2007)	1525639	58933(3%)	103315(6%)	162248 (10%)

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The above table 1 shows the total plan outlays for the centre, states and UTs, during the plan period, from the beginning, total plan outlay has recorded high and gradually it was increasing second and third and so on. During the tenth planning period, it was 1525639 Crs, but agricultural sector allocation is Rs.162248 crs with 10% of the total outlay resources. It is stated that there is inverse relation between the actual amount and in terms of percentage during the plan period.

Now the government is taking more concentration on agricultural activities so that the government has allotted more funds during eleventh plan period onwards.

Agri & Irrigation in Total Plan Expenditure

The Govt. has estimated the total plan expenditure of Rs.1960 crs in the First Five Year plan, among them Rs.731.7 crs has allocated for agriculture and its allied activites i.e. 37.3%. It was the highest amount allocated for agricultural sector during plan period, because of the government has given important to primary sector through introducing green revolution. It has given good result and performance immediately from the second plan. The government has allocated the resource allocation to agriculture, which has increased to Rs.1525639 crs in the Tenth plan period. In terms of actual amounts is has increased from 289.9 crs to Rs.58933 crs during the plan periods. If we compare the percentage which was decreased from 37.3 percent to 10.6 percent during the plan periods. It is clearly said that the government is concentrated on other sector development so that the agricultural plan outlays and its expenditures has declined very fast during the plan. It may be due to the government has given the priority to other sectors and there is no more profitable production in the agricultural activities. And also implied natural factors to reduce the resources for agriculture.

It clearly indicates the government has segregated the agricultural activities such as irrigation and rural developments. These are also evident for reducing the plan expenditure during plan period. However, if the activities has diversified the total efficiency and other factors has decreased. Another reasons is that the globalization has also influenced the plan expenditure the amount has to be invested.

Conclusion

The study has found that the plan outlay resource is very crucial amount which is not fulfill our aims and objectives. The study suggest to increase the resource allocation more on agriculture sector. The crisis are rectify with the help of resource allocation during five year plans.

The Government has accorded vital importance to the agricultural sector and has tried to increase the agricultural production and productivity through the allocation more funds through the various policy measures.

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The Present Status of Agriculture Sector in India- An Overview

Introduction

Agriculture and allied sectors recorded slightly lower average growth than targeted in the Eleventh Plan period due to severe drought experienced in most parts of the country during 2009-10 and drought/ deficient rainfall in some states, namely Bihar, Jharkhand, eastern UP and West Bengal in 2010-11. However, timely and corrective measures taken by the government helped boost agricultural production and growth in agriculture and allied sectors reached 7.0 per cent in 2010-11, the highest growth rate achieved during the last six years. In 2011-12 agriculture and allied sectors are estimated to achieve a growth rate of 2.5 per cent. However a matter of great concern is the fact that agricultural growth is still, to an extent, characterized by fluctuations due to the vagaries of nature (Economic Survey 2011).

Area Coverage Of Foodgrains In 2011-12

In overall area under food grains during 2011-12 (2nd Advance Estimates) as compared to 2010-11. The area coverage under foodgrains during 2011-12 stood at 1254.92 lakh ha compared to 1267.65 lakh ha last year. The lower area under foodgrains has been due to a shortfall in the area under jowar in Maharashtra, Rajasthan and Gujarat; bajra in Maharashtra, Gujarat and Haryana; and in pulses in Maharashtra, Uttar Pradesh, Andhra Pradesh, and Rajasthan. However the area under coarse cereals and oilseeds has also come down as compared to the previous year. The area coverage under rice during 2011-12 is around 444.06 lakh ha which 15.44 lakh is more than the previous year. The area coverage under sugarcane during the current year has slightly improved to 50.81 lakh ha, higher by about 1.96 lakh hectares as compared to the previous year, and the area under cotton has increased significantly to 121.78 lakh ha as compared to 112.35 lakh ha during 2010-11.

Exports And Imports

India's trade policy on agricultural items is guided by the twin objectives of ensuring food security and building export markets for enhancing the income of farmers, depending on domestic availability. In September 2011, government has put the exports of wheat, non-basmati rice, and cotton under open general licence. India is among 15 leading exporters of agricultural products in the world. As per the International Trade Statistics 2011, published by the World Trade Organization (WTO), India's agricultural exports amounted to US $ 23.2 billion with a 1.7 per cent share of world trade in agriculture in 2010. On the other hand, India's agricultural imports amounted to US $ 17.5 billion with a 1.2 per cent share of world trade in agriculture in 2010.

Agricultural Inputs

Improvement in yield, which is key to long-term growth, depends on a host of factors including technology, use of quality seeds, fertilizers, pesticides, micronutrients, and irrigation. Each of these plays a role in determining yield level and in turn augmentation in the level of production.

Seeds

Good quality seed is one of the most important inputs for enhancing agricultural productivity and production. Efficacy of other agricultural inputs such as fertilizers, pesticides, and irrigation is largely determined by it. Seed quality is estimated to account for 20-25 per cent of productivity. It is, therefore, important that quality seeds are made available to the farmers. Since the year 2005-06, the central govern-

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ment has been implementing a central-sector scheme known as 'Development and Strengthening of Infrastructure Facilities for Production and Distribution of Quality Seeds' to address the gaps in infrastructure and to increase availability of quality seeds for different crops through various interventions. The objective of the scheme is to ensure production and multiplication of high-yielding certified/quality seeds of all crops in sufficient quantities and make them available to farmers at affordable prices. An amount of `1987.83 crore (till 15 February 2012) has been released as grants-in-aid under different components of the scheme. Although this scheme has contributed to doubling the availability of quality seeds in the last five years, it requires major changes and up gradation to meet the challenges of the rapidly evolving seed sector and ensure wider use of quality seeds.

Mechanization and Technology

Farm mechanization has immense potential for improving farm productivity. Empirical data reaffirm that availability of farm power has a direct correlation to agricultural productivity. Appropriate crop and region-specific agricultural equipment enable efficient utilization of farm inputs making farming viable and attractive. Though the country has been witnessing considerable progress in farm mechanization, its spread across the country still remains uneven. Current farm power availability hovers around 1.7 kw/ha which is much lower than that of Korea (7+ kw/ha), Japan (14+kw/ha), and the USA (6+kw/ha). It is estimated that in order to upscale farm productivity so as to grow more food given the stagnant net sown area, farm power availability must reach at least 2.0 kw/ha by the end of Twelfth Five Year Plan.

Fertilizers

India facing 80% of its urea requirement through indigenous production but is largely import dependent for meeting the requirements of potassic (K) and phosphatic (P) fertilizers. Chemical fertilizers have played a significant role in the development of the agricultural sector. Consumption of chemical fertilizers has steadily increased over the years. The Nutrient Based Subsidy (NBS) Policy for fertilizers was implemented in 2010. Under the NBS Policy, a fixed subsidy is announced on per kg basis of nutrient annually. An additional subsidy is also given to micro-nutrients.

Price Policy For Agricultural Produce

Government's price policy for agricultural produce seeks to ensure remunerative prices to growers for their produce with a view to encouraging higher investment and production and safeguarding the interests of consumers by making available food supplies at reasonable prices. To achieve this end, the government announces minimum support prices (MSPs) for major agricultural commodities each season and organizes purchase operations through the Food Corporation of India, and cooperative and other agencies designated by state governments.

The government decides on the MSPs for various agricultural commodities taking into account the recommendations of the Commission for Agricultural Costs and Prices (CACP), the views of state governments and central ministries as well as such other relevant factors which are considered important for fixation of support prices. In the year 2011-12, the MSPs of various agricultural crops have been increased as reflected in Table 9. NAFED appoints state agencies to undertake Price Support Scheme (PSS) operations. The losses, if any, incurred by the central agencies on undertaking PSS operations are reimbursed up to 15 per cent by the central government.

The government also implements the Market Intervention Scheme (MIS) for horticultural and agricultural commodities, generally perishable in nature and not covered under the PSS, thus helping farmers get remunerative prices for their produce. The MIS is contingent on the specific request of a state/union territory (UT) government which is ready to bear 50 per cent loss (25 per cent in the case of north-eastern states), if any, incurred on its implementation. However, the loss is restricted up to 25 per cent of total procurement value. Profit earned, if any, in implementing the MIS is retained by the procuring agencies.

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Major Schemes/Programmes In The Agriculture Sector

Indian agriculture, with two-third rainfed area remains vulnerable to various vagaries of monsoon, besides facing occurrence of drought and flood in many parts of the country. Natural calamities such as drought and flood occur frequently in many parts of the country. Climate change will aggravate these risks and may considerably affect food security through direct and indirect effects on crops, soils, livestock, fisheries, and pests. Building climate resilience, therefore, is critical. Potential adaptation strategies to deal with the adverse impacts of climate change are developing cultivars tolerant to heat, moisture, and salinity stresses; modifying crop management practices; improving water management; adopting new farm practices such as resource-conserving technologies; crop diversification; improving pest management; making available timely weather-based advisories; crop insurance; and harnessing the indigenous technical knowledge of farmers.

National Food Security Mission (NFSM)

The NFSM, launched in 2007, is a crop development scheme of the Government of India that aims at additional production of 10, 8, and 2 million tonnes of rice, wheat, and pulses respectively by the end of 2011-12.The scheme was approved with an outlay of 4,883 crore for the period from 2007-08 to 2011-12. A sum of about 3,381 crore has been spent till 31 March 2011. In addition, a special initiative under the name of the Accelerated Pulses Production Programme was initiated in 2010 to boost the production of pulses by active promotion of technologies in 1,000 clusters of 1,000 ha each. Through targeted interventions, the mission has already achieved, a year in advance, 25 millions tonnes of additional production of food grains exceeding the target of 20 million tonnes of production set for the terminal year 2011-12, of the Eleventh Year Plan.

Macro Management of Agriculture (MMA)

The MMA Scheme was revised in 2008 to improve its efficacy in supplementing/complementing the efforts of the states towards enhancement of agricultural production and productivity. The revised MMA scheme has formula-based allocation criteria and provides assistance in the form of grants: loan to the states/UTs on 90:10 ratio basis, except in case of the north-eastern states where the central share is 100 per cent grant. Out of the total outlay for the Eleventh Plan, i.e. 5,500 crore, funds to the tune of 3,845 crore have been utilized/released to the states/UTs during the first four years of the Plan period. An outlay of 780 crore has been approved for 2011-12, out of which an amount of 772 crore has been released to states till 21 February 2012.

Conclusion

- Effective coordination and monitoring of ongoing agriculture and allied sectors programmes need to be ensured for optimum results.
- Indian farmers are mostly small and marginal farmers with small and fragmented landholdings. The average farm size in the country has declined over the years. This poses a challenge in terms of adoption of farm mechanization as well as generating productive income from farm operation.
- Declining per capita availability of foodgrains has been a matter of major concern. For ensuring nutritional security, it is not only important to increase per capita availability of foodgrains but also to ensure that right quantities of food items are there in the food basket of the common man. A thrust on horticulture products is required for enhancing per capita availability of food items as well as ensuring nutritional security.
- priority. Public private partnership models can be of help in ensuring faster development of these requirements which are of vital importance for the growth of the agriculture sector.

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- Another area for improvement is the generation of real-time market intelligence and also agricultural market reforms. Enhancing the returns farmers get on their production is essential for incentivizing them to produce more. Farmers need to realize the market price for their produce. Setting up of efficient supply chains is essential not only for ensuring adequate supplies of essential items at reasonable prices but also so that producers get adequately compensated.
- We need to address the challenges of the agriculture sector through comprehensive and coordinated efforts directed at improving farm production and productivity of foodgrains as well as high value crops, developing rural infrastructure, renewing thrust on the irrigation sector, strengt hening marketing infrastructure, and supporting investment in R&D with due emphasis on environmental considerations. These efforts will in time rejuvenate agriculture sector and bring about inclusive growth of the economy.

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Role of Crop Diversification in Indian Agriculture

Introduction

India is a country of about one billion people. More than 70 percent of India's population lives in rural areas where the main occupation is agriculture. Indian agriculture is characterized by small farm holdings. The average farm size is only 1.57 hectares. Around 93 per cent of farmers have land holdings smaller than 4 ha and they cultivate nearly 55 percent of the arable land.

Crop diversification is intended to give a wider choice in the production of a variety of crops in a given area so as to expand production related activities on various crops and also to lesson risk. Crop diversification in India is generally viewed as a shift from traditionally grown less remunerative cops to more remunerative crops. The crop shift (diversification) also takes place due to governmental policies and thrust on some crops over a given time, for example creation of the Technology Mission on Oilseeds (TMO) to give thrust on oilseeds production as a national need for the country's requirement for less dependency on imports. Market infrastructure development and certain other price related supports also induce crop shift. Often low volume high-value crops like spices also aid in crop diversification.

Crop diversification and also the growing of large number of crops are practiced in rain fed lands to reduce the risk factor of crop failures due to drought or less rains. Crop substitution and shift are also taking place in the areas with distinct soil problems.

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Concepts

Crop Diversification

Crop diversification refers to a shift from traditionally grown less remunerative crops.

Agricultural Diversification

Agricultural diversification encompasses change in production portfolio from low- value to more remunerative and high- value commodities like fruits, vegetables Agricultural Diversification encompasses change in production portfolio, milk meat, eggs and fish that expand farm and non- farm sources of income. It not only involves production process but also new marketing and agri- business- based industrial activities that expand the income sources of rural households and stimulate the overall rural economy. Changes in the share of different commodities in the value of agriculture are used as a proxy agricultural diversification.

Objectives

The following objectives are framed and discuss in the present paper to highlight the crop diversification in Indian Agricultural

- To study the extent, nature and pace of crop diversification,
- To revealed Quality role of diversification in agricultural growth.
- To Identifying the key drivers of crop diversification,
- To examining document policy constraints in accelerating the speed of agricultural diversification.

Pattern of Agricultural Diversification

Agricultural Diversification in India is slowly pricking up momentum in favour of high-value food commodities primarily to augment income rather than the traditional concept of risk management. The nature of diversification differs across region due to existence of wide heterogencing in agro-climatic and SOWO economic environs. It was considered interesting to delineate the key region and lab-sections of agriculture where diversification was catching up fast.

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Nature Extent of Agricultural Diversification in India

India's gross domestic product (GEDP) originates from the agricultural sector and nearly 66 per cent of the total labor force are primarily engaged in agriculture. Probably India is one of the very few Asian countries with such high share of agricultural sector in GDP as well as total employment. This does not compare well with a country like Japan where agriculture contributes kindly 2 percent of GDP and employs only 6 per cent of the total labor force or a country like south Korea where the share of agriculture in total GDP and employment are only 8 percent and 23 percent respectively. In India, the percentage share of agriculture in GDP Decline from 47 per cent in 1965 to 35 per cent in 1992 and that agricultural labor force to total labor force decreased only marginally from 73 per cent in 1965 to 66 per cent in 1992. In most other countries, the pace of non- farm diversification has been much more rapid, thereby enabling the growing labour force to be absorbed outside agriculture.

Agricultural Diversification Programmed has been influenced by factors

1. It is almost mandatory that during wet season, rice will be grown in all irrigated areas, as the farmers want to be assured of meeting their rice requirements.
2. A large proportion of wet Land in irrigated areas may not be suitable for non- rice crops, unless there is land improvement or a significant technological breakthrough;
3. The availability of credit facilities for crops production partly determine the kind of crop to be planted and area allocated for the crop.
4. Availability of labor has not been a major constraint to diversification:
5. The appropriate post- harvest technology for non- rice, perishable crops, is almost lacking which constrain the growth of non- rice crops.
6. Government has restricted import of certain commodities to protect domestic producer from un fair competition from agricultural commodities subsidized by exporting countries. These include rice, Cora, sugar beet, tobacco onion, garlic potatoes, cabbage and also coffee except in case of shortages.
7. There is a favorable government policy which provides small farmers and fisherman greater areas to credit and market for agricultural diversification.
8. Agricultural diversification has so far emphasized more on food self- sufficiency and less on nutritional adequacy through fruits, vegetables and animals fats.
9. The dairy development programmed as well as the production of sugar corn and soybean in Philippines have suffered a setback due to unfair competition from developed countries which subsidies the production of these commodities.

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Role of Crop Diversification in Output growth in India

During the 1960s, the Indian economy was conformation the problem of food insecurity. Both market and technology were less developed, which were mainly responsible for low output and higher variability in the returns of both the food and non-food crops. The introduction of Green Revolution was a step towards changing the orientation of farmers, in term of the adoption of new and better technology. Also the technological mission on oilseeds in the late 1980s was an additional effort to improve the technology. In another area of the agricultural sector, both the efforts concentrated on technological development, these steps proved to be significant, not only in increasing food production in India, but also in increasing growth of output, especially during 1970s and 1980s. However, the success did not sustain longer and from mid 1990 onwards, the country started facing low growth along with near stagnation in food production the module of development in the previous decades concentrated on a few food crops and accordingly several states showed pattern towards increased specialization in a few crops. Such Development initiative or policy came under pressure, especially after the introduction of world Trade organization (WTO) in 1995 that demanded reduction in support measure subsides. At the same time a sustained economic growth, raising per capita income and growing Urbanization caused a shift in the consumption pattern in favor of high- value crops that also substantiated the role of diversification as a policy tool for development in the agricultural sector.

Conclusion

The major concern of Indian agriculture has been on increasing production of cereals, especially wheat and rice. After achieving self- sufficiency in food grains and maintaining adequate buffer stocks to meet the generic exigencies, new challenges have given rise to new thrust areas. The present thrust on the ecological and economic access to food through poverty alleviation, higher profits to farmers, sustainability of resources, import substitution, quality improvement and production for exports has led the planners to devise and implement the diversification strategies successfully.

Indian agriculture has witnesses diversification with impressive improvements in the of livestock and fisheries sector in the total income from agriculture. Within the crop sector, the diversification has largely been in favor of non- food grain crops in most the states. However, the diversification in these states has been essentially for income generation, but has also been for mitigating risk.

India enjoys a comparative advantage due to its diverse agro- eco regions in meeting the challenge posed in the liberalized regime through diversification options . However, harnessing the potential of diversification pre-supposes gradual restructuring of diversification pre supposes gradual restructuring of diversification pre- supposes gradual restructuring of diversification- hindering market institutions, infrastructure and quality standards, and credit fiscal setup into the diversification- encouraging ones.

The results show that there is a mixed picture regarding the typology of diversification within the states. Some states exhibit more diversification, in there is no direct link between the number of crops and spread in the cropping pattern. The picture for states is completely diverse. In terms of relationship of different dimensions of diversification with income and risk, and inverse and positive relationship of increasing spread of the cropping pattern with income and risk, respectively is found.

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An Analytical Study on Crisis of Agriculture Sector in India

Introduction

Indian agriculture is in crisis. Agriculture is the mainstay of Indian population and around 67 percent ofthe Indian population still depends upon agriculture and allied sector for their livelihood. Its share in GrossDomestic Product has come downfrom above 50 percent in the past to around 17 percent. While growth rate ofagriculture is around 2 percent per annum or less than that, the growth rate of income of this sector is estimatedaround 0.5 percent per annum for quite some time. The stagnation in agricultural sector for long is reflected inraising income inequality or relative poverty, passing in two phases of Indian economy. Technological andmanagerial revolution taking place in India such as information andcommunication technology, space technology,bio-technology and other forward technologies to help agricultural practices. Strategy management approachmay be adopted for post harvest agro processing and marketing of produce so that market could be widenedfrom local to national and international levels as also could fetch remunerative prices to farmers

The Govt started reducing its investement in agriculture and the industrial sectors allowing the private sector to take over. The restructuring of the public distribution system really affected the availability of food grains to the poor at subsidised rates. All such measures had implication for the form sector. After the institution of planning in India, the share of agriculture has persistently declined on account of the development of the secondary and tertiarty sector of the economy.

Agriculture provides raw materials to various industries of national importance. Three agriculture based of india- cotton textile, jute and tea-accounted for more than 50% export earning of the agriculture production of food grains in india

The Reason for Agrarian Crisis:

The principle of agriculture is that it deals with life, that is to say with living substances. Its products are the results of processes of life and its means of production is the living soil

India commands about 2.3 per cent of the world's land area and about 4 per cent of the earth's fresh water resources, but feeds 17 per cent of the world population. This puts tremendous pressure on our resources and makes the need for newer and better technologies even more critical.

The performance of the agriculture sector infulences the growth of the indian economy. Agriculture (including allied activities) accounted for 17.8 percent of the Gross Domestic product (GDP-at constant prices) in 2007-08 as compared to 21.7 per in 2003-04, Notwithstanding the fact that the share of this sector in GDP has been declining over the year., its role remains critical as it accounts for about 52 per cent of the employment in the country. Apart from being the provider of food and fodder, its importance also stems from the raw materials that it provides to industry. The prosperity of the rural economy is also closely linked to agriculture and allied activities.

The structural weakness of the agriculture sector reflect in low level of public-investment, exhaustion of the yield potential of new high yielding varieties of wheat and rice, unbalanced fertilizer use, low seeds replacement rate, an inadequate incentive system and post-harvest value addition are mainfest in the lacklustre agricultural growth during the new millennium.

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1. Slowdown in growth;
2. Widening economics disparities between irrigated and rain- fed areas;
3. Increased vulnerability to world commodity price volatility following trade liberalization. This had an adverse effect on agricultural economies of regions growing crops such as cotton and oilseeds;
4. Uneven and slow development of technology;
5. Infessicient Use Of Available Technology And Inputs
6. Lack of adequate incentives and appropriate institutions;
7. Degreadation of natural resource base;
8. Rapid and widespread decline in groundwater table, with particularly adverse impact on small and marginal farmers;
9. Increased non-agricultural demand for land and water as a result of the higher overall GDP growth and urbanization; and
10. Aggravation in social distress as a cumulative impact of the above reflected in an upsurge in farmer's suicides.
11. Diversifying into high value outputs, fruits, vegetables, flowers, herbs and spices, medicinal plants. bamboo, bio-diesel, but with adequate measures to ensure food security;
12. Promoting animal husbandry fishery;
13. Providing easy access to credit at affordable rate;
14. Improving the incentive structure and functioning of markets; and
15. Refocusing on land reforms issues. National commission on Farmers has already laid the foundation for such a framework.

Yield rate is a crucial variable that infulences the overall production of both food and non-food crops. Going by the international standard, the yield rate obtaining for food and non-food crops falls short of the standard set. It is imperative for the Government to take remedial measures to augment the productivity of all crops through dissemination of technology and provision of package, of inputs at relatively cheaper cost.

There is a yawning gap between supply of and demand for oil seeds and pulses. In order to bridge the gap focus will be on improving the yield rates and bringing additional area under irrigated conditions;

Horticultural crops are not only money spinner for the farmers but also earn foreign exchange for the Government. As urbanization and population are rising, there should be a greater pressure for bringing more area under horticulture crops and stepping up yield rate in a larger measure;

The country has many watershed programmes aiming at conserving through check dams, ponds, and artificial recharge of wells. But these schemes have suffered from a multiplicity of Departments handling them, apart from poor knowledge inputs into the programme desin and inadequate involvement of the community.

There should be proper pricing policy for water in order to save salination engendered by over drawal and sharp decline in water table.

Fixing Minimum Support Price for a crop at unreasonably high level leads to excess production by farmers who respond rationally to the artificially- fixed administered price signal. It results in low market prices and unconsumed food stocks warranting high costs of storage;

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In so far as cropping and irrigation intensities remain stagnant there is an imperative need to augment water resources in the State. Desilting operations and development of medium and minor irrigation sources with participatory approach is need of the hour. This step will also foster inland fishery as an external benefit;

Sustainability of subsidies to water, electricity and fertilizers should be examined. Extension of free power supply to the farmers leads to over – exploitation of ground water potential. People find it hard to obtain sufficient water even for drinking purposes. It underlines the need that there should be approproate Water Policy to be evolved in the State. Power subsidy to all farmers without timeframe is to be examined;

Farmers are not applying balanced quantity of fertilizers to the to the crops. Application of over-dose of nitrogen and under-dose of phosphate and potash is a common practice. Farmers should be educated in such a ways they are adopting recommended 4:2:1 ratio of NPK. Fertilizer prices should be streamlined to reduce the skewed N:P:K ratio in fertilizer consumption. Applicat on of recommended seed rate and seed replacement influences the yield rate.

Despite the fact that the Agricultural Research Stations are evolving improved strains of crops, adoption of HYV is found significant only in respect of paddy. But in the case of other crops the adoption of HYV is not considerable. The role of the extension services should be proactive so that the penetration of HYV for all crops will be deeper;

Credit delivery system must meet the farm economy challenges which require overcoming institutional bottlenecks and bootom-up planning

Improvement in productivity and profitability of small farmers would help alleviate poverty which in turn needs soil health; irrigation water supply and management;

Conculation:

For realizing ever Green Revolution new technology will enable farmers to make informed choices and undertake product planning in a demand-driven rather than supply-driven mode;

The objective of establishing Regulated markets is to attract sizeable marketable farm produce into thier folds. Contrary to this, the proportion of farm products transacted in the Regulated markets is Insignificant,

Soil testing a necessary prerequisite for crop diversification, is being done by the Department of Agriculture. However, the feedback of findings that emerged from soil testing to the farmers is being done in a perfunctory manner. Coverage of large area of land for soil testing and timely inputs to the farmers is quite essential.

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Economic Conditions of Agricultural Labour in Agrarian Crisis: A Study of Tamil Nadu

Agriculture is described as the backbone of Indian economy, mainly because of three reasons. One, agriculture constitutes largest share of country's national income though the share has declined from 55 percent in early 1950s to about 17 percent in 2010-11. Two, more than half (65 percent 61st NSSO) of India's workforce is employed in its agriculture sector. Three, growth of other sectors and overall economy depends on performance of agriculture to a considerable extent. Besides, agriculture is a source of livelihood and food security for large majority of vast population of India. Agriculture has special significance for low income, poor and vulnerable sections of rural society. Because of these reasons agriculture is at the core of socio economic development and progress of Indian society, and proper policy for agriculture sector is crucial to improve living standards and to improve welfare of masses. This paper organized as follows: The first section provided growth of agricultural workforce in Tamil Nadu. The second section provided growth of agricultural employment. Third section provided wage earning of the agricultural labour households. The fourth and fifth section provided indebtness and consumption pattern of agricultural labour and final section provided conclusions.

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(I) Growth of Agricultural Workforce

The percentage of rural main workers was 43.20 of the total rural population in 1981, and it increased in 1991 to 45.07 per cent. But the proportion of main workers has declined in 2001, which was 40.98 per cent. This is because of the increasing the proportion of marginal workers. In the case of the marginal workers the percentage continuously increased from 3.28 per cent in 1981 to 3.42 per cent in 1991 and shot up to 9.41 per cent in 2001. In gender perspective, the percentage of male main worker has increased from 29.37 per cent in 1981 to 57.92 per cent in 1991. But the number of male main workers has declined to 51.97 per cent in 2001. The percentage of female main workers was 13.84 per cent in 1981 and rose sharply to 31.97 per cent in 1991 but it declined to 30.08 per cent in 2001.

(II)Agricultural Employment

The share in agriculture and allied sector employment (usual status of employment) had declined from 49.8 per cent in 1999-2000 to 46.3 per cent in 2004-05. In contrast, the manufacturing sector share had increased from 18.3 per cent in 1999-00 to 19.6 per cent in 2004-05. In the same period, construction also increased from 5.0 per cent to 6.2 per cent and other sector like trade, hotel and transport had increased marginally. During the period 1977-78, the growth of total employment rate was 1.26 per cent. In this, the agricultural employment growth rate was 0.41 per cent and the non-agricultural employment rate was 4.03 per cent. Between 1983 to 1987-88, the agricultural employment had declined to –0.05 per cent and marginally increased to 0.84 per cent during 1987-88 and 1993-94.

The growth rate of agricultural rural employment in Tamil Nadu had declined sharply in the 1990s. The total growth of rural employment was –1.41 per cent in the period 1993-94 to 1999-00 and the agricultural and non-agricultural employment was –1.99 per cent and -0.11 per cent respectively in the same period. In Tamil Nadu, the growth of rural non-farm employment was much higher than farm employment except the period of 1993-94 to 1999-00.

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(III) Wages of Agricultural Labour

The major sources of estimating wage rate for agricultural labourers are (1) Agricultural Wages in India (AWI) published by Directorate of Economics and Statistics, Ministry of Agriculture; (2) Agricultural Labour Enquiry Reports (ALEs) and Rural Labour Enquiry Reports (RLEs) by Labour Bureau, Ministry of Labour till the publication of second RLE (Rural Labour Enquiry Report 1974); (3) the NSS (National Sample Survey) conducted three enquires on behalf of the Labour Bureau. Beginning with the third RLE (Rural Labour Enquiry Report), it has been integrated with the quinquennial employment-unemployment surveys by the NSSO.

AWI only sources provided operational wise data, such as ploughman, sowing, repair and harvest, weeding, other agricultural labour and herdsman. These entire operation wage rate reported declined in 1990s compared to 1980s for male, female and child. On the basis of RLEs, the growth of male wage rate was 8.13 in 1980s and it declined to 3.99 in 19990s. For female, it was 7.48 in 1980s and 3.52 in 1990s. Similarly on the basis of NSSO also revealed the same result, for instance, the growth rate of male wage rate was 5.6 in 1980s and 4.2 in 1990s and in the case of female was 5.7 and 3.9 in 1980s and 1990s respectively. The unambiguous conclusion from the existing sources the growth rate of real agricultural wages declined substantially during the period of 1990s and 2000s compared to 1980s.

(IV) Indebtness of Agricultural Labour

The level and intensity of indebtedness determine the availability of employment, wage rate and other sources of income of agricultural labourers. The inadequate earnings of agricultural labour households limit their ability to meet the consumption expenditure. So, the borrowings to meet the expenditures increase their indebtedness. The Rural Labour Enquiry Report (RLEPs) provides the data on indebtedness for agricultural and rural labour households. The percentage of indebtedness among agricultural and rural labour households had been declining but the average debt of rural labour and agricultural labour household had increased sharply. The indebtedness among rural labour households is lesser than the agricultural labour households.

RLERs, shows that 60 per cent of agricultural labour households and 59 per cent of rural labour households were indebted in 1963-65 and it had declined sharply to 25 per cent in 2001. At the same time the average debt per rural and agricultural labour households was Rs.251 and Rs. 244 in 1963-65 and in later periods they continuously increased to Rs.6049 and Rs.5230 in 1999-00 for rural and agricultural labour households respectively. In the case of Tamil Nadu, 70.32 per cent agricultural labour household debted for consumption purpose and 29.62 per cent of agricultural labour household debted for productive purpose. The institutional source of provided credit for only 27.91 per cent and remaining 72.09 per cent for non-institutional sources.

(V) Conclusion

The Indian evidence points to a declining contribution of agriculture to the national product co-existing with a more or less unchanged share of workers in agriculture. The proportion of cultivators declined sharply and as a result the proportion of agricultural labour increased. The days of employment dropped and simultaneously declined wage rate. As consequences, the debt of agricultural labour has augmented and consumption of calories in take turns down. It seems evident that the neo-liberal economic regime since the early 1990s has affected the rural economy in a number of adverse ways with ominous consequences for the well-being of agricultural labourers,

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Watershed Development Programme: A Solution to Indian Agricultural Crisis

Introduction

India has about 18 per cent of world's human population and 15 per cent of livestock population to be supported from only 2.47 per cent of world's geographical area and 1.5 per cent of forest and pasture land. The per capita availability of land has declined from 0.89 ha in 1951 to 0.37ha in 1991: and that of agriculture land from 0.48 ha in 1951 to 0.16 ha in 1991. India accounts for 4 per cent of the water resources of the population. India could face a massive 50 per cent water deficit by 2030, the biggest globally, says the recent report of the Water Resources Group (WRG). The study finds that water demand would add up to nearly 1.5 trillion cubic meters, more than double the 740 billion cubic meters today, driven by the demands of the growing domestic population, a large proportion of which is moving towards middle-class lifestyles. According to a study by centre for science and environment's green Rating Project (2009), the fresh water consumption will be more than triple in the next two decades and reader 18,075 million cubic meters in 2030-31 (maisnam Bobo Singh, 2010). As the water crisis manifests' itself in the form of depleting water tables and water related conflicts between states. It would require integration and adoption of multidimensional approaches that can manage demand by increasing water use efficiency in agriculture. (Archana Gupta, Yojana, 2010).

Methodology

This study is based on secondary sources, collected from various books, journals, reports, government publications, publications of the professional bodies and unpublished working papers. A simple tabular analysis and percentiles are used to analyse the data. The outcome of the analysis and findings emerged are presented in the study.

An attempt has been made in this study to analyse the performance and importance of watershed development programme in terms of allocation of funds, implantation of programmes, technical expertise, quantum and quality of works undertaken. This study also explains the beneficial impacts of watershed and its drawbacks The study has also suggested a few lines of important in order to bridge the gap between formulation and implementation of the programme.

Objectives

- To make an assessment of Watershed Development Programme in India as well as in Tamil Nadu.
- To find out the performance of Watersheds in terms of area treated and amount spent in Tamil Nadu.
- To compare the Watershed Development Programmes among IWDP and DPAP in Tamil Nadu
- To suggest possible policy options, if any, to the policy makers for the improvement of WDPs.

Watershed Management

Watershed management involves management of land, water, energy and greenery integrating all the relevant scientific approaches appropriate to socio-economic background for the development of water-

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shed. The main theme behind the watershed management is to minimize the waste of rain water, which flows into the oceans at the cost of socio – economic and ecological condition of the nations. The approaches are preventive, progressive, maximum benefit from advanced technology. An essential pre-requisite for watershed management is factual assessment of land: soil and ecological regiment of the areas, for which rapid preparation of maps on land use, physiography, land gradient hydrology, watershed nomenclature, geology, soils ground water potential by applying remote sensing techniques using aerial photographs satellite imaginary etc. are required.

In 1994, a technical committee under the Chairmanship of Professor C.H. Hanumantha Rao was appointed by the Government to appraise the impact of DPAP/DDP and suggest measures for improvement. The committee recommended a common set of operational guidelines and expenditure norms for the three programmes of Ministry of Rural Development (MoRD). Accordingly, the Guidelines for watershed development were framed and brought into force from 1st April 1995. Since then DPAP, DDP and IWDP are being implemented on watershed basis. The watershed guidelines of 1995 were revised by MoRD in 2001 to make them more focused, transparent and suitable to local requirements. The revised guidelines, 2001 provided for a greater role of Panchayat Raj Institutions Exit protocol and provision for availing the credit facility from financial institutions to ensure higher value addition to the interventions. The guidelines for these programmes were further revised with effect from 1.4.2003 and renamed as Heriyali Guidelines.

Ongoing Progress of Watershed Development Programme

Watershed development has emerged as a new paradigm for planning, development and management of land, water and biomass resources following a participatory bottom-up approach. The Government of India has been implementing watershed development programmers through different ministries Viz., Ministry of Agriculture, Ministry of Rural Development, Ministry of Environment and Forests and Ministry of Planning and Programme Implementation. The important ongoing watershed development programmes include, DPAP, DDP, River valley Project (RVP), National Watershed Development Project in Rain-fed Agriculture (NWDPRA), international programs of DANIDA,DFID(UK), GTZ, SDC, SIDA and others, State – funded watershed development programs, etc. Based on the experience, the Government of India (GOI) has recently created watershed Development fund (WDF) in collaboration with National Bank for Agricultural and Rural Development.

A technical committee constituted in 2005 by the Department of Land Resources under the chairmanship of Shri S.Parthasarathy analyzed a wide range of statistics to show that even as farming has suffered neglect. The report concludes that the productivity of dry land agriculture needs to be urgently developed if food security demands of the future years are to be met. A greater focus of watershed development programmes to increase productivity.

Watershed Development Programme in Tamilnadu

Tamilnadu is a pioneer in state in the implementation of Watershed Development Programme. Though the WDP is implemented by several agencies, DPAP and IWDP are the implemented an the state of Tamilnadu. District wise details of implementation WDP in the state of Tamilnadu is presented in Table 1.1.

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Table 1.1 DPAP & IWDP – Blocks & Watersheds in the Districts (March 2012)

(in Nos)

Sl No.	District	DPAP		IWDP		Grand Total		
		Blocks	Water-shed	Blocks	Water-shed	Blocks	Water-shed	Percentage
1	Coimbatore	5	70	6	59	11	129	6.05
2	Cuddalore	0	0	3	18	3	18	.84
3	Dharmapuri	6	94	2	49	8	143	6.70
4	Dindigul	3	50	5	60	8	110	5.15
5	Erode	0	0	5	39	5	39	1.82
6	Kancheepuram	0	0	3	20	3	20	0.93
7	Karur	2	29	3	55	5	84	3.93
8	Krishnagiri	8	126	2	31	10	157	7.36
9	Madurai	0	0	5	41	5	41	1.92
10	Namakkal	3	45	5	52	8	97	4.54
11	Perambalur	6	91	6	50	12	141	6.61
12	Pudukottai	4	57	3	46	7	103	4.83
13	Ramanathapuram	7	117	2	30	9	147	6.89
14	Salem	5	75	5	40	10	115	5.34
15	Sivagangai	7	112	4	30	11	142	6.6
16	Theni	0	0	2	20	2	20	0.93
17	Thoothukudi	8	125	4	25	12	150	7.03
18	Tirunelveli	1	16	2	29	3	45	2.11
19	Tiruvallur	0	0	4	40	4	40	1.87
20	Tiruvannamalai	1	16	4	40	5	56	2.62
21	Trichy	1	20	7	55	8	75	3.51
22	Vellore	6	83	4	32	10	115	5.39
23	Villupuram	0	0	4	29	4	29	1.36
24	Virudhunagar	7	96	6	20	13	116	5.44
	Total	80	1222	96	910	176	2132	100

Source: Tamil Nadu Watershed Development Agency – State Level Nodal Agency Report, March 2012. P.7Note: The percentage calculated by the researcher.

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From the above table it is inferred that the DPAP and IWDP programmes are under implementation in Tamil Nadu. The researcher has found that Krishnakri district receives 157 Watersheds which constitute of 7.36 per cent of the total watershed in Tamilnadu and followed by Thoothukudi has number of 150 Watersheds, constituting 7.03 per cent. The following districts in Tamilnadu namely Ramanathapuram, Dharmapuri, Sivagangai, Perambalur, Coimbatore, Viruthunagar, Salem, Vellur, Dindigul and Pudukottai have more than 100 watersheds which 6.89, 6.70, 6.66, 6.61, 6.05, 5.44, 5.39, 5.39, 5.15 and 4.83 per cent respectively.

Evaluation

A careful, unbiased, objective assessment of the WDP by the researcher shows that there is inordinate delay in the release of funds which hamper the speedy implementation of WDP. The stackholders in the implementation of WDP have to made themselves aware of the seriousness of the implementation of WDP, due to the increasing scarcity of water resources. The guidelines of the government are not strictly adhered to by the agencies involved, due to lack of coordination. Once the project period is over, the projects stands neglected. This is clear from the fact that exit protocol has not been strictly followed by the stakeholders.

Selection of work and prioritization of work need concentration so that the available resources are not wasted. The researcher has found out a moderate deviation in following the WDP guidelines. The implementing agencies, especially the NGOs' face difficulties in the implementation as a result of friction between voluntary organization and the government machinery. The involvement of local people who are the direct beneficiaries is lacking in the project area, as a result, impact of the WDP either turns out to be low or in some cases negative. An overview of the implementation of WDP suggests a moderate lack of transparency which needs to be improved in the long run. At present, the entire watershed development programmes are implemented as Integrated Watershed Management Programme (IWMP) under which a target for covering 22.65 million ha has been set for 11th five year plan. A total amount of Rs.1764.56 crores has been released during 2011-12. It has restructured the old system of policies in effective manner. In spite of its drawbacks, WDP is innovative, it helps to increase employment, income, production, productivity, fodder and livestock, changes in land use, adoption of modern technology, increase in milk production and improve the living condition of village people. The programme is being unplemented by the Government with the coordination of stackholders with people participation.

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Conclusion

Watershed has positive impact on soil, water conservation, increase in cropping pattern, increase in crop intensity and ground water recharging with effective people participation in employment opportunities. An individual can't spend his money to water conservation because of his income limited. The watershed development programme will not only ensure optimum utilization of water resources but also help faster agricultural and overall economic development in the country. And it may be taken to a major solution for agricultural crisis in India.

Suggestion

- In due recognition of the significance of Watershed Development Programme.
- The selection and implementation of work should be made in clear and effective manner.
- The meetings as per the framed guidelines should be organized of Watershed Committee, User Groups, Self Help Groups and Grama Sabha members.
- The Government may timely release the funds to the watersheds.
- The watersheds should execute the works within the period of time.

- In order to ensure transparency, boards to be placed at each worksite with the work name, estimated cost, expenditure, etc.,
- In order to realize the benefits of Watershed Development Programme their should not be deviation of guidelines framed by the Government.

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A Study on Farmer Suicides in India – Causes, Consequences and Remedies

Introduction:

Agriculture provides the principal means of livelihood for over 60% of India's population. Despite a steady decline in its share to the gross Domestic Product (GDP) agriculture remains the largest economic sector in the country. The beginning of agrarian crisis requires being located much earlier to the beginning of suicide, which goes back to the 1980s when the terms of trade were going against agriculture. Farmers, who committed suicides, were growing cash crops in dry regions such as: cotton (particularly in Maharashtra), sunflower, groundnut, and sugarcane (especially in Karnataka). Agriculture also provides for 8.56 per cent of the country's total exports. According to some economist and socialist Agriculture sector is a bone of Indian Economy therefore farmers must have some protection but lack of protection and favorable policies to agriculture, lead to suicides of farmers at large.

There is an old saying in Marathi "***Farmer takes the birth in debt and die in the same condition***". This was the position of farmers before independence and it still continue after 60 years of independence.

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Objectives of the Study

The main objectives of the study are as follows:

1. To find out if there has been an increase in the incidence of suicide, particularly farmers' suicide, in recent years in Punjab, or in any particular region of the state.
2. To identify the distinctive socio-economic characteristics of the cases of suicide. To explore both predisposing and precipitating factors that lead to suicide.
3. To suggest ways and means to reduce the incidence of suicide to the minimum possible.

Methodology

In accord with its objectives, the study was conducted in select states of India. The data have been drawn from secondary sources, such as Census of India, 1991, Newspaper reports on farmers' suicide and from websites. The period taken for the study is 1995 - 2011

Reasons For Farmers Suicides

I. Crop failure due to a variety of reasons

1. Drought
2. Lack of irrigation infrastructure
3. Decreasing procurement prices
4. Global influence on crop prices
5. Introduction of GM crops, which increases costs

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II. The economic causes

1. Growing expenditure, specially on bought inputs
2. Low productivity
3. Inadequate prices of agriculture produce
4. Difficulties in marketing and marketing hazards
5. Natural hazards caused by drought
6. Absence of proper crop planning
7. Unsatisfactory agriculture credit
8. Accumulated burden of debit

III. The Social causes

1. The drinking habit which atrophies the productivity of the farmer.
2. Extravagant expenditure on marriages
3. Bad health and illness and inability to meet the necessary expenditure on medicine and health services.
4. Rehabilitation packages e.g. Package of Central Government, Package of State Government, Lone Waiver Proposal, etc are not implementing in proper way to relief needy farmers.

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Trends Of Farmers Suicide

Table – 1 Farmer Suicide: Select States in India (1995-2010)

Year	Andhra Pradesh	Chhattisgarh	Karnataka	Kerala	Madhya Pradesh	Maharashtra	Tamilnadu	Uttar Pradesh	West Bengal
1995	1196		2490	1299	1239	1083		385	1296
1996	1706		2011	1025	1809	1981	799	646	1738
1997	1097		1832	1204	2390	1917	932	568	1539
1998	1813		1883	1514	2278	2409	1089	727	1457
1999	1974		2379	1431	2654	2423	804	845	1240
2000	1525		2630	1295	2660	3022	882	735	1377
2001	1509	1452	2505	1035	1372	3536	985	688	1246
2002	1896	1238	2340	1533	1340	3695	1455	525	1518
2003	1800	1066	2678	1583	1445	3836	1052	387	1036
2004	2666	1395	1963	903	1638	4147	1599	496	822
2005	2490	1412	1883	1118	1248	3926	1255	522	965
2006	2607	1483	1720	1124	1375	4453	426	411	1189
2007	1797	1593	2135	1232	1263	4238	484	486	1102
2008	2105	1773	1737	820	1379	3802	512	745	759
2009	2414	1802	2282	896	1395	2872	1060	656	1054
2010	2525	1126	2585	895	1237	3141	541	548	993
Total	**31120**	**14340**	**35053**	**18907**	**26722**	**50481**	**13875**	**9370**	**19331**

Source 1: *article on farmer suicides in India, Sanhati Journal, January 2012*

Source 2: *http://ncrb.nic.in/*

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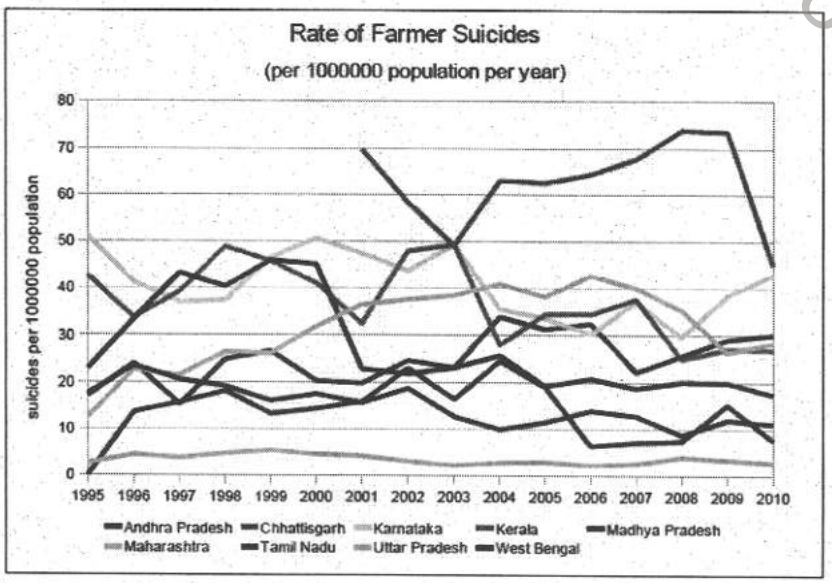
Fig 1: Rate of Farmer Suicides



The above table focuses on farmer's suicide in the nine big states. Maharashtra is known by progressive and developed state but in other side number of farmer's suicide is maximum in India because the total

number of farmer's suicides in Maharashtra is 50481, which is more than other eight states due to failure of cotton crops, severe drought and increasing debt during the period 1997-2008.

Consequences:

The government must amend laws that are governing the farmers in the Indian agricultural sector. If the government does not make any urgent recommendations or legal provisions to offer relief to the trend of farmer suicide in the affected states, the whole country will suffer the consequences. Some of these are given below:

- National disaster as farmer suicides increase every day.
- Food productivity will be hit badly.
- Food inflation will rise at an alarming rate and Severe food crisis.
- The intensity of unemployment problem will be increase.
- Family problems, Social problems, Physiological problems.

Prevention or Remedial Measures to Reduce Farmers Suicide

1. Government should give subsidized inputs to the farmers.
2. Commodity prices should be stabilized.
3. Minimum Statutory Prices (MSR) should be extended to all crops.
4. The marginal farmers should give exemptions in repayment of debt.
5. Marketing cost should be reduced.
6. Counsel the media to stop highlighting suicide since the fact of highlighting suicide itself adds fuel to the suicide fire as it were.
7. Provide direct cash subsidies to actual cultivators.
8. The irrigation facilities should be extended to non-irrigated areas.
9. Necessary amendments may be brought to the existing Land Reforms Act.

Government Measures

For upliftment of the farmers there is need for a joint initiative by State Government, Central Government and Financial Institutions. There is need of,

1. Timely and adequate support by way of credit to farmers with focusing small and marginal farmers to have them modern equipment for improved agricultural productivity.
2. To form the SHGs of Tenant farmers/ share croppers & agricultural workers and give them micro-credit through banks.
3. Encourage the farmers to adopt allied activities like dairy, fishery, poultry etc. with farming activities.
4. Diversification/crop rotation in agricultural production in changed scenario.
5. Adoption of upgraded technology inputs alongwith provision of infrastructure inputs like power at subsidized cost, supply of inputs like seeds, fertilizers, tractors and credit provision through all nationalized banks.

If these facilities are given to farmers they may achieve self-sufficiency in agricultural production. There is need for major review of agricultural policy to meet the changing needs of both producers and consumers

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Conclusion

"Give man a fish, he will eat for a day but, teach him how to catch fish, he will eat for the rest of his life", so goes the popular saying, the case of our Indian farmers is similar to this, what they need is a means to sustain throughout their lives. If India is to shine, the farmers needs to be empowered.

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Impact of Climate Change on Agriculture Sector in India

Introduction

India has a record of sorts. It is the second most populous and seventh largest country in the world. Both India and India's population are vulnerable to the impact of climate change such as changes in forest and water resources and sea level rise. Growing population, rapid industrialization and urbanization coupled with climate change will create additional pressures on India's overall ecology and socio – economic system.

India being a large country with a diverse climate, diverse seasons, diverse crops and farming systems, there is high dependency of agriculture on the monsoon rains and a close link exists between climate and water resources. Two – third of the area is rain dependent. The small land holdings, poor coping mechanisms and low penetration of risk management products only aggravate the problem.

Climate Change –What it means

Climate in a narrow sense can be defined as average weather or more rigorously, as the statistical description in terms of mean and variability of relevant quantities of weather parameters over a period of time ranging from months to thousands or millions of years. These parameters are most often surface variables such as temperature, precipitation and wind.

Before analyzing the impact of climate change on agriculture it is imperative to study the importance of agriculture in India.

Impact of Climate Change on Agriculture – Some major predictions and projections

Several studies on the impact of climate changes how the following projections:-

- The agriculture sector represents 35% of India's Gross National Product (GNP) and as such development.
- Sixty-eight percent of agriculture in India is rain-fed, and depends heavily on the quantity and distribution of rainfall. Predicted effects shows that wheat production will be affected if the effects of climate change are 'pessimistic'
- Nearly 80 million hectares, out of the country's net sown area of around 143 million hectares, lack irrigation facilities and, hence, rely wholly on rain water for crop growth.
- Over 85 per cent of the pulses and coarse cereals, more than 75 per cent of the oilseeds and nearly 65 per cent of cotton are produced from such lands. The crop yields are quiet low.
- According to Inter governmental panel on climate change the estimations show that crop production loss in India by 2100 AD could be 10 – 40%. On account of which India could lose 1 – 5 million tonnes of wheat. Dynamics of pests and diseases will be significantly altered.

A paper presented by Department of Economics, MIT, estimated the effect of variation in weather on agricultural output reduces major crop yield by 4.5% to 9% in the short run and in the long run it reduces by 25 percent or more over a period 2010 – 2039. The paper estimates the economic impact of climate change on Indian agriculture.

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Global warming could increase water, shelter, and energy requirement of livestock for meeting projected milk demands. Climate change is likely to aggravate the heat stress in dairy animals, adversely affecting their productive and reproductive performance. A preliminary estimate indicates that global warming is likely to lead to a loss of 1.6 million tones in milk production in India by 2020.

Increasing sea and river water temperature is likely to affect fish breeding, migration, and harvests. A rise in temperature as small as 1°C could have important and rapid effects on the mortality of fish and their geographical distributions. Corals in Indian Ocean will be soon exposed to summer temperatures that will exceed the thermal thresholds observed over the last 20 years. Annual bleaching of corals will become almost a certainty from 2050.

The Intergovernmental Panel on Climate Change, in its 2007 report, predicts that temperatures will rise by 2.7- 4.3°C over India by the 2080s. The panel also predicated an increase in rainfall over the Indian sub-continent by 6-8 percent and that the sea level would rise by 88 centimeters by 2100.

An annual mean surface temperature rise by the end of this century, ranging from 3°C to 5°C (under A2 IPCC scenario) and 2.5°C to 4°C (under B2 IPCC scenario), with the warming more pronounced in the northern parts of India. Extreme rise in maximum and minimum temperatures is also expected and similarly extreme precipitation is also projected, particularly over the West Coast of India and West Central India.

Observations over India made in 2002 show that the mean annual surface air temperature has increased by 0.4-0.6°C in the last 100 years. It is projected that on an average there will be a 20 per cent rise in all India summer monsoon rainfall over all states except Punjab and Rajasthan in the North West and Tamil Nadu in the South, which show a slight decrease.

Using the climate model, studies have projected that there will be an overall decrease in the number of rainy days over major parts of India. This decrease may be more pronounced in the western and central parts of India (by more than 15 days) while near foothills of Himalayas (Uttaranchal) and in northeast India the number of rainy days may increase by 5-10 days

With changing climate, the phenomenon of dew precipitation is gradually diminishing northern rain fed regions consequently the crops are subjected to more dry weather and high evapotranspiration. Therefore, the area under pulses is progressively shifting towards central and south India.

About two – third of the sown area in India is drought prone and around 40 million hectares is flood – prone. The intensity and frequency of rainfall is likely to increase flooding, while hotter temperatures create more droughts resulting in higher energy and water use.

Government from the North Indian Ocean shows that sea level rise has been between 1.06 – 1.75mm per year over the last 40 years.

- 10 – 40% loss in crop production in India by 2080 – 2100
- Loss of 4 – 5 million tons in wheat production with every rise of 1°C temperature throughout the growing year.
- 2 – 4°C temperature rise to decrease rice yields by 0.75tonnes/hac.
- Temperature rise is bad for maize and sorghum yields, but could be offset by more rains if there will be increase in 2oC in temperature would reduce yield even with doubling of rainfall.
- Sugarcane yields to decline by as much as 30%
- In arid regions of Andhra Pradesh, yields of all major crops – ice, groundnut, jowar are expected to decline.
- Increased heat will reduce milk production of dairy animals by 10 – 25%.

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A major impact of climate change will not only be erratic rainfall and shifting rainfall patterns, but also acute alter stress in the dry season. The projected water stress is particularly troubling given the high degree of water scarcity the country currently faces with receding groundwater levels in all major agriculture areas.

India is most vulnerable to climate change. Under the vagary of extreme temperature and a heat wave the surface air temperature is rising alarmingly at a rate of 0.4°C per century. The most worrying part of prediction is the estimated increase in the winter and summer temperature by 3.2°C and 2.2°C respectively by 2050.

Steps to minimize impact of climate change

Despite technological advances, such as improved varieties, genetically modified organisms and irrigation systems, weather is still a key factor in agricultural productivity.

It is however possible for farmers and other stakeholders to adapt to a limited extent and reduce the losses. Simple adaptations such as change in planting dates and crop varieties could help in reducing impacts of climate change to some extent.

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Water crisis of Agriculture in Tamilnadu

"There will be constant competition over water, between farming families and urban dwellers, environmental conservationists and industrialists, minorities living off natural resources and entrepreneurs seeking to commodify the resources base for commercial gain"

-UNICEF report on Indian water.

Introduction

The crisis of water in Tamil Nadu

Similar to the experience in many other states during the initial periods of the 1970s, a virtual water revolution was ushered in through the introduction of hand pumps in different parts of the states. The ubiquitous hand pumps became the symbol of provision of protected water supply. However with the advent of pumped out, piped water supply, a major change swept both the water providers as also local communities. Slowly, yet strongly, the emphasis shifted from introducing hand pumps to introducing powered pumps. The bore pumps and the overhead tanks (OHTs) now replaced the former hand pumps, as symbols of water service and delivery. Both communities and engineers embraced the technology centered, investment-heavy piped water systems as the panacea for water supply problems. It is significant to note that in terms of distribution, 64.8% of water supply schemes rely on piped water supply and only 18.4% on hand pumps according to the National Family Health Survey of 1998-99. In the rural areas of Tamil Nadu, deep bore wells constituted 77% and shallow bore wells 11%. In other words 88% of all sources of water supply relied on bore wells for water. In Tamil Nadu, 96% of all sources of water are groundwater based. The phenomenal spurt of piped water schemes across the state in the eighties and nineties had its eventual impact on ground water tables. Out of the 385 water 'blocks' in the state, 138 were identified as over-exploited, 37 as at critical levels, 105 as semi-critical and 8 as saline. Only 97 blocks were identified as safe. Meanwhile, of the total 81,587 rural habitations in the state, about 27% are affected by quality. Of these affected habitations, about 25% do not have safe sources. Overall, a challenging scenario presented itself to all those concerned about and involved with water at the start of the new millennium. Despite occasional good monsoons, the first five years of the new millennium witnessed the cumulative impact of years of poor rainfall in Tamil Nadu. Near drought conditions did little to help recharge already precarious ground water tables, as data in the earlier part of this approach paper shows. Unregulated mining of water and un-coordinated use for irrigation and industry only highlighted the deleterious effect of the absence of a rational and integrated water policy framework. Technocratic approaches of the agencies providing water did not lend themselves adequately to stakeholder inclusive methods and lacked capabilities to enhance peoples' participation. Absence of a sense of ownership and alienation from meaningful association led to a lack of involvement of the users and stakeholders water management and reluctance to participate in ensuring sustainable drinking water use practices. Coupled with an outdated approach and complaints of inefficient service delivery, the water crisis presented itself as a complex multidimensional problem calling for inputs from a variety of disciplines, perspectives and experiences.

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Agricultural Water Management:

It is understood that agricultural sector consumes about 85 percent total water available in Tamil Nadu. High water requirement crops like rice (1200 mm), Sugarcane (2000 mm) and Banana (2000 mm) are largely grown in Tamil Nadu from canal irrigated area, tank irrigated areas and well irrigated area. The need of the hour is to change the cropping pattern from high water requirement crop to low water require-

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ment crops., the return per unit of water (Rs/m^3 water) was above one for rice in all the districts of Tamil Nadu except Pudukottai, Ramnad, Virdhunagar, Sivaganga and Tirunelveli districts. Among the districts where more than one was recorded, the highest return per unit of water (Rs/M^3 of water) was more with Trichirapalli district (1.55) followed by Erode (1.51) and Coimbatore (1.48). This indicated that rice must be encouraged where it is gives higher yield with less water input. Hence there is an urgent need to delineate rice efficient cropping zone in Tamil Nadu and Government encouragement may be given to the farmers where the efficient cropping zone lies. In the non-efficient zone area farmers may be discouraged to grow rice and alternatively some other efficient crops may be introduced in the existing cropping pattern. If we examine the productivity of different crops per unit of water in Tamil nadu, though sugarcane and banana give 2.9 and 6.5 rupees per M^3 of water used respectively, their water requirement was on the higher side (2000 mm each). However, the other crops like pearl millet, finger millet, groundnut and onion give a return of Rs. 2.2, 2.6, 4.2 and 9.4 respectively with a total water requirement of 450 mm, 500 mm, 450 mm and 400 mm. At the time of water crisis it is wise to switch over to these crops against raising sugarcane, banana and rice to a possible extent.

In addition to have sound alternate cropping pattern which requires lesser water all water saving techniques so far recommended by Tamil Nadu Agricultural University for various crops must be popularized with the farmers. This includes drip irrigation sprinkler irrigation, surge irrigation alternate furrow irrigation etc.

Further in dry lands of Tamil Nadu (45% of cultivable area) all the water received from rainfall must be conserved in the soil profile through in situ moisture conservation practices and collection in farm ponds and recycling. For this purpose watershed approach may be meticulously followed with most efficient monitoring.

Home sted water management:

Water management at the household is also very important similar to field water management. The following areas are suggested.

i. Harvesting rain water at home

ii. Minimising water requirement at home

Harvesting rain water at home:

The Government of Tamil Nadu has taken right direction in this regard and provision of rain water harvesting structures in all houses has been completed during August 2003.

Minimizing water requirement at house:

- The water requirement per man may be reduced to 42 litres/day (Drinking 2 litres, bathing 20 litres washing clothes and toilets use 20 litres). This can be exercised till water situation in Tamil Nadu get improved.
- Replacing wornout pipes and taps and closing the leakages in all the water pipes.
- Clean the cars and two wheelers with wetted cloth.
- Practicing irrigation to home garden in the evening hours rather than in the morning.
- Using shower for bath rather than water from the buckets.
- Using washing machine with full load once in a week.
- Reusing the used water for cloth washing to clean the houses and toilets.
- Reducing the flushout tank capacity from 10 litres to 5 litres in the toilets.
- When drawing water from pipes to containers, close the pipe when ¾th container is filled up so as to avoid over flow.

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Conclusion:

Though there is no loss to water as per hydrological cycle, its availability is becoming scarce across the world including Tamil Nadu. Water use must be minimized both in agriculture and also in home. There may be some ecological imbalance temporarily, but it will get vanished at longer run.

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Impact of Real Estate Business on Agriculture Sector in Karur District

Introdution

Agriculture has always been the backbone of the Indian economy. Agriculture sector contributes a significant share in GDP. Agriculture sector dominates the economy in the provision of employment opportunities. Indian agriculture plays an important role in the field of international trade.

Due to industrialization, Liberalization, Privatization, Globalization, non – remunerative agricultural price policy, unfavorable climatic condition, erratic monsoon, shortage of rainfall and the emergence of real estate business, agricultural sector face severe problems. The production, productivity and area under agricultural operation are subject to drastic change. Indian real estate sector ensures the high returns to its investors who immensely invest in it. Foreign investors are showing great interest in buying agricultural land which assists them to set up their business firmly in India. At present time real estate sector is touching its heights.

Research Problem

India is a developing economy. The economic stagnation and vicious circle of poverty are slowly and steadily giving place to rapid economic activity and higher levels of income. India ranks second world wide in farm output. Yields per unit area of all crops have grown since 1950 due to the special emphasis placed on agriculture in the five year plans and steady improvements in irrigation, technology, application of modern agricultural credit and subsidies since the Green Revolution in India. But, several studies shows that today, Indian agriculture is facing severe problem from different angles. The Government both centre and state are unable to prevent those problems which ruin the growth of agricultural sector. Special mention should be given to the emergence of real estate business which drastically reduce the area under agricultural operation.

In this context the present paper on the "**Impact of real estate business on agriculture sector in Archampatti village, Karur District**" aims to analyse the following **objectives**:

- To know the trend in area under agricultural operation.
- To findout the factors hindering the growth of agriculture sector.
- To know the impact of real estate business on agricultural operation.
- To assess the problems faced by the existing agriculturists

Methodology

Both primary and secondary are employed to know the impact of real estate business on agricultural operation in the Archampatti village of Karur District. Primary data are collected from the agriculturists. Secondary data are collected from the official records of the Village Panchayat Office, Department of Statistics, Department of Agriculture and from reputed books and journals.

Area of the Study

The area of the study is Archampatti village, which is situated in Karur District. It is 18kms away from chatram bus stand. The total population in this village is 2295 out of which 1191 are males and 1104 are females (2011 census)

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Real Estate Business

The Indian real estate market is still in its infancy, largely unorganised and dominated by a large number of small players, with very few corporates or large players having national presence. The Indian real estate market, as compared to the other more developed Asian and Western markets is characterised by smaller size, lower availability of good quality space and higher prices.

There is a thriving parallel economy in real estate, involving large amounts of undeclared transactions, mainly due to high stamp duty rated. The current legislative framework also leads to substantial losses to the Government.

In India over 100 laws are governing various aspects of real estate dates back to the 19th century. Despite the plethora of laws, the situation appears to be far from satisfactory and major amendments to existing laws are required to make them relevant to modern day requirements.

Table No. 1

Gross Domestic Product: Real Estate

Years	GDP Growth Rate
2001 – 2002	7.98
2002 – 2003	5.58
2003 – 2004	8.69
2004 – 2005	11.41
2005 – 2006	13.92
2006 – 2007	11.79
2007 – 2008	11.7
2008 – 2009	9.5
2009 – 2010	9.1
2010 – 2011	10.6

Source: Central Statistical Organisation

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This table shows that the growth of real estate GDP has been grown from 5.58 in 2002 – 03 to13.92 in 2005 – 06. Thus the real estate business registered a mixed trend after the year 2005 – 06. Now it has been turned into good sign. It can be accelerated through the Government policy like the amount fixation of the property registration by means of legislative modification for the real estate sector. The investors in the real estate business may keep their investment for an eight year cycle period. The first half of the cycle is advisable to sell the real property, and second half of the cycle is advisable to purchase the property.

Real estate business is enhanced by the home loan growth. Studies show that lower real estate show that lower real estate prices coupled with special interest rate schemes announced by the banks – nationalised and private sector banks, higher salary payouts of the employees of government and MNCs accelerates the growth of real estate sector. The banking policy of the RBI has its impact on both the real estate developers and consumers.

Real estate business is considered to be the most profitable venture in metropolitan cities. Now it spreads to other places at a fast rate. The real estate groups in India are having their projects at Delhi NCR, Kolkata, Chennai, Mumbai, Bengaluru, Gurgaon, Ghaziabad, Faridabad, Pune, Hyderabad, Bhopal, Bhubeneswar, Jaipur, Lucknow, Goa, Chandigarh etc

Impact of real estate business on agriculture sector in Archampatti village, Karur District, area under agricultural operation registered a declining trend in the area of study. The total area in this village 713.480 hectares. It was composed of 550.855 acres of irrigated land, 85.9 acres of non – cultivated land 76.64 acres of waste land. This is shown in the following table.

Table No. 2

Total Area Under Cultivation Before And After 2010

Items	Area in acres before 2010	Area in acres after 2010
Cultivated land	550.855	455.855
Non – Cultivated land	85.980	25.980
Waste land	76.645	69.645

Source: Primary Data

Due to the real estate developers namely Thamarai Township, Ramachandra Township and Rich India Developers, 95 acres of cultivated land 60 acres of non – cultivated land and 7 acres of waste land are converted into plots (1200 sq) for sale.

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Table No. 3

Factors Hindering Agricultural Operation

S.No.	Factors	Percentage of Respondents
1	Water shortage	72
2	Liking towards 100 days work	48
3	Unstable agricultural price foodcrops and vegetables	60
4	Uneconomic holding	55
5	Attractive price given by the developers	70

Source: Primary Data

The above table shows that more than 70% of the respondents expressed the view that water shortage is the main hindering factor in undertaking the agricultural operations followed by more than 65% expressed that the developers are offering attractive prices for their land which prevents them doing agricultural operations.

Conclusion

To overcome the problem of food security the agricultural production, productivity should be enhanced. In this context the emergence of real estate business and the tremendous rate of growth of this sector and its impact on agricultural operation need to be studied by the government, economists and socialogists.

Converting the fertile agricultural lands into housing accommodation and commercial undertakings will be resulting in adverse socio economic and cultural impact. Government authorities should come forward in rectifying the evil impact of real estate business on agricultural sector.

Agricultural Crisis In India

Introduction

India is an agrarian country where in over 70% of the population still live in rural areas. Agriculture is the chief employer for 60% of the labour force. Agriculture has a key role in the socio-economic growth of the country. Our country ranks first in the production of several agricultural outputs, in terms of rice production India holds the second position after china and 10% of the world's fruits production is from India.

Agriculture is the backbone of our country, Development, prosperity and stability of agriculture depend more on the efficient management of soil and water systems. In India 182.7 million hectares of land used for cultivation, but only 62 million hectares is currently irrigated, the rest depend entirely on monsoon rains. Agricultural sector alone currently uses about 90% of total water resources.

Agriculture has been fundamental to economic development but due to depletion of ground water only 80% of its irrigation draws from ground water. Today, water scarcity becomes a bigger and bigger problem. The productivity of agriculture sector mainly depends on water. But at present, due to rapid population, pollution, salivation, climate change, the rainfall in our country as well as at the global level has reduced. This severely affects the production of agriculture. In India, the per capita availability of cultivated land has also gradually diminished from 0.48 hectare in 1951 to 0.20 hectare in 1981 and further down to 0.15 hectare in 2001. This is because of the diversion of land from agriculture to non-agriculture purpose which affects the production of agricultural commodities. The demand for agricultural commodities is ever increasing due to population but the supply is not as much as increasing .This creates rise in price of agricultural commodities.

In this context the present study on **"Agriculture crisis in India"** aims

1. To find out the area affected by Drought .
2. To find out the availability of water resources.
3. To analyse the production of foodgrains.
4. To study the rise in price of Agricultural commodities.
5. To find out the contribution of agricultural sectors in GDP.

Methodology

The present study on "Agriculture crisis in India" is mainly based on secondary data which have been collected from reputed Journals, Books, Reports and Web engines.

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Table -1

Area Affected Due To Drought

State	Total Geographical Area (in hectares)	Geographical Area affected by drought	Percentage
Tamil Nadu	13007000	8327619	64
Orissa	19598000	1209161	62
Rajasthan	3422200	21408000	63
Karnataka	1917600	15240095	79
India	**328778000**	**106839069**	**32.5**

Source: Secondary data

The above table shows that the some of the area affected by drought . Drought affect the productivity of agricultural commodities due to insufficient ground water, poor infrastructure, poor irrigation, shortage of rainfall . In India 32.5% of area is affected by drought.

In India agriculture promotes economic development of the country. The development of agriculture mainly depends upon the rainfall. Due to unequal distribution of rainfall our country receives a total annual rainfall of 400 km^3 with a variation of 100 mm per annum. The water resources of the country which occur as natural run-off in the rivers are estimated to be 18,697 km^3 considering both ground water and surface water contributions. The following table explains the percapita water availability in India.

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Table-2

Season –Wise Area, Production And Yield Of Foodgrains In India

A-Area in Million Hectare

P-Production in Million Tonnes

Y- Yield in Kg/Hectare

Year	Kharif			Rabi			Total		
	A	P	Y	A	P	Y	A	P	Y
2008-09	71.43	118.14	1654	51.40	116.33	2263	122.83	234.47	1909
2009-10	69.49	103.95	1496	51.84	114.15	2202	121.33	218.10	1798
2010-11	72.12	120.20	1667	53.61	121.36	2264	125.73	241.56	1921
2011-12	70.49	123.88	1757	-	-	-	-	-	-

Source: Secondary data

The table -2 shows that area of the cultivation has declined during Kharif season from 71.43M.H in 2008-09 to 70.49 in 2011-12. In Rabi season, cultivation area,production and yield also increased.

Findings

a. Climate change affects the rainfall concentration. The magnitude of annual rainfall has declined significantly. The percapita availability of water also reduced due to population.

b. Unequal rain fall affects the crop production.

c. Profitability rate in Indian Agriculture is started falling.

d. The per capita availability of cultivated land has gradually diminished.

e. The area under cultivation has reduced which affects the production of food grains .

f. The contribution of agriculture sector in GDP has gradually decreased.

g. There has been drastic increment in food prices due to imbalance between growth in domestic production and consumption.

Suggestions

- Water management practices should be changed .
- Steps can be taken to encourage the farmers for improving the productivity.
- Government should provide agricultural implements at a subsidized prices frequently.

Conclusion

Agriculture in India is undergoing a structural change leading to a crisis situation. The rate of growth of agricultural output is gradually declining in the recent years. The relative contribution of agriculture to the GDP has also been declining over time steadily .The trends in the Area, Production and yield of food grains also declining indicates that the slowing down process of agriculture in India. It is due to change in climate, liberal import of agricultural products, conversion of agricultural land to non agricultural purpose, etc.,. Crisis in agriculture sector would be affecting other sector and also millions of people in India. So Government should take immediate step to prevent the consequences of agriculture crisis by increasing its investment expenditure on farm sector and attract the farmers to continue the crop production in large scale.

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A Study on Agricultural Production and Productivity in India From 1955 To 2011

"Agriculture is the backbone of the Indian Economy" - Mahatma Gandhi

Introduction

India is an agricultural country. The Indian economy is basically agrarian. "India lives in villages and agriculture is the soul of Indian economy". Nearly two-third of its population depends directly on agriculture for its livelihood. Agriculture is the main stay of India's economy. It contributes about 26 percent of the gross domestic product. The net sown area in India today is about 143 million hectares. India has the highest percentage of land under cultivation in the world. In spite of the fact that large areas in India, after independence, have been brought under irrigation, only one-third of the cropped area is actually irrigated. The productivity of agriculture is very low. Farming depends mainly upon monsoon rain. Most of the production comprises food crops. About one-third of the land holdings are small, less than one hectare in size. Farmers own their own small pieces of land and grow crops primarily for consumption. Even storage facilities for crops are inadequate. Now use of pesticides and fertilizers has increased and large areas have been brought under high yielding variety of seeds. This led to green revolution in several parts of India. This has helped in increasing yields per hectare as well as total production of different crops.

The productivity of the land has increased through the years, but has not reached international productivity levels. Indian agriculture has diversified into various sectors and contributes significantly to the nation's economy. But this situation is not likely to remain so easy in the years to come. The population of India is likely to be around 1300 million. This would require a huge amount of food grains along with non-food grains. India has to use its vast potential of agriculture in a systematic and planned manner. We have to develop some of the techniques which the developed countries have been using.

Agriculture meets food requirements of the people and produces several raw materials for industries. India ranks second worldwide in farm output. Agriculture and allied sectors like forestry and fisheries accounted for 16.6% of the GDP in 2009. Even while India's industrial and services sectors are growing by leaps and bounds and where growth rate of agriculture as below 2%. Even industrial and services sectors are invariably entangled with the fortunes of agriculture due to various intricate forward and backward linkages.

Objective of the Study

The present study has been undertaken to conduct an analysis of the performance of agricultural sector of Indian economy since 1950's

Thus the objectives of the study can be enumerated as follows:

- To analyse the agricultural production of foodgrains and commercial crops
- To evaluate the area of cultivation of foodgrains and commercial crops in India
- To study the yield per hectare of foodgrains and major commercial crops
- To find out the foodgrains production, total area and yield of Indian agriculture 2001 to 2012
- To assess the growth of GDP, agriculture, industry and services of India

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Methodology

Nature and Source of Data

The present study is of analytical nature and makes use of secondary data. The relevant secondary data are collected from various publications of government of India, Ministry of Agriculture, Economic Survey 2011–12 and Planning Commission Report etc. The study is analyzing the data from 1955 – 2011.

Table – 1

Trend In Food Grain Production In India (1995-2012)

(Million tonnes)

Year	Cereals				Pulses	Total Food Grains (5+6)
	Rice	Wheat	Coarse cereals	Total (2 to 4)		
1	2	3	4	5	6	7
1955-56	27.56	8.76	19.49	55.81	11.04	66.85
1960-61	34.58	11.00	23.74	69.32	12.70	82.02
1965-66	30.59	10.40	21.42	62.41	9.94	72.35
1970-71	42.22	23.83	30.55	96.60	11.82	108.42
1975-76	48.74	28.84	30.41	107.99	13.04	121.03
1980-81	53.63	36.31	29.02	118.96	10.63	129.59
1985-86	63.83	47.05	26.20	137.08	13.36	150.44
1990-91	74.29	55.14	32.70	162.13	14.26	176.39
1995-96	76.98	62.10	29.03	168.11	12.31	180.42
2000-01	84.98	69.68	31.08	185.74	11.07	196.81
2001-02	93.34	72.77	33.37	199.48	13.37	212.85
2002-03	71.82	65.76	26.07	163.65	11.13	174.78
2003-04	88.53	72.15	37.60	198.28	14.91	213.19
2004-05	83.13	68.64	33.46	185.23	13.13	198.36
2005-06	91.79	69.35	34.06	195.20	13.39	208.59
2006-07	93.35	75.81	33.92	203.08	14.20	217.28
2007-08	96.69	78.57	40.76	216.02	14.76	230.78
2008-09	99.18	80.68	40.03	219.90	14.57	234.47
2009-10	89.09	80.80	33.55	203.45	14.66	218.11
2010-11	95.32	85.93	43.68	226.53	18.24	244.78
2011-12	104.32	93.90	42.01	240.23	17.21	257.44

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Source: Ministry of Agriculture, Government of India.

The above table 1 gives the total foodgrains Production of India since 1955-56. The total foodgrains production was just 66.85 of million tonnes in 1955-56 and invested to 257.44 Million tonnes in 2011-12. Four time increase has been registered in foodgrains growth during this period. Though all the foodgrains production are showing significant growth, two things should be highlighted. Production trend of cereals and pulses are not that much satisfactory. Again rice production is not as significant as registered by wheat production. The rate of increase of total food grains production has been declining from the post reform periods, i.e (from 1991's). This shows the new economic policies totally ignored the agricultural production especially food grains. This data also reveals that during 2010-2011, there is a greater investment in production of both cereals and pulses than the previous years.

Table – 2

Trends In Production Of Major Commercial Crops In India

Year	Oilseeds				Coffee	Cotton (Lint)	Raw Jute & Mesta	Sugar cane	Tea	Tobacco
	Ground nut	Rape seed & Mustard	Soya bean	Total						
1	2	3	4	5	6	7	8	9	10	11
1955-56	3.86	0.86	-	5.73	-	4.18	5.39	60.54	-	0.30
1960-61	4.81	1.35	-	6.98	-	5.60	5.26	110.00	-	0.31
1965-66	4.26	1.30	-	6.40	-	4.85	5.78	123.99	-	0.29
1970-71	6.11	1.98	0.01	9.63	110.23	4.76	6.19	126.37	419.00	0.36
1975-76	6.76	1.94	0.09	10.61	83.98	5.95	5.91	140.60	487.00	0.35
1980-81	5.01	2.30	0.44	9.37	118.65	7.01	8.16	154.25	569.60	0.48
1985-86	5.12	2.68	1.02	10.83	122.45	8.73	12.65	170.65	656.20	0.44
1990-91	7.51	5.23	2.60	18.61	169.73	9.84	9.23	241.05	720.34	0.56
1995-96	7.58	6.00	5.10	22.11	223.00	12.86	8.81	281.10	756.02	0.54
2000-01	6.41	4.19	5.28	18.44	301.20	9.52	10.56	295.96	848.43	0.34
2001-02	7.03	5.08	5.96	20.66	300.60	10.00	11.68	297.21	851.41	0.55
2002-03	4.12	3.88	4.66	14.84	275.30	8.62	11.28	287.38	845.97	0.49
2003-04	8.13	6.29	7.82	25.19	270.50	13.73	11.17	233.86	878.65	0.55
2004-05	6.77	7.59	6.88	24.35	275.50	16.43	10.27	237.09	906.84	0.55
2005-06	7.99	8.13	8.27	27.98	274.00	18.50	10.84	281.17	948.94	0.55
2006-07	4.86	7.44	8.85	24.29	288.00	22.63	11.27	355.52	973.07	0.52
2007-08	9.18	5.83	10.97	29.76	262.00	25.88	11.21	348.19	987.02	0.49
2008-09	7.17	7.20	9.91	27.72	262.30	22.28	10.37	285.03	972.77	0.62
2009-10	5.43	6.61	9.97	24.88	289.60	24.23	11.82	292.30	991.18	0.69
2010-11	7.54	8.18	12.74	32.48	302.00	33.43	10.62	342.38	966.73	-
2011-12	6.93	6.78	12.28	30.01	314.00	35.20	11.57	357.67	978.96	-

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Source: Ministry of Agriculture, Government of India.

The table 2 displays production trend of major commercial crops. Total oilseeds production has increased from just 5.73 million tones in 1955-56 to 30 million tones in 2011- 2012. This table shows the significant increase in the production of sugarcane, tea, coffee and cotton. In the earlier stages, the level of production of sugarcane was around 60 million tones, which are increased to 357.67 million tones. At the same time, the tea production has increased to 978.96 million tones in 2011-12 from 419.00 million tones in 1970-71. There is no significant development in the production of oil seeds. The total production of oil seeds were 5.73 in 1955-56 and it has increased to 30.01 in 2011-2012. The major oilseed that is groundnut production trend is not encouraging. It is even slowly a declining trend after it registered the maximum of 9.18 million tones in 2007-08. Among the other commercial crops raw jute and Mesta production is not encouraging.

India has shown remarkable progress in recent years and has attained self sufficiency in food staples; the productivity of Indian farms for the same crop is very low compared to farms in Brazil, the United States, France and other nations. Indian wheat farms, for example, produce about a third of wheat per hectare per year in contrast with wheat farms in France. Similarly, at 44 million hectares, India had the

largest farm area under rice production in 2009. Yet, the rice farm productivity in India was less than half the rice farm productivity in China. Other food staples productivity in India is similarly low, suggesting a major opportunity for growth and future agricultural prosperity potential in India. Indian total factor productivity growth remains below 2 percent per annum; in contrast, China has shown total factor productivity growths of about 6 percent per annum, even though China too has smallholding farmers.

Table – 3

Yield Per Hectare – Foodgrains

Year	Cereals				Pulses	Total Food Grains (5+6)
	Rice	Wheat	Coarse cereals	Total (2 to 4)		
1	2	3	4	5	6	7
1955-56	874	708	449	639	476	605
1960-61	1013	851	528	753	539	710
1965-66	862	827	483	676	438	629
1970-71	1123	1307	665	949	524	872
1975-76	1235	1410	694	1041	533	944
1980-81	1336	1630	695	1142	473	1023
1985-86	1552	2046	664	1323	547	1175
1990-91	1740	2281	900	1571	578	1380
1995-96	1797	2483	940	1703	552	1491
2000-01	1901	2708	1027	1844	544	1626
2001-02	2079	2762	1131	1980	607	1734
2002-03	1744	2610	966	1753	543	1535
2003-04	2077	2713	1221	1983	635	1727
2004-05	1984	2602	1153	1903	577	1652
2005-06	2102	2619	1172	1968	598	1715
2006-07	2131	2708	1182	2020	612	1756
2007-08	2202	2802	1431	2151	625	1860
2008-09	2178	2857	1459	2183	659	1909
2009-10	2130	2830	1222	2082	225	1798
2010-11	2240	2938	1528	2247	689	1921
2011-12	2346	3026	1574	2390	649	1993

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Source: Ministry of Agriculture, Government of India.

To increase self-sufficiency in food grain production, yield per hectare should be improved. During the period, all the crops are showing increased yield per hectare. When compared with other crops, the productivity in pulses is not registering very good growth rate. The yield per hectare of rice, paddy and coarse cereals are showing more than three times increase in the study period. Amble scope is there for increasing the productivity of rice. The productivity of rice has increased to 2346 kg. Per hectare in 2011-12 from 874 kg. per hectare in 1955-56. Likewise wheat productivity also has increased to 3026 kg. per hectare in 2011-12 from 708 kg per hectare in 1955-56. This is the good sign for the growth of self sufficiency power of Indian agriculture.

Findings of the Study

- The production of rice, wheat, sugarcane, tea has increased. But the production of coffee, oil seeds, pulses has not increased so much.
- The area under rice and wheat cultivation has increased slightly. But area for cultivating coarse cereals has reduced.
- The area of cultivating commercial crops are not showing significant increase.
- The productivity of foodgrains and commercial crops has increased.
- Indian farm sector performance is not showing a consistent trend based on annual data.
- The growth of agricultural sector is not encouraging.
- During the reform period, the productivity of food grains and commercial crops has not increased significantly.

Suggestions

- The government has to take effective steps to increase the area under cultivation
- The modern equipments has to be used in agriculture sector to increase the production.
- The fertilizer, manures, better hybrid seeds to be used in agriculture and that has to be given in a subsidised rate by the government.
- The government has to create awareness of using modern technology and modern methods of cultivation among the rural farmers.
- There should be proper regulated market for the commercial crops and the government has to guide the farmers in exporting their crops for a better price.
- The new economic reforms has to concentrate on agriculture sector also.

Conclusion

The production of food grains, oilseeds, pulses and other commercial crops are increasing frequently in India. But capital formation level is decreasing in the agricultural sector due to the unfavorable policy of government regarding investment promotion. Globalization is a necessary but not a sufficient condition for high growth of production, India has undertaken economic reforms, both internal and external. The agricultural sector in India is facing a crisis today. The solution of the problem is not in a few packages but in drastic changes in the present economic policies related to agriculture. All farmers, agricultural labourers, government and non government organizations should work collectively to revive agriculture and save India from Agrarian Crisis.

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A Study on The Socio-economic Conditions of Agricultural Labourers in Tirunelveli District

Agricultural Labourers in Tamilnadu

Agricultural occupies a key position in Tamilnadu contributing 18 per cent of the state income and employing 50 per cent of the working population. According to the estimate of the state planning commission about 22.5 per cent of the people in the state live below the poverty line. The number of agricultural labourers in Tamilnadu had increased both absolutely and relatively over years. It increased from 28.3 lakhs in 1961 to 86.4 lakhs in 2001. In terms of percentage change it had raised from 18.4to31.0.This indicates the fact that the number of agricultural labourers are increasing over a period of time, adding substantially to the persons living below the poverty line.

Scope of the Study

The researcher is interested in analysing socio economic condition of agricultural labourers households in the study area. This study strives to explore the different form of employment status, income, expenditure and satisfaction of wage of households of agricultural labourers.

Objectives of the Study

The overall objective of the study is to know the status of agricultural labourers in the study area. The specific objectives are

1. To study the employment status of the respondents,
2. To examine the income and expenditure pattern of the respondents;
3. To analyse the Income satisfaction of the respondents; and
4. To offer suggestions for the betterment of the respondents.

Methodology

The main purpose of the study is to have a critical view of problems of the agricultural labourers. Therefore, emphasis is laid more on the information supplied by the agricultural labourer supplemented by the secondary data. Thus, the present study is based on both primary and secondary data.

Area of the Study

The selected for the study encompasses a few villages in Tirunelveli Taluk in Tirunelveli district. The main occupations of the households are agriculture. The study area was purposely selected for two reasons. First, the villages has a large number of poor households with agricultural as the main occupation. The second reason is that the researcher is familiar with the area and so was able to get the co-operation of the officials and the respondents.

Collection of Data

There are 277669 agricultural labourers in Tirunelveli district. Therefore 100 labourers engaged in agricultural activities were selected by stratified random sampling method. The primary data were collected for this study using a framed questionnaire. To giveproper representation to various villages in Tirunelveli taluk workers residing at various areas like Thenkalam, Ramayanpatti, Pettai rural Abishekapatti and Narasigananullr were collected.

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Data Analysis

The socio economic conditions of the agricultural labourers in Tirunelveli District area are described in this chapter. Therefore, the social aspects like the employment status and Satisfaction about Income of the households have been explained. Further the economic aspects like the annual households income, expenditure of the households have also been analyzed.

Employment Status

Employment status is an important determinant of the income of the agricultural labourers. Most of agricultural labourers depend on the temporary and seasonable employment. Very low levels of agricultural labourers are getting permanent employment in the agricultural sector.

Employment Status

S. No	Employment Status	No of Respondents		Total Percentage
		Female	Male	
1	Permanent	8	7	15
2	Temporary	16	13	29
3	Seasonable	30	26	56
4	Others	-	-	-
	Total	**54**	**46**	**100**

Source: Primary Data

The table shows that distribution of employment status. Most of the respondents are temporary labourers. Only 15 per cent of the respondents are permanent labourers.

Distribution of Income

Income is one of the main indicators of the economic development of a particular nation, with out in come one cannot live. In the Tirunelveli district most of the people are depends, upon agricultural activities for their survival. In this section, agricultural labourers income is analysed. The table explain frequency distribution of agricultural labourers income.

Annual Income of the Respondents

S. No	Annual Income (Rs)	No of Respondents	Total Income (Rs)	Percentage
1	Up to 15000	12	141500	6
2	15000 - 20000	19	359168	15
3	20000 - 25000	32	762432	32
4	25000 - 30000	15	403869	17
5	30000 - 35000	22	727830	30
	Total	**100**	**2394799**	**100**

Source: Primary Data

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The table shows that out of 100 samples respondents, 6 per cent is earning up to 15000, 15 per cent of the respondents earning Rs 15000 to 20000, 32 per cent of them earning Rs 20000 to 25000 but only 30 per cent of the respondents earning annual income is Rs 30000 to 35000.

Distribution of Expenditure

The expenditure of the agricultural labourers indicates their economic position. Hence an attempt was made to study the position of expenditure in Tirunelveli district The following table shows the frequency distribution of agricultural labourers expenditure in the study area.

Annual Expenditure of the Respondents

S. No	Expenditure (In Rs)	No of Respondents	Total Expenditure	Percentage
1	Up to 15000	22	329829	13.6
2	15000 to 20000	24	476954	19.7
3	20000 to 25000	20	498182	20.6
4	25000 to 30000	14	419816	17.3
5	30000 to 35000	20	693145	28.6
	Total	**100**	**2417926**	**100**

Source: Primary Data

The table shows that out of 100 samples of agricultural labourer. 24 respondents (19.7 per cent) are having expenditure Rs 15000 to 20000, 20 respondents (20.6 per cent) are having expenditure Rs 20000 to 25000 a per annum. But 20 respondents (28.6 per cent) are having expenditure Rs 30000 to 35000 a per annum. This table derived total expenditure more than total income of respondents.

Findings

- It observed that female labourers (54 per cent) are more than male labourers (46 per cent).
- 56 per cent of the agricultural labourers are seasonal labourers in the study area.
- 32 per cent of sample respondents earn Rs 20000 to 25000 as their annual income.
- 28.6 per cent of respondents are having Rs 30000 to 35000 as their annual expenditure.
- 55 per cent of respondents are having very low satisfaction about Income.

Suggestions

- The government may be implemented education programmes to reduce the illiteracy rate in the study area.
- Since the agricultural labourers are affected by monsoon changes, so alternative occupation may be arranged by the government.
- Children's and family welfare programme can be arranged by the government authority.
- Bank facilities are not available at short distance so government should be taken steps to open banks in the study area.
- The workers can join in the workers association for their security of the work.

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Conclusion

Thus this study concludes that the present conditions of the agricultural labourers are extremely unsatisfactory. It must be overcome by the strict enforcement of social and economic legislation as well as through sustained efforts in providing education. They don't have the knowledge about the government loan facilities. The mild suggestion which the researcher has offered would go a long way in improving Socio-economic Condition of Agricultural Labourers.

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Trends in Area, Production and Yield of Spices in Tamilnadu: 1990-91—2009-10: The New Revealations

Introduction

The major spices grown in Tamil Nadu are chillies, turmeric, tamarind, coriander. Chillies are used throughout the world as a spice and also in the making of beverages and medicines. The cultivation of chillies began in Tamil Nadu in 1960-61 and showed highly variable performance across the districts with no break in production till 2009-10. Turmeric is another important crop with a huge medicinal value. In the beauty parlour industry, usage of turmeric has been very significant in beautifying the personality of women. Turmeric powder is used in cooking vegetarian and non-vegetarian food. The consumption of turmeric, especially by women and children, increases immunity and metabolism. The intake of turmeric along with milk, helps the lactating mothers breast feed their children. The cultivation of turmeric started from 1975-76 onwards and has shown positive growth rate till 2009-10. Tamarind possess as medicinal value and is widely used in cooking food. Tamarind is also useful in healing many wounds. The cultivation of tamarind began in Tamil Nadu in 1960-61 and its production has been very significant in a majority of districts of Tamil Nadu till 2009-10. Another important spice is coriander. The consumption of coriander has been very significant from time immemorial on account of its medicinal and digestive value. Although 59674 hec of cultivation area was allocated for coriander during the period 1960-61 to 1980-85, there was absolutely no production of coriander crop across the districts of Tamil Nadu. Production of coriander began only from 1985-86. **Season and Crop Report of Tamil Nadu (2005-2010)** revealed that the production of chillies, turmeric, tamarind and coriander is spread across the districts of Tamil Nadu. The percentage share of turmeric production had increased by 16.7 percent, production of chillies had decreased by 1.8 percent and there had also been a fall in coriander production by 1.6 percent. The share of tamarind production had declined to 16.7 percent during the period 2005-2010. Thus, the major spices are facing a serious threat mainly due to low production, senility of plants, poor genetic trait of the plants, poor crop management practices, pests and attacks of disease. This situation warrants a thorough analysis of the 'trends in the growth of area, production and yield of major spices in Tamil Nadu'. The present study addresses this task.

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Objectives of the Study

1 To examine the trends in Area, Production and Yield of selected spices in Tamil Nadu during 1990-91 to 2009-10.

2. To identify the problems in spices production.

3. To Suggest further strategy to increase the spices production.

Methodology of the Study

The study is primarily based on secondary data. The secondary data has been collected from Seasonal and Crop report of Tamil Nadu, Department of Economics and Statistics for the study period 1990-91 to 2009-10.

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Results and Discussion

3.1 Chillies

Table 3.1 shows the growth trend of Area, Production and Yield of Chilles during the study period 1990-91-2009-10.

Year	Area	Growth Percentage	Production	Growth Percentage	Yield	Growth Percentage
1990-91	49936		30120		603	
1991-92	60881	21.9	34340	14	564	-6.5
1992-93	86489	42.1	45730	33.2	529	-6.2
1993-94	73427	-15.1	43720	-4.4	595	12.5
1994-95	66107	-10	47610	8.9	720	21
1995-96	69147	4.6	27670	-41.9	400	-44.4
1996-97	76763	11	38150	37.9	497	24.3
1997-98	70120	-8.7	42390	11.1	605	21.7
1998-99	77194	10.1	43910	3.6	569	-6
1999-00	86315	11.8	55940	27.4	649	14.1
2000-01	76138	-11.8	55266	-1.2	726	11.9
2001-02	72859	-4.3	41515	-24.9	570	-21.5
2002-03	68566	-5.9	40646	-2.1	593	4
2003-04	75206	9.7	40067	-1.4	533	-10.1
2004-05	66990	-10.9	44631	11.4	667	25.1
2005-06	49033	-26.8	31830	-28.7	649	-2.7
2006-07	61418	25.3	42719	34.2	696	7.2
2007-08	67408	9.8	34084	-20.2	506	-27.3
2008-09	65412	-3	32924	-3.4	503	-0.6
2009-10	58476	-10.6	31230	-5.1	534	6.2

Note : Growth Percentage is calculated from Secondary data

Source : Season and crop report of Tamil Nadu from 1990-91 to 2009-10

3.2 Turmeric

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Table 3.2

Year	Area	Growth Percentage	Production	Growth Percentage	Yield	Growth Percentage
1990-91	8761		38420		4385	
1991-92	9904	13.08	47020	22.38	4748	8.25
1992-93	15784	59.37	83220	76.99	5272	11.04
1993-94	22061	39.77	136640	64.19	6194	17.49
1994-95	19727	-10.58	124040	-9.22	6288	1.52
1995-96	15625	-20.79	79650	-35.79	5098	18.92
1996-97	16025	2.56	92050	15.57	5744	12.67
1997-98	18189	13.5	110680	20.24	6085	5.94
1998-99	24754	36.09	126010	13.85	5090	-16.35
1999-00	32511	31.57	167380	32.83	5148	1.14
2000-01	33000	1.5	158643	-5.22	4807	-6.62
2001-02	23638	-28.37	118257	-25.46	5002	4.06
2002-03	17298	-26.82	64536	-45.42	3731	-25.41
2003-04	16181	-6.46	67250	4.21	4156	11.39
2004-05	21616	33.59	118447	76.13	5480	31.86
2005-06	25970	20.14	143358	21.03	5520	0.73
2006-07	30528	17.55	172334	22.34	5745	4.08
2007-08	27303	-10.56	146008	-16.75	5348	-6.91
2008-09	29875	9.42	172334	18.03	5769	7.87
2009-10	33366	11.69	169071	-1.89	5067	-12.17

Note : Growth Percentage is calculated from Secondary data

Source : Season and crop report of Tamil Nadu from 1990-91 to 2009-10

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3.3 Tamarind

Table 3.3

Growth Trend of Area, Production and Yield of Tamarind

Year	Area	Growth Percentage	Production	Growth Percentage	Yield	Growth Percentage
1990-91	13562		41480		3059	
1991-92	13267	-2.2	40080	-3.4	3021	-1.2
1992-93	15158	14.3	46470	15.9	3066	1.5
1993-94	18623	22.9	58340	25.5	3133	2.2
1994-95	18431	-1	56940	-2.4	3089	-1.4
1995-96	17320	-6	53630	-5.8	3096	0.2
1996-97	18309	5.7	56490	5.3	3085	-0.4
1997-98	18817	2.8	58720	3.9	3121	1.2
1998-99	19422	3.2	61150	4.1	3148	0.9
1999-00	20497	5.5	65060	6.4	3174	0.8
2000-01	21192	3.4	66902	2.8	3157	-0.5
2001-02	21353	0.8	67589	1	3165	0.3
2002-03	21769	1.9	68801	1.8	3161	-0.1

Note : Growth Percentage is calculated from Secondary data

Source : Season and crop report of Tamil Nadu from 1990-91 to 2009-10

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3.4 Coriander

Table 3.4

Year	Area	Growth Percentage	Production	Growth Percentage	Yield	Growth Percentage
1990-91	47366		18590		392	
1991-92	39889	-15.8	15700	-15.5	394	0.5
1992-93	45522	14.1	5416	-65.6	119	-69.8
1993-94	51924	14.1	11002	103.5	212	78.2
1994-95	49273	-5.1	13978	27.1	284	34
1995-96	28246	-42.7	2846	-79.7	100	-64.8
1996-97	36383	28.8	11208	295.8	308	208
1997-98	37669	3.5	8856	-21.1	235	-23.7
1998-99	36743	-2.5	8584	-2.9	234	-0.4
1999-00	26698	-27.3	12742	48.4	477	103.8
2000-01	25132	-5.9	6176	-51.5	246	-48.4
2001-02	29889	18.9	6955	12.6	232	-5.7
2002-03	25327	-15.3	4719	-32.2	186	-19.8
2003-04	27722	9.5	8052	71.1	290	55.9
2004-05	19350	-30.2	8391	4.2	434	49.7
2005-06	21062	8.8	6424	-23.4	305	-29.7
2006-07	17425	-17.3	5680	-11.6	326	6.9
2007-08	13288	-23.7	5124	-9.8	385	18.1
2008-09	14139	6.4	4821	-5.9	341	-11.4
2009-10	15977	13	6315	31.1	395	15.8

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Note : Growth Percentage is calculated from Secondary data

Source : Season and crop report of Tamil Nadu from 1990-91 to 2009-10

Conclusion

The above analyses reveals all the nuances of spice cultivation in Tamil Nadu. The time series data from 1990-91 to 2009-10 of area under cultivation, production and yield of the spices have been analysed. The results indicate that significant fluctuation occurred in area under cultivation, production and yield during the study period. Fluctuation was high, accentuated by various climatic and institutional factors. Similarly, there could some reasonable hike in production and yield at the marginal level which could be the manifestation of the usage of modern equipments in agricultural sectors. The empirical picture shows the impact of the implementation of new economic policy on spices performance at the state level somewhat is significant. Tamil Nadu is endowed with suitable climatic conditions for spice production like Kerala.

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Disparity in Cropping Intensity in India

Introduction

Agriculture has been a way of life and continues to be the single most important livelihood of the masses. Agricultural policy focus in India across decades has been on self sufficiency and self reliance in food grains production rose from 52 million tons in 1950-52 to 244.78 million tons in 2010-11.The share of agriculture in real GDP has fallen given its lower growth rate relative to industry and services. Achieving minimum agricultural growth is a pre requisite for inclusive growth, reduction of poverty levels, development of the rural economy and enhancing of farm incomes. There is the Green revolution belt in the North that has become the main supplier of grain to the government for running in public distribution system. Over 80% of the suppliers of grain to the PDS are now provided by the three northern states of Punjab, Haryana, and Utter Pradesh.

There are only two ways to satisfy the increasing food and agricultural demands of the country's rising population, either expanding the net area cultivation or intensifying cropping over the existing area. However, the scope for year round cropping activities in most states of India is severely constrained by the seasonal distribution of rain fall. So long as these natural constraints are relaxed by developing irrigation facilities the level of multiple cropping improves. The flexibility in selecting appropriate crop pattern is also enhanced when irrigation facilities make water available in a controllable manner farm to the farmers throughout the year. It would therefore be reasonable to hypothesize that disparity in the level of cropping intensity could be due to the disparity in the pattern of development of irrigation facilities, both in qualitatively and quantitatively.

In general the level of cropping intensity is higher in the regions with higher percentage of net zone area irrigated and with higher intensity of land use by irrigation. However it is futile to expect one to one correspondence between irrigation and cropping intensity. The other crucial variables that determines the level of cropping intensity is the availability of labour. The nineteen characteristics of the farms according to holding size in India suggest that labour availability is an important determinant. The various farm management studies carried out in India showed that the average size of holding increases, the average family size increases but not in the same proportion.

Statement of the Problem

In Indian agriculture, year-to-year fluctuations in output and variations in productivity across space have remained issues of significant concern for researchers and policy makers. State and region wise variations in cropping intensity in India is also a major issue in the productivity variations by states as well as various regions of India. Hence, there is a need to study the disparities in agricultural development in India. Keeping in view, the present study aims at analyzing the interstate and interregional disparities in cropping intensity in India.

Objective

The prime objective of this study is,

-to analyze the interstate and inter regional disparities in cropping intensity in India.

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Data and Methods

The data for this analysis have been obtained from the reports of the Central Statistics Office, the Directorate of Economics and Statistics and Department of Agriculture and Cooperation. To analyse the cropping intensity disparities among various regions of India, five regions were identified as Northern region comprising the states of Haryana, Punjab, Uttar Pradesh, Uttarkhand, Himachal Pradesh, Chandigarh, Jammu and Kashmir and Delhi, the Eastern region with Bihar, Jharkhand, Orissa and West Bengal, the North Eastern comprising of Assam, Manipur, Meghalaya, Mizoram, Sikkim, Arunachal Pradesh, Nagaland and Tripura, Southern region with Andhra Pradesh, Karnataka, Kerala, Tamilnadu, Pondicherry and Lakshadweep, and Western region comprising of Chattisgharh, Rajasthan, Goa, Gujarat, Madhya Pradesh, Maharashtra and Dadra Nagar and Hawali. The trends in cropping intensity in various states of India were obtained from important secondary sources of Data for the years 2000-2010. The data obtained from various sources have been analyzed with the help of statistical tools such as Averages, growth rates and co efficient of variation.

Results and Discussions

The analysis of the data in the table-2, indicates that the cropping intensity in India was 140.95 per cent in 2000-2001 and it declined to 140.62 in 2088-09, showing 0.53 per cent of shortfall in cropping intensity in India. However there is a significant interstate and interregional variation in the growth rate of cropping intensity during the period 1999-2000 to 2010-11.

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Southern region

An analysis of cropping intensity in Southern region indicates the following facts. Southern region's cropping intensity was 124.1 per cent in 2000-01 and it decreased to 123.4 per cent in 2008-09 showing a 0.81 per cent of short fall in the period of analysis. The declining trend shows 1.17 per cent fluctuation as per the results of coefficient of variation. Andhra Pradesh state's cropping intensity was 121.9 per cent in 2001 to and it increased to 127.3 per cent in 2008-09 showing a 4.43 per cent growth with 2.05 per cent fluctuation in the period of analysis. Karnataka state's cropping intensity was 118 per cent in 2000-01 to and it increased to 121.6 per cent in 2008-09 showing a 3.05 per cent growth in the period of analysis. Its growth trend shows 2.7 per cent fluctuation in the study period. Kerala state's cropping intensity was 137 per cent in 2000-01 to and it decreased to 129 per cent in 2008-09 showing a 5.84 per cent of shortfall with 2.59 per cent declining trend in the period of analysis. Tamil Nadu state's cropping intensity was 119.5 per cent in 2001 to and it decreased to 115.5 per cent in 2008-09 showing a 3.35 per cent shortfall in its growth in the period of analysis. Its declining trend shows 2.22 per cent variation in the study period. Puducherry state's cropping intensity was 177.9 per cent in 2000-01 to and it declined to 170.6 per cent in 2008-09 showing a 4.10 per cent of decline with fluctuation of 1.17 per cent in the period of analysis.

Western region

An analysis of cropping intensity in western region indicates the following facts. Western region's cropping intensity was 117 per cent in 2000-01 and it moved up to 125 per cent in 2008-09 showing a 6.84 per cent of increase in the period of analysis. Its growth trend shows 2.74 per cent fluctuation as per the results of coefficient of variation. Chhattisgarh state's cropping intensity was 111.8 per cent in 2000-01 to and it rose to 120.7 per cent in 2008-09 showing a 7.96 per cent growth in the period of analysis.

The growth trend in Chhattisgarh shows 2.9 per cent variation in the study period. Rajasthan state's cropping intensity was 121.2 per cent in 2000-01 to and it rose to 129.7 per cent in 2008-09 showing a 7.01 per cent growth in the period of analysis. The growth trend shows 2.61 per cent variation during the period 2000-01 to 2008-09.

Northern region

An analysis of cropping intensity in northern region indicates the following facts. Northern region's cropping intensity was 170 per cent per cent in 2000-01 and it declined to 169 per cent in 2008-09 showing a 0.59 per cent of short fall in the period of analysis. The declining trend shows 0.49 per cent fluctuation as per the results of coefficient of variation. Haryana state's cropping intensity was 173.4 per cent in 2000-01 to and it rose to 181.3 per cent in 2008-09 showing a 4.56 per cent growth in the period of analysis with 1.84 per cent fluctuation in the growth trend. Punjab's state ranks the first position in cropping intensity and it is worked out to 189.8 per cent in 2008-09. Punjab state's cropping intensity was 186.8 per cent in 2000-01 and it went up to 189.8 per cent in 2008-09 showing a 1.61 per cent growth in the period of analysis with 0.75 per cent fluctuation. Utterpradesh state's cropping intensity was 150.4 per cent in 2000-01 to and it increased to 155.6 per cent in 2008-09 showing a 3.46 per cent growth in the period of analysis. Utterkhand state's cropping intensity was 159.2 per cent in 2000-01 to and it decreased to 157.7 per cent in 2008-09 showing a 0.94 per cent shortfall in its growth with 0.84 per cent fluctuation in the study period.

Himachal Pradesh state's cropping intensity was 170.9 per cent in 2000-01 to and it increased to 173.1 per cent in 2008-09 showing a 1.29 per cent growth in the period of analysis. Its growth trend shows 1.31 per cent variation during the period 2000-01 to 2008-09. Chandigarh state's cropping intensity was 170.9 per cent in 2000-01 and it decreased to 151.5 per cent in 2008-09 showing an 11.35 per cent of shortfall in its growth in the period of analysis. Delhi's cropping intensity was 177.9 per cent in 2000-01 and it decreased to 170.6 per cent in 2008-09 showing a 4.1 per cent of shortfall in its growth in the period of analysis.

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Eastern region

An analysis of cropping intensity in Eastern region indicates the following facts. Eastern region's cropping intensity was 151.43 per cent in 2000-01 and it decreased to 149.25 per cent in 2008-09 showing a 1.44 per cent of short fall in the period of analysis. The declining trend shows 2.31 per cent fluctuation as per the results of coefficient of variation. Bihar state's cropping intensity was 141.1 per cent in 2000-01 and it decreased to 137.7 per cent in 2008-09 showing a 2.41 per cent shortfall in its growth in the period of analysis. The declining trend shows 2.02 per cent fluctuation as per the results of coefficient of variation. Jharkhand state's cropping intensity was 161.1 per cent in 2000-01 and it decreased to 112.3 per cent in 2008-09 showing a 30.29 per cent of shortfall in its growth during the period 2000-01 and 2008-09. Orissa state's cropping intensity was 135.2 per cent in 2000-01 and it increased to 161.9 per cent in 2008-09 showing a 19.75 per cent growth with 6.25 per cent fluctuation in the period of analysis. West Bengal state ranks the second position in cropping intensity and it is worked out to 185.1 per cent in 2008-09. West Bengal state's cropping intensity was 168.3 per cent in 2000-01 and it increased to 185.1 per cent in 2008-09 showing a 9.98 per cent growth in the period of analysis.

North Eastern region

An analysis of cropping intensity in north eastern region indicates the following facts. North eastern region's cropping intensity was 115.26 per cent in 2000-01 and it decreased to 114.64 per cent in 2008-09 showing a 0.54 per cent of short fall in the period of analysis. The declining trend shows 0.79 per cent fluctuation as per the results of coefficient of variation. Assam state's cropping intensity was 146.5 per cent in 2000-01 and it decreased to 144.7 per cent in 2008-09 showing a 1.23 per cent shortfall in its growth in the period of analysis. Manipur state's cropping intensity was 100 per cent in 2000-01 and it maintained same level in 2008-09 showing a study growth in its cropping intensity. Meghalaya state's cropping intensity was 120 per cent in 2000-01 and it decreased to 118.7 per cent in 2008-09 showing a 1.08 per cent of shortfall in its growth in the period of analysis. Mizoram state's cropping intensity was 100 per cent in 2001 to and it maintained the same level in 2008-09 showing a steady growth in its cropping intensity.

Sikkim state's cropping intensity was 109.8 per cent in 2001 to and it maintained to 109.8 in 2008-09 showing a steady growth in its cropping intensity.

Conclusions and Suggestions

It is concluded that northern region occupies the first position with respect to per cent of cropping intensity as it is estimated at 169.22 per cent of average estimate during the period 2000-01 to 2009-10, eastern region the second, southern region the third, western region the fourth and north eastern region the last. It could be seen clearly from the above discussion that cropping intensity is highest in Punjab state in India. This is due to success of green revolution and progressive growth of mechanization of agriculture. The cropping intensity is found above 150 in the states such as Haryana, Himachal Pradesh, Orissa, Utharakhand, West Bengal and Chandigarh. The cropping intensity is quite low in Mizoram, Manipur and Meghalaya. Thus, higher cropping intensity means that a higher portion of the net area is being cropped more than once during one agricultural year. This also implies higher productivity per unit of arable land during one agricultural year. It shows great spatial variations with 'higher levels in northern plains. Punjab has the highest cropping intensity of 187.47per cent, followed by West Bengal (178.81 per cent), Himachal Pradesh (174.70 per cent), Haryana (179.02 per cent) and Uttar Pradesh (152.04per cent). The intensity is low in dry, rain fed regions of Rajasthan, Gujarat, Maharashtra and Karnataka (120.24per cent).

The cropping intensity is found to be quite low in Mizoram, Sikkim, Meghalaya and Manipur. Hence there is a need to increase the cropping intensity through increasing area under cultivation and area under irrigation. The percentage of net irrigated area to the total cropped area is found to be quite low in Kerala, Goa, Jharkhand, Meghalaya, Mizoram and Sikkim. Hence, there is a need to increase the net irrigated area through development of irrigation potential in these states.

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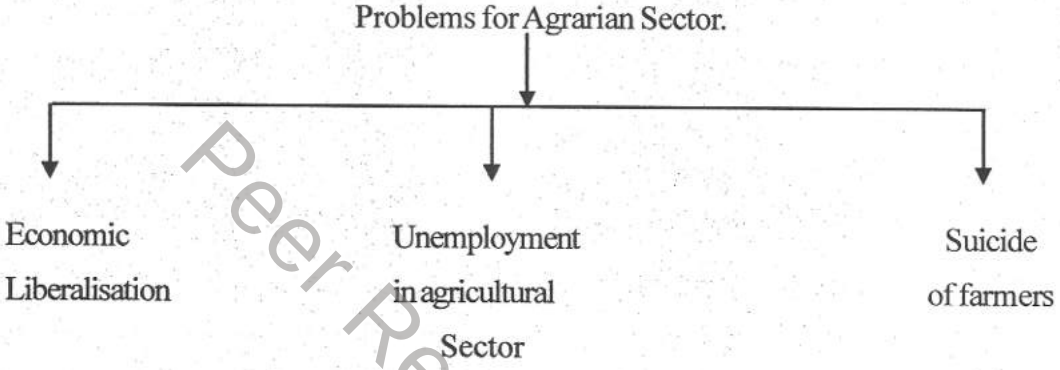
Agrarian Crisis in India is a Creation of the Policy of Globalisation

Introduction:

The People's protest against special Economic Zones in various paths of the country, including at Nandigram in west Bengal, stagnation agriculture, import of the food grains, widespread suicide of farmers all these are systems of simmering discontent in the agricultural Sector.

It was with the structural Adjustment programme (SAP) in 1991 that the policy of globalization was concretely introduced in India. The government started inducing its investment in agriculture and the industrial sector allowing the private sector to take over. All such measured had implications for the farm sector. This article analyses how the policy of globalization has affected agriculture in India.



These are three problems for agrarian sector.

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(i). Economics Liberalisation:-

15th years of economic liberalisation have adversely affected Indian agriculture. The most prominent manifestation of this is in the drastic decline in the growth rate of food grains. The rate of growth of agricultural output was gradually increasing in 1950, and it was more the rate of growth of the population.

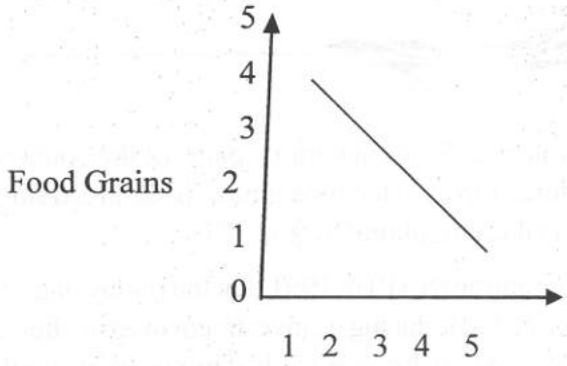
The per capital availability of food grains decreased, the growth rate of population become higher than that of foodgrains, and India stated the import food grains, and India stated to import food grains at a much higher price than that in the domestic market.

Table

Food Grains(In hectare)	Population (in million)
5	1
4	2
3	3
2	4
1	5

N.K. Muthusamy, Department of Economics,
Srivasavi College Erode

Diagram



This diagram explain that the food grains in gradually comes to down wards. As well the population goes to upwards. This system is loss for agricultural sectors.

(ii). Unemployment in agricultural Sector

Secondly un employment in the agricultural sector increased during the reform period as agricultural was not profitable due to the fall in the price of farm products. According to National sample survey (NSS) the annual rate of growth of the employment in the rural areas was 2.07. 1 in 1987-1984, while it declined to a mere 0.66 percent in 1993 – 2000, which corresponds to the period of liabaralisation. It is not only the farmers but also, the dalits and tribals, who heavily depend on agriculture, become unemployment.

Reasons for Agrarian Crisis

(i). Liberal import of Agricultural products:-

The main reason for the crash of prices of agricultural products, especially of cash crops in India was removal of all restrictions to impost these products. As for example, when the Government of India reduced the import duly on the and Coffee from Srilanka and Malaysia, their prices in the domestic market got reduced drastically.

2. Cutback in Agricultural subsides:-

In the post reform period the government reduced different types of subsides to agriculture and this has increased the production of cultivation. Since the decrease in subsidy to agriculture us part of the regulations of WTD, it is related to the policy of globalisation.

3. Lack of easy and Low-cost to agriculture.

After 1991 the bending pattern of commercial banks, including nationalised banks to agriculture drastically changed with the result that loan was not easily available and the interest was not affordable.

4. Decline in Government Investment in the Agricultural sector:-

This studies show that after the economic, reforms started, the government's expenditure and investment in the agricultural sectors have been drastically reduced, so the rate of capital formation in agriculture came down, and the agricultural growth rate was also reduced.

5. Restructuring of the public distribution system (P.D.S)

As the in lake from PDS was less it has affected the market and the formers.

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6. Special Economic Zones:-

Since the SEZ deprives the farmers of their land and livelihood, it is harmful to agriculture in order to promote export and industrial growth in lime with globalisation the SEZ was introduced in many countries.

Conclusion

In a country where 60% of people depend on Agriculture for their livelihood, it is better to become an agricultural force based on food security rather than a nuclear force. But in our country reduced the agricultural product. Because our country's population capacity is very high so, the people abolished the agricultural sector and develop the building infrastructure. So, in our country must be reduced the population growth otherwise no other way to develop in economic force.

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"Food For All"

"FOOD FOR ALL" will become the slogan in near future because according to a new Oxford University Study, 55percent of India's population are living in poverty. Using a newly development index the study has found that**One-Third of the world's poor are in India.** The study has taken into account many indicators like, child mortality, nutrition, access to clean drinking water, sanitation, cooking fuel, electricity and years of schooling etc. According to UNICEF Organisation census 2011, India has occupied the first place (15.56 lakhs) in child death within five years. The Second and the third is backed by Nigeria (7.56 lakhs) Gango(4.65lakhs), Fourth and fifth by Pakistan (3.58 lakhs) and China (2.49 lakhs),In the world per day 19,000 children die due to Nimonia (18%) Uterus problem (14%)Diyaria (11%) Delivery complication (7%) and Malaria (7%) The most important one is the **One-third of children die due to nutrition shortage.**(Thinamalar.14.09.2012. pg.no.13)

Poverty and Inflation are very important studies now becauseit is very dangerous to economic development in developing countries. India is facing two problems. One is**the food production is low level compared with the level of increasing of the population**. The reason for that problems are as follows;

1. Population has been growing at the rate of over 2% Per annum and food production has to grow at least by 2.1% Per annum.But there is no increase in food production
2. The total food production in India isincreasing. but Marginal food production is decreasing because total geographical area of our country is 329 million hectares. of which 145 million hectares is cultivable land. The **day-by-day percapita land availability is decreasing** from 0.48 hectare in 1952 to 0.15 hectare at present time. It is nearly observed that nearly 40% of Indian farmers want to quite farming.

Second is**increase inmoney supply.**Moneysupply has been growing at 20percent but there is no corresponding growth in the output of food items. The reason for increasing money supply are :

1. The Government of India has implemented the recommendations of the 6th Pay commission in 2008 (effect of 1.1.2006) with an average increase of around 40% in the salaries of the government employees.
2. The Government's rural initiatives like the implementation of Mahatma Gandhi Rural Employment Guarantee Programme and also hike in social sector spending have boosted purchasing power with the poor. There is growing demand.

India has meeting the above two problems recently. On the one side food production is decreasing and another side Purchasing power is increasing which creates inflation for foodgrains. The following table clearly explains the situation.

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Table

Trends In Food Prices

Items	2007(%)	2010 (%)	Increasing level(%)
Food grains	6.27	17.89	285.32
Cereals	6.27	13.69	218.34
Pulses	2.14	45.62	2131.77
Rice	6.05	12.02	198.67
Wheat	6.71	14.86	219.49
Dairy product	6.08	12.87	211.67
Eggs & Fish	6.38	30.71	481.34
Sugar	14.69	58.94	401.22

Source :KISAN WORLD. Apr. 2011 vol.- 38. No-4.Pg.no :12

Conclusion

India is a developing country. The majority of the population of India who are living in rural India are more or less like slaves. Over population is one of the features of our country. Population increases at high level as well as their consumption. On the other side the availability of cultivable land decrease day –by-day. Hence fall in food production. Population exceeds more than the agriculture production. The ultimate result is existence of extreme poverty India has been adopting many schemes to eradicate poverty.

These programmes have mainly stimulated income of poor families and there by purchasing power finally causing demand pull inflation. Food grains prices to be monitored carefully and see the rate of increasing the price of food grain is not higher than the rate of increasing income of poor families. Food inflation will exacerbate poverty without food security. In order to overcome this situation, the government should declare**"FOOD FORALL"** programme in future.

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An economics analysis of paddy cultivation: Nutritional Security and Nutrient Management in Tamilnadu

Introduction

The food production required to be enhanced to provide food and nutritional security to the growing population. In order to retain the farmers especially the younger generation to take up agriculture as a profession, the income from the farm holdings required to be increased considerable. In Tamil Nadu, 90% of the farmers belong to small and marginal category and their operational holding account 56% of the total areas. So the small and marginal farmers play a key role in overall development in agriculture and the adoption of scientific technologies by these farmers needs focused attention. The gross cropped area in Tamil Nadu is ground 58.43 lakh hectares of which the gross irrigated area is 33.09 lakh hectares which is 57% and the balance 43% of the area are under raifed cultivation. Major efforts are required to increase the productivity of rainfed crops by overcoming the various challenges such as; erratic monsoon rains, soil with low nutrient and organic contents/poor water holding capacity, soil and water erosion. The labour scarcity especially during the peak cropping season is also causing difficulty to the farmers to take-up timely field operations.hence to achieve sustainable development and break-through in agricultural production, continuous concentration on technical advancement, input supply, credit and market supports are required.

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Objective:

1. Spatial distribution of paddy cultivation in Tamil Nadu.
2. To find out district wise Supply and demand for water in Tamil Nadu.
3. To assess productivity district wise and crop wise.

Methodology:

The present study based on secondary data the secondary data collected from Directorate of Economics and Statistics, Government of Tamil Nadu, Chennai, Season and crop report-2011-12. Department of Economics and Statistics, Chennai -6, In addition to that, books, journals and magazines were referred.

High rainfall regions:

The nilgiris, the coastal belt of the cuddalore, kancheepuram districts, kanyakumari and palani hills

Medium rainfall region:

Western parts of the cuddalore, tiruvallur district, whole of vellore, thiruvannamalai, eastern parts of the salem, western parts of thanjavur, nagapattinam, eastern and northern parts of trichy, eastern part of Madurai, dindigul, northern part of ramanathapuram, sivaganga, virudhunagar, Coimbatore and salem.

Low rainfall region:

Central and southern part of ramanathapuram, sivaganga, virudhunagar, thoothukidi and tirunelveli districts and ccentral part of Coimbatore, central and western part of Madurai, dindugal and southern half of tiruchirapalli.

Dr.S.Thamilarasan Assistant Professor, Department of Economics

Annamalai University Annamalai Nagar

Number of rainy days:

An average of 50 rainy days per year was recorded in this state, the highest of 106.2 rainy days was recorded in nilgiris, while the lowest of 45.5 days was observed in ramanathapuram.

Paddy Production in Tamil Nadu

Tamil Nadu is one of the major rice producing states in India. Rice being the staple food crop of Tamil Nadu, it is extensively cultivated in all the districts of the state. The area under rice cultivation is around 22 lakh hectares, accounting for one third of the gross cropped area of the state. The total rice production in the year 2000-2001 amounted to 75 lakh tonnes.

Department of Economics and Statistics, Chennai.

Paddy is the principal crop extensively cultivated in all the districts of Tamil Nadu having a unique three-season pattern, namey Kar/Kuruvai/Sornavari (April to July), Samba/Thaladi/Pishanam (August to November) and Navarai/ Kodai (December to March). Paddy accounted for 33.20 per cent of the total cropped area in Tamil Nadu during 2009-10. Thiruvarur district is at the top with an area of 1,78,040 hectares followed by Thanjavur district with 1,77,094 hectares and Nagapattinam district 1,70,840 hectares. During the year 2009-10 the area under paddy was 19,31,603 hectares as against 17,89,170 hectares in 2008-09 recording a remarkable increase of 8 per cent. Even though yield rate of paddy (in terms of rice) has decreased by 8.4 per cent, the production has increased by 2.80 per cent due to the increase in area. It is interesting to note that the third season namely Navarai that there is an increasing trend both in area paddy cultivation and productivity significantly.

Nutritional Security and Nutrient Management in Tamilnadu

Nutrient management: Application of required quantity of organic manures and inorganic fertilizers in a balanced way based on the need of the crops is essential to get maximum productivity. Most of the soils in tamilnadu are found to be highly deficit in organic matter and micro nutrients content. The decline in organic matter content reduces the biological activity of soil, water holding capacity, nutritional availability which affects productivity of crops. In order to improve soil health and soil fertility, the application of bio-fertilizer, cultivation of green manure crops, vermin compost, composting of farm wastes through pleurotus are recommended. In addition, Tamil Nadu soils are deficient in micronutrients viz., zinc(52%) copper (7%) and manganese(6%). Its is well known that Zn deficiency is predominant in low land ecosystems, sodic and upland soils and calcareous coarse textured soil with low organic matter content suffer from Fe deficiency, besides Zn and cu deficiencies.

Nutritional Security

Agriculture has been the mainstay of the economy since independence with more than 65 percent of the population depending on this sector for a living. Agricultural growth holds the key for economic development and for reduction in the incidence of poverty. Major food crops grown are paddy, millets, pulses and cash crops such as groundnut, cotton and sugarcane. Yearly per capita foodgrains availability in Tamil Nadu works out to 168.21 kgs. This is lesser than the normal requirements of foodgrains as recommended by the National Institute of Nutrition, Hyderabad at 182.50 kgs. The per capita net availability of food grains per day works out to 431 grams which is lower than the National availability of 466 grams per day.[18] The estimates of poverty made by the Union Commission in 1999-2000 shows that 21.12 percent of the State's population live below the poverty line which is less than the All-India average of 26.10 percent.

Comparison of some major health indicators of Tamil Nadu with all-India figures shows that the State has made impressive strides. The annual population growth rate during 1981-1991 was 2.14 percent for all-India, while it was 1.43 percent for Tamil Nadu, second only to Kerala (1.34 percent). Infant mortality rate has decreased from 63 per 1000 population from in 1990 to 49 in 2000. Even when mortality is

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controlled nutritional status did not improve. The National Nutrition Monitoring Bureau data show a high percentage of under weight children in India below three as under weight, stunted and wasted. Making Tamil Nadu malnutrition free state is one of the objectives of the Tenth plan. In spite of a number of schemes being implemented to tackle malnutrition problem in the State, the recent National Family Health Survey (2000-2001) assessment on the basis of weight-for-age, height-for-age and weight-for-height, observed that in Tamil Nadu, 37 percent of the children under the age of three years are under weight, 29 percent are stunted and 20 percent are wasted. Undernutrition is higher in rural than urban areas and it is particularly high among children from disadvantaged socio-economic group.

Conclusion:

For the next five years, well defined objectives and priorities have been set for popularizing hybrid rice technology covering both seed production and commercial cultivation. They include effective transfer of the technology already generated, developing hybrids with desirable grain quality, resistance to diseases and pests and adaptability to a specific ecosystems.

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Agricultural Input and Output Through Co-operative Societies

Introduction:

Agriculture plays a very important role in the economic development of a country. Agriculture is the backbone of an agricultural country like India. India's prosperity depends upon the agricultural prosperity. The marketing of farm products generally tends to be a complex process. The types of agricultural commodities produced in our country are various and varied. Agriculture is the largest and most important sector of the Indian economy.

Agriculture contributes nearly 40% - 45% of the national income and provide livelihood to about 70% of the population of the country. Agricultural marketing involves many operations and processes through which the food and raw materials more from farm to the final consumers. But unfortunately, in India the middlemen enjoy the cream at the cost of disability, illiteracy etc, of the poor Indian farmers. A small part of the price paid by buyers reaches the farmers while the big part is sucked by the middlemen. An efficiently organized co-operative marketing performs the middlemen's function more economically and efficiently.

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Distribution of Agricultural Inputs:

Co-operative societies take steps to decrease the cost of production of their members. They supply farm inputs. They encourage the members to grow the best crop to increase their yield. The supply of quality materials takes place at the right time at reasonable price. They help the members in purchasing the best seed, fertilizers and machinery at cheaper price. Co-operative societies give credit facilities to their members to buy agricultural requirements. The credit is recovered when the produce is sold through the society.

Agriculture continues to be the mainstay of India's national economy. Its contribution to India's Gross Domestic Product (GDP) is about 30 percent. Nearly two thirds of the population still depends on this sector directly or indirectly. Self-sufficiency in food grains has been the basic objective of India's policy on agriculture. Food grain production has increased from the level of 52 thousand tones in 1951-52 to 199 million tones in 1996-97. However, the food grain production declined to 193 million tones in 1997-98. The present population of the country is about 960 million and is likely to touch 1000 million by the turn of this century. To feed this level of population, India has to produce 208 million tones of food grains from the present level of 193 million tones which is, no doubt, a gigantic task.

Supply of Fertilisers:

Fertilizers are produced imported at about 200 locations in the country and distributed to the farmers scattered through the length and breadth of the country in about 6,00,000 villages through a network comprising of private and institutional channels. Some quantities are also made available through manufacturers own outlets. Private trade accounts for about 60 percent of the total fertilizers distributed in the country followed by institutional agencies at 35 percent and remaining 5 percent through the manufacturers own outlets. Among the institutional agencies , co-operatives are the main agency which alone account for nearly 30% of the total fertilizer business. The total number of fertilizer sale points in the country is 2,62,000; out of which about 71,000 (27%) are institutional agencies sale points (mainly co-operatives) and the remaining 1,91,000 (73%) are controlled by the private trade.

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Government Arts College, Salem.

Distribution of Fertilizer and Others Through Co-operatives of Last 5 Years:

Co-operatives are the main institutional agency in the country handling fertilizers. Co-operative network, at present, comprises of 29 state level marketing federations, 171 district level marketing societies and about 66,200 village level co-operative societies are generally called Primary Agricultural Credit Societies (PACS). These societies are the backbone of the co-operative marketing system. These societies are well spread in the entire country covering 97% of the 0.6 million villages and 95% of the farming families.

Purchase and Sales of Agricultural Outputs:

Co-operative society may adopt the method of outright purchase, as if it is a private dealer. Here the producers sell their produces at the agreed. Later, producers are sold by the society on their own account. Cultivators can dispose the produces against cash and meet their financial needs. To reduce the risk, there is a price committee that fixes the price for the produces.

Society works as a commission agent in selling the produces of cultivators. The produces are sold under open bidding system. Immediately after the sale by deducting a nominal amount as commission, farmers are paid. There by society needs limited amount of capital apart from safe system. The grading and standardization are done. No blocking up of capital is there . Members get good price. Here producers are pooled together. So that grading becomes easier. This is a drawback to the cultivators who bring produces of superior quality.

Agricultural Produce (Grading and Marketing) Act-1937:

As per the recommendations of the directorate of marketing and inspection and Indian trade commissioners for defining standards and qualities of agricultural products in India, the Agricultural Product (Grading and Marketing) Act was passed in 1937. Under this act, government has setup grading stations for commodities. The graded goods are stamped with the official seal of the Agricultural Marketing Department.

The Act was first passed in 1937 and was amended in 1943 to widen its scope and to include additional products. The Act now includes fruits, vegetables, hides, skins, dairy products, tobacco, coffee, oilseeds, rice, wheat etc. To check the adulteration of food articles, the prevention of food Adulteration Act was passed in 1954 and rules were framed in 1955. The inspecting staff of the Central Agricultural Marketing Department inspects the grading products from markets. The samples are examined to see if they conform to the standards of quality laid down by the central quality control laboratory at Nagpur.

Standard Weights and Measurements:

To put an end to the practice of false weights and measures in unregulated markets, the government passed the Standard Weights Acts as far back as in 1939 are the State Government to model their legislations. The Central Government adopted the metric system of measures in1958 and an Act to this effect was passed in the Parliament. The metric system replaced all old systems of weights and measures and has introduced uniformity in this respect all over the country.

Buffer Stock Operations:

The effectiveness of the government operations in food grains market in order to have smooth public distribution system depends on the size of stocks. The size of stocks is determined by two considerations. One is to meet the current needs, i.e., to hold a quantity of stocks adequate to maintain the supply line throughout the year; and the other is to have some stock to maintain the supply line even in times of crop failure. The former may be described as normal stock and the latter as buffer stock. Normal stock can be called pipeline stock.

the trough of the farm price to the peak of the retail price get automatically determined".

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Support Price Scheme:

- **Paddy:**

  Assistance of Rs.7000/. per MT as incentive for paddy sold to designated co-operative societies in the state. Minimum quantity is 100kgs and 7000kgs for each season.

- **Sugarcane:**

  Assistance of Rs.200/. per MT of sugarcane is given as support price to sugarcane besides RS.100/. per MT is given as harvesting assistance.

- **Areca nut:**

  The support price is provided to the extent of difference between the actual price received by the farmer and Rs.100/. limited to Rs.20/. per kg for SUPARI category and Rs.10/. for other i.e KHOKA, LAL KHOKA and VENCH. Maximum quantity is 6400 kgs of areca nut.

- **Coconut:**

  Assistance to the extent of difference between Rs.5/. minus and the actual rate received per coconut by the farmer is provided. Minimum quantity of 100 coconuts and maximum 50,000 coconuts.

- **Oil Palm:**

  Assistance to the extent of difference between Rs.5000 per ton of fruit. Less the actual price received by the farmer is provided.

- **Cashew nut:**

  Assistance to the extent of difference between Rs.50/. less the actual price received by the farmer in market limited to Rs.10/. per kg for cashew nut is provided.

Conclusion:

Agricultural co-operatives in India are the backbone of the co-operative system and involved in variety of function and serving the rural people by eliminating middlemen, arbitrary deduction, manipulation of weights and scales, multiple market charges, reduced price and improving market methods, reducing the cost of production on the farm etc. Their role has been commendable and helped in making essential inputs availability and output marketing to the rural masses.

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Economic Analysis of Goat Rearing in Keeraplayam Block, Cuddalore District

Introduction

Goat rearing, this was the economic activity of rural resource-poor people has attracted large and progressive farmers, businessman and industrialists due to its economic viability under intensive as well as semi-intensive systems of management for commercial production. The entry of resource-rich people, including poultry farmers, who have better access to technical knowledge, resources and markets, into this activity would help in realizing the potential of this enterprise. It would also encourage the aspirant commercial goat farmers who do not have access to grazing resources.

The lack of good quality breeding stock being a major constraint in commercialization of goat production, the farms managed on scientific lines should be encouraged to become the centers of production of superior quality breeding animals.

Considering good economic potential in commercial goat production, some large industrial houses such as Hind Agro Industries (a major meat exporter of the country) are entering into goat farming business, especially for the export market. The big poultry farmers from Haryana, Punjab, Delhi, Madhya Pradesh and Maharashtra have also successfully started diversifying their business towards commercial goat farming.

The commercial goat farmers can earn best profit by producing and Marketing pure breed goats and festive sale during Eid. In the long run, vertical and horizontal integrations would have to be evolved for achieving sustainability of commercial goat production and remaining competitive in the global market. Service centres will have to be established to provide technical knowledge, recommended inputs and market information. Small size modern slaughterhouses need to be established near the production centres (possibly in each development block) to maintain commercialization of goat production. The private sector may be encouraged to create such infrastructures through appropriate policy support and incentives. This would enable the farmers to enhance their productivity and reduce cost of their production

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Objectives

1) To understand the livelihood strategies and pastoral practices of goat farmers
2) To study the existing local market in goat trading as well as the potential for forward and backward market linkages.
3) To identify the problem faced goat farmers
4) To understand the economic contribution of goat farming to the society.
5) To analyse the social welfare of goat farmer.
6) To contribution of goat farming were economic and local poor people

Methodology

The present study on "Goat farming in Keerapalayam block of Cuddalore district" is survey type and analytical research. Based on literature review, objectives have been framed and researcher confined to collect information pertained to socio economic condition of goat farmers in Keerapalayam block and the sample of the respondents is composed of 60 respondents.

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Tools of Data Collection

Pre-tested interview schedule was used to collect the primary data. The schedule consists of questions related to socio-economic condition of goat farmers, benefit obtained from goats rearing and problem that they face.

Source of Data

This study is based on primary data collect from the 60 respondents those who are running goat farming in Keerapalayam block in Cuddalore district.

Major Findings

- The respondents are keeping the goats 83.3% of the respondents are keeping goats. 16.7% are not keeping them.
- Majority of respondents are doing house work. Smallest number of the respondents is found in service sector.
- The respondents are involved in agriculture and most of them about the return between 1000-10000 are 56.7% and those how get more than 10000-50000 are 36.7% and 6.7% only get above 51000
- The respondents to the livestock health care facilities. It shows that 31.7% of the respondents have free pay to veterinary while as 68.3% have to pay for veterinary. So most of the respondents faces it had to care their goats health because the costs they have pay in order to obtain that.
- Most of the respondents have to travel long distance to get the veterinary doctors.
- The reason why most of the respondent use the lead and follow method is because most of them don't have transport means to transport goat to the market.
- Most of them use locally at home where 61.7% of them use the local market and 23.3% take them near by the market and 15% takes them to the urban market.

Suggestions

- Goat farming should be considered as source of income and should be given much care and there should be use technology in order to expand the production
- Banking institution should provide credit facilities to goat farmer at easy basis
- The government should provide support to rural people how are most involve in this type of farming because it proved income to the most back ward people
- There should improvement in the health facilities goat this can be done through increase the number of free veterinary doctors
- Goat farming should be done on big scale of land because most of the sample respondents those it on small scale of land.
- There should be introduction of high product breed in order to increase the level of market.
- The milk goat should also be improved in order increase its demands.

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Conclusion

In order to improve goat production more effort should made to encourage all group of farmer to be involved in that, when the research was conducts the researcher found that only the middle age and young age are only involved in goat farming.

The government should provide education facilities to the goat farmers; the goat rearing should be educated on keeping goats as source income and even about the health of goats. The most of the farmers face the problem climatic change so there to should be joint force between rearing and the government to solve the problem of climatic change and this can be done through provision of irrigation facilities to the farmers. Financial institutions should put effort in supporting macro finance which provide credits to the rearing and farmers should educated how to use that fund and this will head in development of the standards of living of the rural people. Goat farming is an import source of income if it is given a lot effort. Because it is cheap in caring for them and it can produce good milk and good leather which can be used by industries as source of raw materials.

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Gambling With Farming – A Risky Proposition

Is it acceptable to ignore the historic distress call of the paddy cultivators of Andhra Pradesh and go on with the business as usual? The movement of this rice bowl region in a way reflected the piling up of the farmers' woes as regards to the fickle monsoon, crashing of prices due to bumper harvests, faulty procurement, the state's anti-poverty scheme (which subsidises rice at the farmers' cost) and above all the spiraling prices of the farm inputs. It was rather with the screaming of the editorials that actually prompted the state government to form a high power committee of experts spearheaded by Mohan Kanda to address the unique phenomenon and come out with an amicable solution; assurances did and still continue to pour in from the country's premier research institutes as regards to the farmers' rights to 'get the right prices for their produce'; but the farmers' associations lament that all these has not helped them in any way. In a system in which everybody is entitled to a profit, the 'farmer-induced' stir indeed sent out an obvious awakening signal – 'all that we have been asking is a share of the proceeds that is commensurate with our efforts'. Isn't it a justifiable appeal at a time when the monthly wages of government employees after the sixth pay commission have gone up by 150 percent, monthly income of legislators and parliamentarians has risen by 200-400 percent and education and health expenses have gone through the roof (Sharma, 2011)? However there do exist a section of economists who seem to be opposing the 15.7 percent increase in MSP of paddy (although the farmers felt that the increase is too low to offset the rising cost of farm inputs) proposed by the CACP stating that it may trigger the food subsidy bill and thereby inflation (Kang, 2012). Have these economists failed to recognize the harsh fact that the cultivation of paddy continues to be in the throes of what appears to be a perpetual rise in farm inputs? Or are they showing deliberate ignorance to pave way for the corporate takeover of farmland?

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It is worth mentioning that the agrarian movement which erupted during the last kharif season has started to engulf the other food bowls in India. The movement besides having extended to six more districts of Andhra Pradesh with the farmers threatening to continue their agitation in the Rabi season as well the Consortium of Indian Farming Association has called the farmers in Punjab to declare crop holiday in 10 percent of the land against the low price of wheat and rice (Deccan Herald, 2012).

And The Water Users' Association of Sriamsagar Project too is compelled to declare crop holiday this Kharif season (The New Indian Express, 2012). Can these distressed moves of the farming community be considered as a symbol of an epic crisis that is going to unfold at a national level in the near future? How different is the situation in the Thanjavur-Nagapattinam region – the 'granaries of Tamil Nadu'? Is paddy cultivation remunerative in those regions? Can we expect a Konaseema-like situation in this fertile irrigated Cauvery delta region? In this article an attempt will be made to answer these questions by utilizing the available data.

How Remunerative Is Paddy Cultivation In Tamil Nadu?

Distressed voices of the paddy cultivators of Tirunelveli in Tamil Nadu have reportedly echoed the ongoing painful scenario of conversion of barren lands into housing plots. Elsewhere in Thanjavur the paddy cultivators have opted to cultivate 'green gold' (pulses) on their fields. The officials from the agricultural department of the respective districts point out that it is the capricious monsoon that is playing havoc with these farmers. Is paucity of water the only vital factor in prompting the farmers to either go in for a change in the cropping pattern or disposing off their farm lands for housing purposes? What about the cost of cultivation of paddy in these regions? Is it not woefully vicious?

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Being a staple crop, paddy is estimated to be cultivated in about 39.47 million hectares in India (2011-12). It accounts for about 33.85 percent of the cropped area and about 39.46 percent of production of foodgrains (2010-11). With paddy being an irrigated crop, the coverage of irrigation witnessed a leap from 31.7 percent in 1950-51 to 58.7 percent in 2008-09. The farmers were also able to maintain the yield which increased from 668 kg/hectares in 1950-51 to 2207 kg/hectares in 2010-11. Somewhat shoddy in its implementation, the Minimum Support Price (MSP) has increased over the years for paddy crop. Keeping these facts aside, there is a need to analyse the profitability of paddy from the data on cost of cultivation published by the Commission of Agriculture Costs and Prices (CACP) of the Ministry of Agriculture for the period 2000-01 to 2009-10 for the state of Tamil Nadu. While carrying out the analysis, startling revelations came to the fore. The farmers of Tamil Nadu were struggling to get a substantial profit over the cost C2 over a ten-year period, ie., from 2000-01 to 2009-10. It seems that as regards to the cost of cultivation of paddy crop, the status of the three-seasoned patterned rice bowl state (Tamil Nadu) is no different from Andhra Pradesh. If this is so, then can we expect a healthy signal with respect to the area under cultivation of paddy, production and productivity of paddy in Tamil Nadu and more specifically in the Thanjavur-Nagapattinam region? If we receive somewhat unhealthy signals from the paddy fields of Tamil Nadu, will it have any larger impact on the gross foodgrains production of India?

Foodgrains Production in Tamil Nadu – Is it Precarious?

Tamil Nadu is one such state in India which has been cultivating paddy from time immemorial owing to its favourable climatic conditions suitable for paddy cultivation. In Tamil Nadu, the paddy crop is cultivated in about 1.91 million hectares (2010-11). It accounts for about 60.82 percent of the cropped area and about 75.42 percent of production of foodgrains (2009-10). In the recent years it is observed that the area under cultivation of paddy in the state has gradually declined from 2.08 million hectares in 2000-01 to 1.91 million hectares in 2010-11. However, compared to the previous year there has been an increase in the area under cultivation of paddy by about three percent. The picture is equally worse in production and productivity as well. The production of paddy is found to have declined from 7.36 million tonnes in 2000-01 to 5.79 million tonnes in 2010-11, but it has indeed increased during 2010-11 as compared to its previous year by about two percent. The productivity of paddy which declined from 3541 kg/hectares in 2000-01 to 2682 kg/hectare in 2008-09, revived sizably in the following year to the tune of 3070 kg/hectares, but fell to 3039 kg./hectares in 2010-11. However, the picture does not seem to be gloomy in the Thanjavur-Nagapattinam region.

The area under cultivation of paddy in Thanjavur district has infact risen from 0.13 million hectares in 2002-03 to 0.16 million hectares in 2009-10, however, compared to the previous year a dip by about five percent is noticed during the period 2009-10. The paddy crop has indeed clocked positive signs in terms of production and yield rate in these rice-bowl regions. And more specifically the decline in the area coverage had adequately been compensated by the increase in production and yield rate. One observation worthy to note from all these facts and figures is that despite a shrink in the area under cultivation of paddy in the rice-bowl regions it has in no way impinged upon the production owing to a significant jack up in the yield rate. Does this healthy signal from the paddy fields of the rice-bowl regions indicate that all is well as regards to the state's foodgrains production?

A shaky and depressing situation tends to prevail as regards to the area under cultivation and production of foodgrains in Tamil Nadu. When compared to the previous year the area under foodgrains in 2009-10 dwindled by about three percent. Such a consistent decline in the area under foodgrains is a matter of serious concern as it is one such factor which determines the gross production of foodgrains in the state over the years. Equally depressing is the production scenario as well. The production of foodgrains declined from 8.61 mt in 2001-01 to 6.58 mt in 2007-08, however, witnessed a rapid increase in the two successive periods. However, the yield rate is found to be encouraging as it has increased moderately from 2461 kg./hectare in 2000-01 to 2473 kg./hectare in 2009-10.

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Onset of a Crisis of Sustainability and Economic Viability

What can be inferred at this juncture is that the danger is looming over the farming horizon of Tamil Nadu. The agricultural officials of the state seem to be rejoicing over the increase in the area under pulses cultivation; what they fail to recognize the underlying fact is that a shrink in the area under paddy cultivation can in no way be compensated by an increase in the area under pulses cultivation; rather it would jeopardize the gross foodgrains production of the country. The trends in area, productivity and production of foodgrains apprehend that there is going to be a slowdown in the gross production of foodgrains in India. Wherein the average under fallow land increased by over two million hectares during 2000s (2000-01 to 2009-10) over its previous decade 1990s (1990-91 to 2000-01), the net sown area also declined to about two million hectares during the same period.

The area under foodgrains crops also witnessed a sharp decline between 1990s and 2000s. The average foodgrains area which was 123 mha during the 1990s, dipped to about 121 mha in 2000s, a reduction of about two million hectares. To be more specific, the area under foodgrains which increased consistently till the end of 1980s, started to decline thereafter. However, it is found to have increased from 125 mha in 2010-11 to 126 mha in 2011-12. Despite the production of foodgrains touching a new peak of 257 million tonnes in 2011-12, the trends in productivity and productions are far from satisfactory. The average productivity of foodgrains no doubt increased from 1535 kg/ha during 1990s to 1768 kg/ha during 2000s, the increase in terms of percentage has reduced during 2000s compared to its previous decade where it increased to over 30 percent. Likewise, the increase in gross production of foodgrains also fell to 2.25 percent during 2000s as compared to its previous decade where it was over seven percent. All these facts and figures vividly point out that if the plight of the distressed paddy cultivators of Andhra Pradesh and Tamil Nadu is ignored then the production of foodgrains is more likely to head towards a precarious situation.

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Trends in Area, Production and Productivity of Sugarcane in India

Introduction

Sugarcane has been secured important place among the crops of India. It provides raw material for the second largest industry in our country. In the sugar map of the world, India stands first in respect of area under cane 5.4 million acres. India is presently dominant players in the global sugar industry along with Brazil in terms of productions and nearly 50 million farmers are dependent in sugarcane cultivation. Unlike many Western or major sugar growing countries, sugarcane is the only source of sugar in our country and therefore any mismatch between demand and supply of sugar in the country assumes significance at the national level and influences the economics of sugarcane cultivation to a great extent.

History of Sugarcane

The sugarcane belongs the order of grasses and is perennial in its habit mention of sugarcane is made in 'Atharv veda'. From provinces of Indian border it spread to Far East around 424 A.D. in to Southern China on to Java, Philippines and Island of the Pacific, Hawaii, etc. It is said to have travelled towards the West in to Arabia and Spain by about 1620 A.D. Its cultivation is known to have extended to Brazil, Peru and other American republics and the Island of the Atlantic by 1650 A.D. By 18th century its spread was almost global. Gur, Khandsari and sugar is prepared from Sugarcane in India since time imperial.

Statement of the Problem

According to National Commission on Agriculture, Population of India is expected to swell to 1.5 billion by 2030AD. The Per Capita Consumption may go up to 35 Kg. by 2030 AD. India require nearly 520 million tons of sweeteners by 2030 AD. 312 million tons of sugarcane will be required for White Sugar and 78 million tons of cane exclusively for ethanol production. .This will entail a productivity requirement of 100-110 tons per hectare, as the area under sugarcane cultivation may stabilize around 5.00 million hectare. India has to gear up to the new challenges of higher cane and sugar production to meet the further requirements. Keeping these aspects in view, present study is undertaken to Access the changes in Area, Production, Productivity, Import, and Export of sugarcane in India.

Objectives

1. To study the changes in area, production, productivity of sugarcane and its growth in India, Tropical and Subtropical states of India.
2. To know the changes in Utilization pattern of sugarcane in India.
3. To analyze the India's Export and Import of sugar.

Methodology:

The methodology of the present study is comprised of the following parts:

Nature of Research Design:

The study is intended to analyze and describe the area, production, productivity, imports and exports of sugarcane in India.

Period of Study:

The study covered the period of 11 years from 2000-01 to 2010-11

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Source of Data Collection:

The study is mainly based on the Secondary data. The data for the study was drawn from published books of Sugar India Year Book and Cooperative Sugar Journal.

Method of Data Analysis:

The collected data were analyzed with the help of simple statistical tools like percentage, Average Growth Rate (AGR) and Compound Growth Rate (CGR).

The formula for AGR=$(Y_t - Y_0)/ Y_0 x\ 100$

The formula for CGR= $[(Y_t /Y_0)1/t-1] \times 100$

Y_t = Value of current year

Y_o = Value of previous year

Summary and Findings

Summary and findings of the present study is as follows.

The area and production of sugarcane in India during the study period (2000-2011) was positive being 1.36 percent and 1.37 percent respectively. There was no improvement in productivity during this period.

The area and production of sugarcane in the tropical state during 2000-2011 was positive being 1.75 percent and 1.45 percent respectively. The growth of productivity of sugarcane in tropical state was only 0.21 percent.

The area and productivity of sugarcane in subtropical state during 2000-2011 was 1.17 percent and 1.46 percent. The growth of productivity of sugarcane in subtropical state was only 0.79 percent.

There was change in percentage utilization pattern of sugarcane in India. White sugar production has increased by 11 percent. Gur and Khandsari production has been decreased by 12 percent. Seed and feed utilization of sugarcane has been stable at 12 percent.

The growth of export was negative being -18.42 percent and import was positive being 36.05 percent for the study period.

Conclusion

Area and Production of sugarcane in tropical and subtropical states has fluctuated in absolute terms, in terms of Average Growth Rate (year wise) and Compound Growth Rate (state wise), pointing out the need for bringing out the stability in area and production in India. Productivity of Sugarcane shows no improvement, pointing out the need for taking effective steps towards improving the Sugarcane productivity. The utilization of sugarcane for white sugar production has been raising and that for Gur and Khandsari production falling. Seed and feed utilization of sugarcane has been stable. The growth of export of sugarcane was negative and import was positive for this study period, pointing out the need for taking effective steps towards improving the export.

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The New Avatar of the Mgnregs

Introduction

The Mahatma Gandhi National Rural Employment Guarantee Act [MGNREGA] aims at enhancing the livelihood security of people in rural areas by guaranteeing hundred days of wage - employment in a financial year to a rural household whose adult members volunteer to do unskilled manual work. The objective of this Act is to supplement wage employment opportunities in rural areas and in the process also build up durable assets.

The new avatar of the Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS), coming into existence on April 1, 2012, will allow farmers who qualify for support under MGNREGS to hire hands for eight man-days per acre for transplantation and for another four man-days at two intervals for weeding. Through this provision the centre seeks to solve the problem of small and marginal farmers who not only find it difficult to get hands but also pay higher wages demanded by workers. They are unable to match the wage paid under MGNREGS. Now the government will pay for those working on agricultural land owned by eligible farmers.

The objective of this paper is to study what are the new works permitted under MGNREGA and to examine the impact of MGNREGS on poverty decline. The MNREGS is one of the major programme for the declining of poverty in rural India. From this major impact, the planning commission has recently released the poverty ratio has declined by 7.3 per cent points from 37.2 per cent in 2004 – 2005 to 29.8 per cent in 2009-2010 and with the rural poverty declining by 8 per cent points from 41.8 per cent to 33.8 per cent. In the MGNREGS, out of the 30 new works approved almost 90% were agriculture related.

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A. Watershed related works

1. Contour trench

A contour trench is a trench dug along a contour line. A contour line is an imaginary line that joins together points of the same elevation. Since the trench is dug along a line that is at the same elevation, this increases the chance of holding the runoff water for a longer time within the trench.

2. Contour bund

Contour bunds are a simple and low-cost method of checking the velocity of runoff in the ridge area of any watershed. A contour bund is a bund constructed along a contour line. A contour line is an imaginary line which joins together points of the same elevation. Making a bund along a line that is at the same level increases the chances of containing runoff for a longer period of time within the bund. Like contour trenches, bunds also collect the rainwater that falls in the ridge area. This way the soil moisture profile in the area adjacent to the bund is improved.

3. Boulder check

The main aim of constructing loose boulder checks is to reduce the velocity of water flowing through the drainage line. By reducing the velocity of runoff, boulder checks help in reducing soil erosion; trapping silt which slows the rate of siltation in water harvesting structures in the lower reaches of the watershed; creating a hydraulic head locally which enhances infiltration of surface runoff into the groundwater system; and increasing the duration of flow in the drainage line. Therefore, the capacity of the water harvesting structures created downstream on the drainage line is utilised more fully as they get many more refills.

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4. Farm bunding

Farm bunds are constructed on agricultural land with the aim of arresting soil erosion and improving the soil moisture profile. Ideally, bunds on farms should be made on the contour line. However, farmers do not easily accept this as it creates several problems. Contour bunds divide the field into irregular sections.

5. Gabion structures

The main aim of constructing gabion structures is to reduce the velocity of water flowing through the drainage line. By reducing the velocity of runoff, gabion structures help in reducing soil erosion, trapping silt, which reduces the rate of siltation in water harvesting structures in the lower reaches of the watershed, increasing recharge of groundwater and increasing the duration of flow in the drainage line.

6. Underground dyke

Underground dykes are earthen dams that obstruct the flow of this sub-surface water and divert them to nearby wells and tubewells. Dykes do not submerge any land. Nor is the water stopped by them subject to evaporation. Underground dykes are most suited to hard rock areas where impermeable strata are often found at shallow depths below the surface and in areas where the soil required to fill up the dyke is relatively easily available.

7. Earthen dam

The most important structures of any watershed programme are the earthen dams built on the main stream of the watershed. Most parts of India typically receive rainfall between June and September, very intensely within a few hours and a few days. The number of rainy days does not average more than 40-50.

B. Watershed related works in mountain regions

v Springshed development

Regenerating springs' discharge in mountain regions is critical because they are the sources of most rural and urban water supply systems. Larger springs are also used for irrigation. A springshed is the area of a mountain slope that feeds water to a spring through underground seepages. Springshed development can help enhance rainfall infiltration into the ground, recharge springs, revive dysfunctional traditional water harvesting systems, moderate flood peaks and recharge streams and rivers. Springshed development includes a number of interventions that are typical of watershed development, e.g., trenching, planting of trees, fodder grasses or hedges and gully plugging.

C. Agriculture related works

1.NADEP composting

Revitalizing soil health holds the key to improving productivity of Indian agriculture. Composting is a process of utilising and processing solid waste through which its organic component is biologically decomposed to a humus-like state that can be used as fertiliser. Solid wastes usually contain the entire range of micro-organisms in large numbers. Selection of households to be taken up for this activity under MGNREGA will be made only from those households eligible under MGNREGA for work on private land.

2. Vermi-composting

Vermi-composting uses earthworms to turn organic wastes into very high quality compost. In ideal conditions worms can produce at least their own weight of organic matter in a day. The micro-organisms in the worm casts promote healthy plant growth. Usually, a twin pit model is used for vermi-composting, with the pit size of 3.6m*1m*0.75m and with a dividing wall in the middle. Vermi-composts are best suited for intensive application in kitchen gardens and small vegetable plots.

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3. Liquid bio-manures: sanjeevak or amrit paani

Sanjeevak is a liquid manure application based on cattle-urine. This low cost and effective method has immense potential to improve plant nutrition. This solution should be shaken regularly three times a day. After 7 days, the liquid manure of 1000 litres is diluted and applied on the field. This liquid manure can be mixed with irrigation water at the time when crops are irrigated. This ensures an even spread of the manure in the field. It can also be used in vegetable plots and kitchen gardens.

D. Livestock related works

1. Poultry shelter

Backyard poultry helps in supplementing income as well as for providing much needed nutritional inputs for rural households. Poultry birds suffer from very poor shelter infrastructure available in villages leading to their poor health and frequent illnesses. High mortality amongst birds results in high losses and unpredictable and low incomes.

2. Goat shelter

Most poor rural households, who depend on small ruminants, lack the resources to construct and provide for an adequate and safe living space for their cattle. It is well known that for tribals of Central India goats and poultry are often more important as a means of livelihood than even minor forest produce.

3. Construction of pucca floor, urine tank and fodder trough for cattle

sually, cattle are kept in sheds with kutcha floor. The place where cattle rest often gets messy with cow dung, cattle urine and water. In particular, during rainy seasons the kutcha floor becomes unhealthy for and causes several infectious diseases for the cattle.

Conclusion

The Mahatma Gandhi National Rural Employment guarantee Act offers the promise of entitlement, empowerment, security and opportunity to millions of our marginalized citizens. It offers the promise of being a separated of rural transformation that spins off positive impulses in agriculture community development, sustainable livelihood creation, water management and sanitation.

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Food Production in India in Pre and Post Reform Period

Agriculture was considered to be the backbone of Indian economy and its contribution to the National Income was estimated at about 57 per cent in the early fifties. This position got altered steadily and significantly since independence. In 2000- 01, the contribution of agriculture to GDP was halved again to about 26 per cent. In 2007-08, it is estimated that agriculture contributes only 19.78 percent to the GDP. (Economic Survey, 2009). The growth performance of agriculture has been always lower than that of the total economy since the early independence period say pre-green revolution era (1951-52 to 1967-68).

The divergence is the highest during the Tenth Plan Period where the total economy was growing at 7.77 per cent, the agriculture and allied sector was witnessing a growth of 2.47 per cent only. The growth rate of agriculture was relatively high during the eighties and early nineties, 3.52 and 3.66 per cent respectively. However, during the 9th Plan, the growth rate of agriculture dripped down to 2.50 and further to 2.47 during the 10th Plan Period. It showed declining importance of agriculture sector in the Indian economy. In general, the poor performance of agricultural production and food production is not a healthy sign for the economy. (Albert Christopher Dhas, 2011). The recent trends in the agricultural sector of India need to be looked at in the context of globalization process and its impact on Indian economy. In the present paper, an attempt was to analyse the impact of economic reform on food production in India. The following are the specific **objectives** of the study

1. To analyse the trend and growth in the food production in the pre and post reform period
2. To compare food production in the pre and post reform period

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Methodology

The data for the study was based on secondary data collected from Hand Book of Indian Economy, Reserve Bank of India, Bombay. The period of the study was divided as pre reform and post reform period. The pre reform period was confined to the period of 1950- 1991. The post reform period was considered as the period between 1991- 2011. The trends in the food grains production was compared between pre and post reform period. The t test and compound growth rate was used to fulfill the objectives. The specification of the above statistical tools are as under

Results and Discussion

The results pertaining to the study is analysed under the following heads

1. Trends in food grains production
2. Comparison of food grains production between pre and post reform period.
3. Growth of food grains production between pre and reform period

1. Trends in the Food Production

The performance of agriculture by crop categories clearly indicates the slowing down process of agriculture in India. Though the onset of deceleration in agriculture began from early nineties, it became sharp from the late nineties. The cereals output was growing at the rate of 4 percent in the fifties and sixties, and thereafter it recorded a steady decline and the growth rate was only 1.28 per cent during the 10th Plan Period. The growth rates of pulses and oilseeds declined drastically during the 9th Plan, but improved during the 10th Plan. The growth rates of fruits and vegetables output showed a steady decline from early nineties (Albert Christopher Dhas, 2011).

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TABLE-1

Trends and Growth of Food Production in the Pre Reform Period

(Million tones)

Year	Rice	Wheat	Coarse Cereals	Total Cereals	Pulses	Total Foodgrains
1950-1951	20.58	6.46	15.38	42.42	8.41	50.83
1951-1952	21.30	6.18	16.09	43.57	8.42	51.99
1952-1953	22.90	7.50	19.61	50.01	9.19	59.20
1953-1954	28.21	8.02	22.97	59.20	10.62	69.82
1954-1955	25.22	9.04	22.82	57.08	10.95	68.03
1955-1956	27.56	8.76	19.49	55.81	11.04	66.85
1956-1957	29.04	9.40	19.87	58.31	11.55	69.86
1957-1958	25.53	7.99	21.23	54.75	9.56	64.31
1958-1959	30.85	9.96	23.18	63.99	13.15	77.14
1959-1960	31.68	10.32	22.87	64.87	11.80	76.67
1960-1961	34.58	11.00	23.74	69.32	12.70	82.02
1961-1962	35.66	12.07	23.22	70.95	11.76	82.71
1962-1963	33.21	10.78	24.63	68.62	11.53	80.15
1963-1964	37.00	9.85	23.72	70.57	10.07	80.64
1964-1965	39.31	12.26	25.37	76.94	12.42	89.36
1965-1966	30.59	10.40	21.42	62.41	9.94	72.35
1966-1967	30.44	11.39	24.05	65.88	8.35	74.23
1967-1968	37.61	16.54	28.80	82.95	12.10	95.05
1968-1969	39.76	18.65	25.18	83.59	10.42	94.01
1969-1970	40.43	20.09	27.29	87.81	11.69	99.50
1970-1971	42.22	23.83	30.55	96.60	11.82	108.42
1971-1972	43.07	26.41	24.60	94.08	11.09	105.17
1972-1973	39.24	24.74	23.14	87.12	9.91	97.03
1973-1974	44.05	21.78	28.83	94.66	10.01	104.67
1974-1975	39.58	24.10	26.13	89.81	10.02	99.83
1975-1976	48.74	28.84	30.41	107.99	13.04	121.03
1976-1977	41.92	29.01	28.88	99.81	11.36	111.17
1977-1978	52.67	31.75	30.02	114.44	11.97	126.41
1978-1979	53.77	35.51	30.44	119.72	12.18	131.90
1979-1980	42.33	31.83	26.97	101.13	8.57	109.70
1980-1981	53.63	36.31	29.02	118.96	10.63	129.59
1981-1982	53.25	37.45	31.09	121.79	11.51	133.30
1982-1983	47.12	42.79	27.75	117.66	11.86	129.52
1983-1984	60.10	45.48	33.90	139.48	12.89	152.37
1984-1985	58.34	44.07	31.17	133.58	11.96	145.54
1985-1986	63.83	47.05	26.20	137.08	13.36	150.44
1986-1987	60.56	44.32	26.83	131.71	11.71	143.42
1987-1988	56.86	46.17	26.36	129.39	10.96	140.35
1988-1989	70.49	54.11	31.47	156.07	13.85	169.92
1989-1990	73.57	49.85	34.76	158.18	12.86	171.04
1990-1991	74.29	55.14	32.70	162.13	14.26	176.39

Source: Handbook of Indian Economy, Reserve Bank India, Bombay.

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In the pre reform period, the production of rice, wheat , pulses and total food grains production had shown an increasing trend in the pre reform period though there was fluctuation. The total food grains production was 50.83 million tonnes in 1950 -1951. It had fluctuated and reached 176.39 million tones in 1990 -1991.

In the pre reform period, the area under rice production had increased from 30.81million hectares in 1950 -1951 to 42 .69 million hectares in 1990-1991. The wheat production had increased from 9.75 million hectares in 1990-1991 to 24.71 million hectares in 1990-1991. The area under production of coarse cereals pulses had also shown an increasing trend in the pre reform period. The area under total production of pulses increased from 78.23 million hectares in 1990-1991 to 103.18 million hectares in 1990-1991. The area under total food grains production had fluctuated and reached 127. 84 million hectares in 1990-1991.

In the post reform period, the policy measures were not favourable for agricultural sector. Hence the agricultural production was affected much in the post reform period. The poor performance of agriculture could be attributed to a large number of factors such as natural resource base (including rainfall), technology, infrastructure (including irrigation), and the economic environment comprising price signals and institutions. The Steering Group of the Eleventh Plan identified technological change, public investment, and diversification as the most important determinants of growth. The Steering Group analysis showed that progress on technology and public investment slowed down from early 1990s. (Albert Christopher Dhas, 2011)

The table -2 shows the food grains production in the post reform period.

Table-2

Trends in the Food Production in the Post Reform Period

(Million Tonnes)

Year	Rice	Wheat	Coarse Cereals	Total Cereals	Pulses	Total Foodgrains
1991-1992	74.68	55.69	25.99	156.36	12.02	168.38
1992-1993	72.86	57.21	36.59	166.66	12.82	179.48
1993-1994	80.30	59.84	30.82	170.96	13.30	184.26
1994-1995	81.81	65.77	29.88	177.46	14.04	191.50
1995-1996	76.98	62.10	29.03	168.11	12.31	180.42
1996-1997	81.73	69.35	34.11	185.19	14.24	199.43
1997-1998	82.54	66.35	30.40	179.29	13.83	193.12
1998-1999	86.08	71.29	31.33	188.70	14.91	203.61
1999-2000	89.68	76.37	30.34	196.39	13.41	209.80
2000-2001	84.98	69.68	31.08	185.74	11.07	196.81
2001-2002	93.34	72.77	33.37	199.48	13.37	212.85
2002-2003	71.82	65.76	26.07	163.65	11.13	174.78
2003-2004	88.53	72.15	37.60	198.28	14.91	213.19
2004-2005	83.13	68.64	33.46	185.23	13.13	198.36
2005-2006	91.79	69.35	34.06	195.20	13.39	208.59
2006-2007	93.35	75.81	33.92	203.08	14.20	217.28
2007-2008	96.69	78.57	40.76	216.02	14.76	230.78
2008-2009	99.18	80.68	40.03	219.90	14.57	234.47
2009-2010	89.13	80.80	33.55	203.48	14.66	218.11
2010-2011	95.32	85.93	42.22	223.47	18.09	241.56

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Source: Handbook of Indian Economy, Reserve Bank India, Bombay.

In the post reform period, the rice production had increased from 74.6 million tonnes in 1950-1951 to 95.32 million tonnes in 1990 -1991. The production of total cereals and pulses had also shown an increasing trend in the post reform period. But this increase was not adequate to meet the growing demand for food.

2.Comparison Of Food Production In Pre And Post Reform Period

Conclusion

To conclude, the absolute level of food production was higher in the post reform period compared to pre reform period. The value of t shows that there was significant difference in the food production between pre and post reform period. Though the absolute level of food grains production was higher in the post reform period, the growth rate of food grains production was less in the post reform period. It was on account of negative growth of area under food grains production in the post reform period.

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Issues Related to Use of Chemical Fertilizers in Agricultural Sector of India

Introduction:

Agriculture means not only the production of crops by the cultivation of soil, but also the rearing of livestock. Thus milk, meat and wool are gathered in agriculture and product as wheat, rice and cotton. Agriculture is a basic and an important occupation as it provided not only food-stuff but also essential raw-materials of industry. It is the oldest business in the work and nearly two-thirds of the population of the world is dependent on agriculture directly or indirectly for its livelihood. The development of agricultural sector is felt important in India which has to feed around 121 crores of people. Fertilizer is one of the powerful resources to the man who wrests his living from the soil. This paper is also significant from the broader perspective of regional and national policy making. The results of this paper would help in formulating government policies regarding to protect the soil from fertilizer.

Consumption Of Fertilizers In India

(Thousand tones of nutrients)

Year	Nitrogenous (N)	Phosphate (P)	Potassic (K)	Total (NPK)
2005-06	12723 (62.55%)	5204 (25.56%)	2413 (11.89%)	20340 (100%)
2006-07	13773 (63.6%)	5543 (25.6%)	2335 (10.78%)	21651 (100%)
2007-08	14419 (63.8%)	5515 (24.4%)	2636 (11.6%)	22570 (100%)
2008-09	15090 (60.5%)	6506 (26.1%)	3313 (13.3%)	24909 (100%)
2009-10	15580 (58.8%)	7274 (27.4%)	3632 (13.7%)	26486 (100%)
2010-11*	NA	NA	NA	NA

Source : Ministry of Chemicals & Fertilizers, Department of Fertilizers.

Figures in parentheses show per cent

*Estimated (Production figures are considered actual for April-November 2010 and estimated for Dec.2010 – March 2011)

NA : Not available

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The above table shows that in all the years from 2005-06 to 2009-10, the quantity of consumption of nitrogenous (N) fertilizer was more compared to phosphate and potassic. Regarding nitrogenous fertilizer the consumption has decreased from 62.55 per cent to 58.8 per cent. The consumption of phosphate (P) has increased from 25.57 per cent to 27.4 per cent. In the case of potassic (K) fertilizer consumption has increased from 11.8 per cent to 13.7 per cent.

Issues in the use of chemical fertilizer in Agricultural sector of India:

Over application can result in negative effects such as leaching, pollution of water resources, destruction of micro-organisms and friendly insects, crop susceptibility to disease attack, acidification or alkalization of the soil or reduction in soil fertility — thus causing irreparable damage to the overall system. Over supply of N leads to softening of plant tissue resulting in plants that are more sensitive to diseases and pests. They reduce the colonization of plant roots with mycorrihizae and inhibit symbiotic N fixation by rhizobia due to high N fertilization. They enhance the decomposition of soil OM, which leads to degradation of soil structure. Nutrients are easily lost from soils through fixation, leaching or gas emission and can lead to reduced fertilizer efficiency

The food problems commenced in the 18th century and the magnitude of the problem intensified during the 20th century. But at present due to the pragmatic steps followed by the Government such as Green Revolution, the intensity of food problem has decreased. However, the problems faced by the farmers seem to continuing due to various reasons. Farmers face diversity in landholdings, pattern of crop, usage, lack of capital, rural indebtedness, marketing problems and other economic problems

Outmoded farming techniques, fluctuations and inelasticity of crop output, more dependence on natural resources such as rain, temperature *etc.*, also cause maximum fluctuations in the agricultural sector. Further India is a country having substantial diversities. The nature of soil, the magnitude, availability of water in time, cost of farming, availability of power, cost of fertilizers and pesticides differ considerably between various regions.

Productivity in agriculture depends on social, technological and economical factors The consumption pattern of fertilizers also varies due to local and environmental factors. The social environmental of villages is a reason for changes in consumption pattern. Most of the Indian farmers are illiterates, superstitious, conservative and indifferent to new agricultural techniques in relation to fertilizers. Lack of credit and marketing facilities with regard to produce is also considered as a factor influencing fertilizer consumption.

Availability of required quantity, storage facility for fertilizers, cost of applying fertilizers, chemical combination required, water and irrigation facilities available at the time of applying, type of crop *etc.*, may influence fertilizer consumption pattern. The socio economic status of the farmers may also have impact on the consumption pattern. Increased use of biological fertilizers may also divert the attention of the farmers to new – untouched areas. Some consumer organizations are also opposing the use of chemicals as fertilizers and wide propaganda is being made for use manure and bio-fertilizers. A single window system has not so for been developed to minimize the problem of farmers, especially in the case of fertilizer consumption.

Integrated use of chemical, organic and biofertilizers

Increased attention is now being paid to developing an Integrated Plant Nutrition System (IPNS) that maintains or enhances soil productivity through balanced use of all sources of nutrients, including chemical fertilizers, organic fertilizers and biofertilizers. The basic concept underlying the IPNS is the adjustment of soil fertility and plant nutrient supply to an optimum level for sustaining desired crop productivity through optimization of the benefits from all possible sources of plant nutrients in an integrated manner.

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We conducted a field experiment to evaluate the effects of chemical fertilization (CF), organic fertilization (Compost-N and Compost-P), combined use of chemical and organic fertilizer (Compost-P + urea) and integrated use of chemic al and organic fertilizer along with biofertilizer (½ (Compost-P + urea) + Biofertilizer) on the growth of cabbage and maize (residual effect) and soil fertility. The amount of fertilizer application in all treatments, except CK, Compost-N and Biofertilizer was based on providing the same amount of P for cabbage, and the release rate of P in compost was assumed to be 30%.

Suggestions

The state can think in terms of going in for extensive cultivation instead of practicing intensive cultivation. This may minimize the problems related to fertilizer usage and may also provide employment to millions of rural poor.

Enormous advertisements may be given in villages about the type of mix of chemical and bio-fertilizers according to the cropping pattern so that the farmers are benefited by these advertisements. Also Agricultural officers or block level officers can advice the farmers about the profitability in using the mix of chemical and bio-fertilizers.

The agricultural farmers should be sensitized on the optimum level of usage of fertilizers to prevent over and under usage of fertilizer through simple charts to be distributed through fertilizer outlets and agricultural departments.

Conclusion

Efficient plant nutrition management should ensure both enhanced and sustainable agricultural production and safeguard the environment. Chemical, organic or microbial fertilizer has its advantages and disadvantages in terms of nutrient supply, soil quality and crop growth. Developing a suitable nutrient management system that integrates use of these three kinds of fertilizers may be a challenge to reach the goal of sustainable agriculture; however much research is still needed.

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Crisis of Indian Agriculture : Before and After Economic Reforms in India

Introduction

In the decade of liberalization, privatization and Globalization i.e. the last decade of 20th century, the agricultural landscape of the country was dismal and full of contradiction agricultural growth was stagnant. Condition of farmer remained the same throughout the country i.e. he fought hard to earn his livelihood (except in the areas of) Agriculture to this date remains a gamble against the monsoon. This statement sums up the level of infrastructural support available to Indian farmers. In the areas of green revolution the situation of farmers was no different. It appeared farmers here had become rich evolved into entrepreneurs. But the fact remains while in other parts of country agricultural yields were stagnant but in green revolution area agricultural yields were actually declining. This is attributed to over exploitation of land and water.

Some of the indicators of the crisis

- Based on the Structural Adjustment Programme the government has been reducing its investment in agriculture. European Journal of Business and Management
- The fundamental difference between agriculture and industry is being ignored. viz. whereas capital is elastic in supply, land is inelastic. There is no level playing field. While the manufacturing and service sectors are virtually pampered, the real/ rural sector that feeds the masses is practically disregarded. Even thousands of farmers' suicides could not fetch such a soothing concern to the agriculture sector in our agrarian economy!
- Farmer's suicides – an all-India phenomenon emanating largely from severe indebtedness – has pushed Indian agriculture to a critical condition. The National Sample Survey Organization (NSSO) Report released in 2005 states that 1 in 2 farm households are in debt and only 10 per cent of the debt was incurred for non production purposes. Also, 32.7 per cent of farmers still depend on money lenders. The National Crime Records Bureau reports that between 1997-2005 1,56,562 farmers committed suicide. Nearly 60 of them took place in the 4 progressive states, viz., Maharashtra, Andhra Pradesh, Karnataka and Madhya Pradesh. More than 20 per cent of suicides have taken place in Karnataka.

Gross Capital Formation in Agriculture and Allied Sector

The share of agriculture & allied sector in total GCF after showing a marginal increase during 1999-2000 to 2001-02 has been continuously declining. It stood at 10.2 per cent in 1999-2000, increased to 11.7 per cent in 2001-02. The value of acquisitions of new or existing fixed assets by the Agriculture & allied sectors, which is known as Gross Capital Formation, as a proportion to the GDP in the Agriculture & allied sectors stagnated around 14 per cent during 2004-05 to 2006-07. Now, there is a marked improvement in this figure during the current Five Year Plan 2007-12. The proportion has increased to 16.03 per cent in 2007-08 and further to 19.67 per cent in 2008-09 and to 20.30 per cent in 2009-10. Though, the GCF in agriculture and allied sectors relative to overall GDP has remained stagnant at around 2.5 to 3.0 per cent. The decline was mainly attributed to decline in the private sector despite increase in the share of public sector.

Policy Measures need to be done

The crisis in agriculture is a crisis of the country as a whole and so needs urgent attention. Some of the suggestions are listed here.

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- A revamping of the agricultural credit system – a pro-farmer approach is needed.
- Cooperative farming with coordination, particularly by small and marginal farmers needs to be revitalized.
- There is a need for periodic revision of the procurement prices for farm produce, making those remunerative.
- The issues regarding Special Economic Zones should be resolved at the earliest taking into account the genuine interests of the farmers.
- Our farmers must adopt modern practices of farming with a pinch of salt, not sailing on credentials of green revolution but implementing sustainable agriculture. One cannot simply sail on the credentials of green revolution. Sustainable agriculture should be the objective. Eco-friendly techniques must be adopted.
- Empowerment of farmers with social, cultural and spiritual rejuvenation is required to avoid suicidal cases. The balance between biological, human and physical capital growth must be maintained.

Conclusion

Indian agricultural has been hit hard during post WTO period. The share of agro goods in India's global export has declined during this period. During post WTO period, agricultural subsidies of developed countries have been rather increased. Therefore it is very difficult for India to face global agricultural competitiveness. In this scenario, the global agricultural trade would likely to become oligopolistic. The returns of various crops have declined due to increase in cost of production, slow growth of agricultural productivity, weak marketing mechanism, increase in input intensity and fall of water table. As a result farmers have become highly indebted and are resorting to suicides. In the near future also the total quantum of exports particularly agriculture and light manufacturing goods can not be raised significantly in the global market in the near future because of limited and uncertain domestic export surplus and particularly their inelastic demand at world market.

Government of India is not sleeping over this crisis. National Commission on farmers has been constituted under the eminent Scientist Dr. M.S. Swami Nathan. He has recommended a comprehensive national policy for farmers to give an all round boost to the sector. Corporatisation of agriculture should be allowed but in controlled and regulated manner. Government should ensure that corporate sector discharge its social obligations also. With purposeful partnership between private sector and agriculture sectors the crisis in agriculture can be overcome. Developed India is possible with the attainment of growing, advancement of manufacturing and services sector. But prosperous India is possible only with healthy agricultural sector. The pride and confidence in farmers and farming needs to be restored. This alone can help agriculture grow like never before.

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The Concept of Green Industry: A Road to Sustainable Development

Introduction

As far as we know, earth is the only planet that has all the requirements for the species to live. Most of the resources that exist in the earth are being utilized by the human beings. There is no problem arises until the limited number of resources used by the human. But, the problem arises when the human beings started to exploit it at a large scale. The problems make disturbances in the environment and simultaneously. It left the planet is unsuitable for living. "Human society necessarily exploits the surrounding ecosystem in order to survive, but societies that flourish to the extent of over exploiting the ecosystem may destroy the basis of their own survival". The environment serves three distinct functions for human societies (Dunlap 2008). At first, it provides our homes or the space where we conduct our activities; second, it supplies us with the resources that are necessary for living and finally, acts as a "sink" for absorbing the waste products of modern industrial societies.

Green Industry – exclusive way for sustainable development

The Green Industry vision grasps the potential for industries to decouple economic growth and revenues from excessive and increasing resource use and pollution. It foresees a world where industrial sectors minimize waste in every form, utilize renewable resources as input materials and fuels, and take every possible precaution to avoid harming workers, communities, climate, or the environment. Green industries will be creative and innovative, constantly developing new ways of improving their economic, environmental and social performance (UNIDO 2011). It has been prepared as part of the United Nations Industrial Development Organization (UNIDO) Green Industry initiative, which focuses on ways that developing countries can green their industries and accelerate growth in their environmental goods and services sector. The goal of the Green Industry is to promote the developing nations to utilize the new technologies which provide optimal production using little resource, raw materials and exit very low effluent. Green industry is industrial production and development that does not come at the expense of the health of natural systems or lead to adverse human health outcomes. Green Industry is aimed at mainstreaming environmental, climate and social considerations into the operations of enterprises. It provides a platform for addressing global, interrelated challenges through a set of immediately actionable cross-cutting approaches and strategies that take advantage of emerging industry and market forces.

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Developing nations find hard to accommodate with green industry, because of confusion in its technology and question on economic viability. Industries in developing countries are having the machinery depends largely on human force rather than modern technical applications. The machineries and production process are age old, lack of technological advancement leads to dedicate large resource to produce comparatively low standard and low quantity goods. Hence, the implementation of the green industries is a multilevel task that requires contribution from various social systems.

Strategies for initiating green industry

The emergence of green industry depends upon integrated framework which supports greening of industries. The greening of industry by governments is a cross-cutting exercise which involves the complex interplay of environmental, economic and social factors. Some of the important strategies are given below:

i. Formulating new industrial policies

Upto 1986 the industrial policies are only aimed to accumulate wealth for the nation by welcoming the foreign investment. After the 1984 industrial accident in Bhopal, India most of the nations realize the industrial pollution and its effects on human settlement. Further the developed nation came up with drastic

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changes in their industrial policies. Still the developing nation does not understand the importance of harmless industries in developmental activities. In a nation's development the role of polices are comparatively significant, so the policies are need to be formulated under the basis of sustainable development. Every nation must give importance to promote the green industries by introducing new policies. Environmentally-motivated subsidies, stimulating investment in green production technologies, pollution taxes are some of the important things to be concentrate in policy making.

ii. Developing new technology

The technology must be upgrade to satisfy the needs of increasing population and developing consumer culture. Very few nations are give importance in conducting research on sustainable technology, renewable resources and eco-friendly products. Rest of the countries is continuing ignorance in this aspect. Keeping the environmental threatening every nation should promote the research by funding research oriented areas and initiate new research institute to do research in this field. This help to invents new technologies that provide harmless development in the future.

iii. Change of people attitude towards consumer culture

It should be the significant field that everyone must take into consider. Any government policies or new ideas do not get victory without changing the individual attitude. In this consumer culture era, most of the individual prefer to buy the product without knowing their uses, this result in lakhs of products are dumped into the market. Most of them are enemies of eco system in such a way by consuming large power, emitting radiation or other form of harmful gases. By education and providing awareness to the people, they come to utilize the product relatively eco friendly. By introducing "The five star rating" everyone can know the energy consumption of the product, it helps to select a product having energy efficiency.

iv. Promotion of corporate social responsibility

Corporate Social Responsibility (CSR) is a voluntary initiative whereby companies go beyond the course of duty to integrate social and environmental concerns in their day-to-day business operations and external interactions. In a broad sense, CSR can be defined as the overall contribution of business towards achieving sustainable development goals (UN, 2007). Apart from profit oriented activities some companies are doing social service for the betterment of the people living nearby industry by providing housing, health and better infrastructure. In addition to that, it is very important to give them a harmless environment for their secure life. By providing the green industrial circumstance the companies offer a pleasant environment for the people living nearby.

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Conclusion

Our environment has limited resources, i.e. the materials we convert into products, energy, water and air supply and the places where we dispose of old products, are limited. Our society uses these resources to improve the living standard. However, we also need to provide for a sustainable environment for the next generation. The future will be dangerous for not only human kind but also the species having its home on earth when the current situation maintains. In this condition it is important to introduce harmless production technology for safeguard the environment for the future. Hence, the green industry is the right option to preserve the remaining resource for the future generation.

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The Agricultural Crisis in India

Introduction

In the twenty first century India has emerged as a major economic power in the world, with the growth rate of the gross domestic product reaching impressive levels and the poverty ratio coming down significantly. In the context of such a scenario, it is indeed very incongruous and difficult to believe that the Indian countryside where the large majority of its people reside is in the grip of a severe agrarian crisis. The most tragic face of India's agricultural crisis is seen in the increasing number of farmer suicides, not just in the hotspot areas of Andhra Pradesh and Vidarbha but in the allegedly prosperous agricultural zones of Punjab and Karnataka as well. Farmers' suicides are no longer limited to the drought and poverty stricken areas of the country. Now farmers in the most productive agricultural regions such as Karnataka, Punjab, West Bengal, Andhra Pradesh, and Maharastra are ending their lives because of their massive indebtedness.

Reasons for Agricultural Crisis

The agricultural crisis has been attributed to growing cost of cultivation, higher input prices, higher cost of labour, higher requirement for cash and falling price of agricultural produce. This has been compounded by collapse of soil health due to excessive use of agrochemicals and falling water table due to irrational, wasteful use of water resulting from free electricity and free water. Of 5723 ground water blocks in the country, over 1000 are critically exploited. At the same time, there has been diminishing investment in agriculture by the government, with allocation to agriculture falling in Five Year Plans and reduced institutional credit availability to farmers. Repeated crop failures, inability to meet rising cost of cultivation and rising indebtedness have been responsible for farmers' suicides in the countryside It has been felt that the present crisis is the result of deflationary public policies and trade liberalization which has slowed output growth, contributed to rising unemployment, income deflation for the majority of cultivators and labourers and loss of assets including land, to creditors. Another reason being given for the agricultural crisis is the drastic reduction in the state's spending on rural development which has led to loss of purchasing power among rural people. Expenditures in rural development, under which fall the heads agriculture, rural development, special areas programmes, irrigation and flood controls, and village and small scale industry, have been slashed to an all time low of 0.6% of NNP in 2010.

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An attempt to have a correct appraisal of the crisis afflicting Indian agriculture in recent times has been made by the Tata Institute of Social Sciences (TISS) in Mumbai, which had conducted an investigation into the Vidarbha agrarian crisis and farmer suicides at the behest of the Bombay High Court. The main reasons for the crisis are repeated crop failure, inability to meet rising cost of cultivation and indebtedness. Emergency in agriculture has developed because of the rising cost of agricultural production which is not offset by either the Minimum Support Price offered by government or prices available on the market. The combination of high cost of production, low market price and non- availability of easy credit has contributed to an enormous debt burden. This is further compounded by personal needs taken for social needs like marriage and education. The crisis becomes acute when farmers, exhausting their credit with banks, turn to private money lenders who charge usurious rates of up to 60% per annum.

Changing Climate and Uncertain Rains

The term "climate change" refers to projected changes in the Earth's climate that are the outcome of human activities. The Greenhouse Effect is the natural phenomenon that warms the Earth, enabling it to support life. Greenhouse gases are a natural part of the atmosphere and without them; life could

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not be sustained on Earth. However, human actions, particularly the burning of fossil fuels, are increasing the concentration of these gases. This is believed to be raising the Earth's temperature, creating the prospect of global climate change. The main impacts of climate change are expected to manifest in the form of rising temperature, sea level rises, changes in rainfall patterns and increased variability of weather events. Climate change is linked to agricultural yield directly because of alterations in temperature and rainfall, and indirectly through changes in soil quality, pests, and diseases. It has been predicted that the yield of cereals will decline in India

Special Economic Zones and the Agricultural Crisis

On July 31, 2006 the West Bengal Government signed an agreement with Indonesia's Salim Group, to implement developmental projects, including a chemical industrial estate to be spread over 10,000 acres in a 50:50 joint venture. In the deal, the Government will acquire around 20,000 acres of rice farming land in Nandigram for the development of a chemical hub. Special Economic Zones have aroused much controversies relating to the acquisition of farmland for non-farm purposes, which would only aggravate the present crisis in agriculture.

Recommendations

An in depth of this study reveals the severity of the present agricultural crisis. To mitigate the present crisis, the government should follow a number of recommendations, which are as follows:

- Input costs should be reduced.
- Markets must be made available for agricultural produce.
- A good market price must be provided for the agro products.
- For farmers, credit should be made available at low interest rates.
- Extension system should be revived to solve problems in the field.
- There should be a proper system to address the issue of water scarcity.
- Adequate water for irrigation should be provided.
- Agricultural land should not be given to Special Economics Zone.

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Cotton- The White Gold of India

Introduction

The basic needs of human beings such as food, clothing and shelter are satisfied through agricultural sector. Under this ground the welfare of a country to a large extent depend on the agriculture sector. This sector provides not only food and raw materials but employment to a large population.

India is an agrarian economy with two-third of the population depends on agriculture sector directly or indirectly. Indian agriculture contributes to the National Gross Domestic Product is about 25 percent (Izhar, Ahmad Mohammed, 2007). As compared to the other countries of the world India is unique for agriculture due to the depending factors such as high soil productivity, supply of balanced crop nutrients, efficient water management, improved crops, better plant protection, post- production management for value addition and marketing etc.

Cotton the Basic Raw Material for Textile

Cotton is one of the principal crops of India and is the major raw material for domestic textile industry. The Indian cotton industry provides sustenance to millions of farmers as also the workers involved right from processing to trading of cotton. The Indian cotton field provides ample opportunities for millions of farmers as also the workers involved right from processing to trading of cotton. The Indian textile industry consumes a diverse range of fibres and yarn, but it is predominantly cotton based. The ratio of cotton to man-made fibres and filament yarns by the domestic industry is about 56:46(Cotton Industry- indian Mirror). Cotton sector contributes about 14 percent to the industrial production, 4percent to the GDP [1] and 14.42 percent to the country's export earnings.

India possesses largest cotton cultivated area in the world. India accounts for around 30 percent of the 30.66 million hectares global cotton harvested area. The area under cotton cultivation grew from around 56.5 lakh hectares in 1950-51 to 94.14 lakh hectares in 2007-08 and witnessed a marginal decline at 94.06 lakh hectares in 2008-09. In 2002-03 the drought conditions experienced in India to a certain extent restrained the cotton cultivators from cultivating the cotton, resulted in reducing the area under cotton to 76.7 lakh hectare from 87.3 lakh in 2001-02. The reasons such as monsoon fluctuations, returns from competitive crops etc. affected the cotton cultivation. By reaching 2006-07 the area under cotton cultivation increased, due to good monsoon in major cotton growing parts of India and higher prices fetched (Government of India, 2007).

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Table: 1.1
Trend growth rates in production of cotton crop during various phases of growth

Period	Trend growth of cotton production
PGP (1960-61/68-69)	1.41
EGR (1968-69/75-76)	3.19
WTD (1975-76/88-89)	1.17
DIV (1988-89/ 95-96)	5.16
PR(1995-96/ 2004-05)	1.02
REC (2004-05/2010-11)	9.92

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PGR-Pre Green Revolution; EGR-Early Green Revolution; WTD-Period of Wider Technology Dissemination; DIV-Period of Diversification; PR- Post-reform period; REC- Period of Recovery.

Source: Chand Ramesh and Parappurathu Shinoj 2012, 'Temporal and spatial variations in agricultura growth and its determinants; EPW, VolXLVIII Nos 26&27.

The performance of cotton crop cultivation during various phases of growth was assessed by estimating their annual trend growth rates in production in different phases (Table: 1.1). Even though a wide disparity in growth was observed across the crops during success

Vie phases, a general deceleration was visible after the initial years of reforms. The period of diversification was charatcerised by a relatively better growth in cotton production.

In terms of efficiency in land-use India continued to lag far behind due to low land efficiency. This might be due to the low price of cotton in India. This low price is due to the faulty policies of the government. The government always framed such policies which kept the domestic price level always lower than the world price.

In India the private sector handles the cotton marketing, includes the co operatives and traders. But the markets are regulated by Government of India and the state governments.

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Table :12
Trend in domestic cotton availability and cotton consumption

Period	Cotton availability(lakh bales)	Cotton consumption (lakh bales)
2000-01	202.63	173.03
2001-02	212.26	171.76
2002-03	193.67	168.83
2003-04	210.21	177.1
2004-05	276	195.03
2005-06	320	217.0
2006-07	337.53	232.03
2007-08	369	241.0
2008-09	340	230.0
2009-10	373.5	250.0

Source: Compiled from Pal Supriya,2010, Indian cotton production: current scenario, The Indian textile journal, vol.CXX,No.6

Cotton supply increased by 84 percent over the period from 2000-01 to 2009-10 and the consumption increased by 44.48 percent during the same period. This shows supply is more than demand and therefore India is able to export to foreign countries. But still India import cotton from foreign countries, i.e., to meet the needs such as high quality and for getting high count yarn. Because India produces mainly low count yarn.

Conclusion

Cotton is one of the principal crops of India and is the major raw material for domestic textile industry. The Indian cotton field provides ample opportunities for millions of farmers as also the workers involved right from processing to trading of cotton. India possesses largest cotton cultivated area in the world. Cotton consumption has witnessed sustained increase since 2003-04 onwards as a result of growing

demand for Indian textiles, which led to considerable expansion and modernization of the textile mills. In 2007-08 domestic consumption merely grew by around 2percent over that in 2006-07 due to consistently high cotton prices mainly because of speculative funds coming into play and due to large scale exports of cotton. Exports of cotton stood at around 88.5 lakh bales during 2007-08. Also, appreciation in the rupee for some months during the cotton year 2007-08 led to low textile exports that affected the domestic mill consumption of cotton. In the cotton year 2008-09, domestic consumption of cotton declined by 6.9 lakh bales to an estimated 229 lakh bales (Ministry of textiles, Government of India; texmin.nic.in/ ….Fibre_policy_sub_%20groups_Report-dir-mg-d-……). The global crisis, steep hike in minimum support price of different varieties of cotton adversely affected the demand for textiles both domestic as well as export. Due to high minimum support price the procurement cost of cotton increased. So cotton cultivation is one of the important agriculture crop in India, because of cotton has major contribution to Indian GDP.

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Agricultural Environmental Issues in India

Economic Reforms And Agriculture:

India initiated the process of economic reforms in 1991 in response to the changes in the external and internal economic environment. The major objectives of economic reforms were market orientation of the economy, increasing private sector initiative, improving efficiency in Government spending, enhancing export competitiveness, foreign capital inflow, stabilizing balance of payment and revamping many sectors of the economy such as Industry, Trade, Finance, Infrastructure etc. The response of the economy to the reform efforts has been both positive and not so positive in different sectors. Not many reforms were initiated in the agriculture sector on account of the perception that in the early phase of reforms, food security and agricultural growth should be maintained. Reforms, on account of unexpected consequences that they might produce should not be allowed to threaten food security.

The agriculture sector has seen very little direct reform efforts though the rest of the economy has been undergoing reforms and restructuring. But the reforms in the other sector have had an Impact on the agriculture sector. The changes brought about in the monetary policy, banking policy, credit policy, trade policy, exchange rate policy and the like have had different effects on agriculture sector.

Agriculture continues to be an important sector of the economy with a 24.8% share in the Gross Domestic Product (GDP). Its contribution in terms of providing employment to nearly two third of the work force has been critical in maintaining livelihoods especially in the rural areas. The planned approach to development has helped the country to reach a stage where the country is self sufficient in agricultural food grains and has a comfortable buffer stock. These achievements have been possible mainly through the favorable policy framework. The policy of Indian Agriculture was to achieve agricultural food security by providing incentive for growth along with equitable access to food. As a result terrible famines have become events of the past and the agricultural production does not show large variation even in the event of adverse climatic condition. It is, however, revealed that the growth rate of agricultural production declined from 3.72% in eighties to 2.35% in the nineties indicating towards the need of sustainability in agriculture. Indian agriculture is still beset with problems like inadequate capital formation, low productivity, high cost of production, uneven growth etc.

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Problems of Indian Agriculture:

India is largely an agricultural country. Eighty per cent of her vast populations live, directly or indirectly, on income derived from agriculture. But to say that India lives by agriculture does not mean that India is agriculturally advanced. The major problems confronting Indian agriculture are those of population pressure, small holdings, depleted soils, lack of modern technology and poor facilities for storage. Although agriculture plays a pivotal role in the country's economy it is backward and traditional when compared with developed countries of the West. Agricultural productivity is low and the economic condition of the farmers is poor. The investment in agricultural sector is lower than industrial and commercial sectors and the pace of modernisation is very slow. Following is a brief mention of some of the problems which are retarding the development of agriculture in the country.

1. Population Pressure:

India has a huge population of over one billion and it is increasing at a very fast rate. According to 2001 census figures the overall density of population is 324 persons per sq. km..

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2. Uneconomic Size of Landholdings and their Fragmentation

Foregoing description leads us to conclude that majority of land holdings in India are too small to be economically viable to promote modern agricultural development. These do not generate enough income to buy new agricultural inputs or make heavy investment. Small size accompanied with fragmentation also prevents the use of new farm machineries which are very essential in today's agriculture.

3. Lack of Infrastructural Facilities

Although some mechanization of farming has taken place in some parts of the country, most of the farmers are poor and do not have enough resources to purchase modern farm implements and tools. This hampers the development of agriculture. Rural areas in India lack proper transport and communication facilities.

4. Soil Erosion and Soil Degradation:

Indian soils have been used for growing crops for thousands of years which have resulted in the depletion of soil fertility. With deforestation the sources of maintaining natural fertility of soil has been drying out. Lack of material resources and ignorance of scientific knowledge have further depleted the soils of the natural fertility.

5. Storage of food grains:

Storage of food grains is a big problem. Nearly 10 percent of our harvest goes waste every year in the absence of proper storage facilities. This colossal wastage can be avoided by developing scientific warehousing facilities. The government has taken several steps to provide storage facilities.

6. Poverty and Indebtedness of Farmers:

Although peasants indebtedness is universal in subsistent farming, but its impact is perhaps nowhere as crushing as in Indian agriculture. An estimate of the All Indian Rural Credit Survey indicated that nearly 70 per cent of all the cultivating families were in debt.

7. Scarcity of Agricultural Inputs:

On the one hand farmers are less receptive to agricultural innovations on the other hand mostly the agricultural inputs like chemical fertilisers, high yielding varieties of seeds, insecticides, pesticides, weedicides, farm machineries etc. are either not available in sufficient quantity or their prices at beyond the reach of an ordinary farmer. Due to lad of quality control there is always possibility of hugger.

8. Low Productivity:

One of the main problems of Indian agriculture is its low productivity. The main cause of this low per hectare yield is due to low fertility of soil and less care to replenish it through artificial fertilizers. "An average farmer, deep in debt, does not have the resources to apply nitrogen, potash, or potassium to the crops. Investment in chemical fertilization could lead to his economic ruination. Burnt stubble, branches, leaf mold, or animal manure application are his chief means of fertilization.

9. Lack of Agricultural Research, Education & Training Facilities:

In India agricultural research is still in infantile stage. There is also no co-ordination between the farm and the research laboratory. Hence gains of new researches are not reaching the common farmer. Very little attention is being paid for educating and training farmers for adopting new farming techniques, increasing agricultural production and making it profitable and sustainable.

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Conclusion:

India is the major producer and consumer of food in the South Asian region and possesses huge potential that remains highly under-realised. Therefore, India has to play a major role not only to maintain its own self-sufficiency in food production but also to meet the additional requirement of its neighboring countries. In this stage India to move sufficient development of agricultural productivity. But Indian agricultural sector faced number of problems. The right research priorities and production strategies will promote future growth in agriculture and ensure sustainable food and nutritional security. Sustainable agriculture may be regarded as the successful management of resources for agriculture to satisfy the changing human needs while maintaining or enhancing the quality of environment and conserving natural resources. Sustainable agriculture integrates three main goals environmental health, economic profitability, and social equity. It is just not enough to go about with sustainable development, what is needed is to improvise the agriculture with more eco-friendly technologies in the near future .

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Farmers' Suicides and Agrarian Crisis in India:is There A Way Out?

Introduction

A popular peasant saying that "abundance of water destroys life; paucity of water destroys life" signifies agriculture's link with monsoon. The vagaries of nature have been associated with ups and downs in cultivation. In addition, disease and pests can also affect crops. When the produce is good, a glut in the market can through low prices lead to poor returns from cultivation. Increasing cost can also adversely affect returns. Spurious inputs could also leave the farmer in a quandary. The increasing dependence on inputs from the market has also brought about greater demand for credit, which adds another important dimension to the difficulties. There are multiple risks in agriculture – income, yield, price, input, technology and credit among others. In recent years, one observes an increasing incidence of farmers' suicides. Suicide being a multifaceted and complex phenomenon, the risks are identified either in the neurobiological or socio-economic domain. The former are predisposing in nature and are internal to the individual whereas the latter are the precipitating ones and are external to the individual. A relatively higher suicide among a particular sub-group is indicative of a larger socioeconomic malaise.

The features of the current agrarian crisis are briefly elaborated as follows. First, there has been a decline in the trend growth rate of production as well as productivity for almost all crops from the mid-nineties. Further, the value of output from agriculture has been declining from late nineties. Second, there is an excessive dependence of a large section of the population on agriculture (in 2004-05 nearly 64 per cent of the rural persons were from households whose members major activity status was either self-employed in agriculture or agricultural labour). This also indicates that rural non-farm employment opportunities are limited. Third, with declining size-class of holding and an increasing preponderance of marginal holdings along with poor returns from cultivation indicates that income for farm households is very low.

Fourth, the much talked about green revolution had a greater focus on rice and wheat under irrigated condition bypassing crops and regions under rainfed or dry land conditions (which is three-fifths of the 141 million hectares of net sown area in the country during 2003-04). There has been a failure to capitalise on the vast network of institutes to provide and regulate new technology (including the usage of biotechnology), and a virtual absence of extension service. Fifth, the neglect of agriculture in plan resource allocation has led to a decline of public investments in irrigation and other related infrastructure. Sixth, supply of credit from formal sources to the agricultural sector is inadequate leading to greater reliance on informal sources at higher interest burden. Last, but not the least, with changing technology and market conditions the farmer is increasingly being exposed to the uncertainties of the product as well as factor markets.

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Poor Returns to Cultivation

On an average, returns to cultivation per farmer household is Rs.11,259/- in 2002-03. To account for the drought in the said year even if one increases the returns by one-third then also it would be less than Rs.15,000/-, which given a family size of 5.5 turns out to be less than eight rupees per capita per day. This means that other sources of income would become necessary if the farmer household has to stay above the poverty line. About 60 per cent and 10 per cent of farmer households obtain some returns from farm animals and nonfarm business respectively and per farmer household monthly returns from these are Rs.85/- and Rs.236/- respectively. In addition, farmer households will also get income from wages and salaries. As expected, returns per household increases with land size. Average family size also increases with land size indicating that the increase in per capita returns would not be as large. Across caste groups, scheduled castes (SCs, who generally own the marginal lands) have the least returns and above them are scheduled

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tribes (STs) and from both these groups, the other backward classes (OBCs) fare better, but the returns for all these three groups is lower than the total average. Almost two-fifths of the farmers indicated that they do not like farming as a profession. This group, on an average, fares worse than those who like farming as a profession. Overall, there is not much diversification and the income of an average farmer household from cultivation would hardly suffice to meet some basic day-to-day requirements. The Situation Assessment Survey of Farmers, 2003 (SAS) indicates that the monthly per capita income to a farmer household is much lower than the monthly per capita consumption expenditure. This holds for near landless, lower marginal, upper marginal, small and semi-medium farmers. Only medium and large farmers have income higher than their consumption expenditure. The nominal farm business income per hectare of gross cropped area deflated by Consumer Price Index for Agricultural Labour (CPIAL) seems to be slowly declining with wide fluctuation during 1993-94 to 1999-2000.

Farmers' Suicides

Poor agricultural income and absence of non-farm avenues of income is indicative of the larger malaise in the rural economy of India. One manifestation of this has been the increasing incidence of farmers' suicides. The suicide mortality rate (SMR, suicide death for 100,000 persons) for male farmers in India increased from 12.3 in 1996 to 19.2 in 2004 and then reduced to 18.2 in 2005 whereas SMR for male non-farmers increased from 11.9 in 1996 to a peak of 14.2 in 2000 and thereafter declined to 13.4 in 2005. During 2001-05, there were 86,922 farmers' suicides, of which, 86 per cent were males. Across major states, the states where SMR for male farmers is higher that of the national average of 17.5 and SMR for male non-farmers in that state are Kerala, Maharashtra, Chhattishgarh, Karnataka, Tamil Nadu and Andhra Pradesh . Among smaller states/union territories the incidences are high in Pondicherry, Dadra & Nagar Haveli, Delhi, Goa and Sikkim. Public policy and media attention have already highlighted the farmers' suicides in parts of Kerala, Maharashtra, Karnataka and Andhra Pradesh. In selected districts of these states, the central government and the respective state governments have announced measures to deal with distress. What is intriguing is that the relatively higher incidence of farmers' suicides in Chhattishgarh and Tamil Nadu seems to have gone unnoticed. Chattishgarh scenario is worrying because cultivators form nearly 45 per cent of its workers, as per 2001 census.

Tamil Nadu situation is serious because some recent studies based on verbal autopsies point out that suicides as per police records are underestimates. Further probing is required in these states. Studies in the other four states have identified multiple risk factors that co-exist and reinforce each other. The most common thing was indebtedness.Next in importance is fall in economic position. Indebtedness per se need not lead to economic downfall, but when repayment is difficult and the household may resort to sale of assets. Similarly, a fall in economic position can also lead greater reliance on credit, and thereby increasing the debt burden. Not discussing one's problem with others leads to closing an avenue for letting out ones pent up feelings and frustration. Crop failure is mentioned in 40 per cent of the cases and most of these also mentioned about loss in second or third sowing due to delay in rainfall. There were a few cases which mention fire or theft. Crop loss can also happen due to excessive untimely rain, say, during the time of harvest. Crop failure can lead to economic downfall and make it difficult to repay existing loans. This will also increase the need for additional credit.

Crop failure leading to fall in economic position is quite straight forward, but the causal links can also be the other way round. A house that had some fall in economic position or was heavily indebted could not take additional loans for investing in agriculture (say, during a pest attack) and this can lead to a reduction in yield or total crop failure. Incidentally, the year of survey when pockets witnessed crop loss, the overall scenario was a glut in the market and as a result many individuals faced yield and price shock simultaneously. Harassment by creditors or their agents due to non-payment of loans can also lead to a loss of face in the community. Crop failure due to unsuccessful experimentation by a farmer who was recognised as successful entrepreneur may find a change in his social status – people who earlier came for advice are now providing solace.

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A socially important role of a brother/father is to get one's sister/daughter married. Communities have norms in terms of age and expenditure. A farmer is largely dependent on a good return from his produce to fulfil this obligation. Thus, crop failure, greater credit burden or a fall in his economic position can come in his way of fulfilling this obligation. Inability to conduct sister's/daughter's marriage can be socially humiliating. It can also increase intrahousehold conflicts. To complete this social obligation a farmer may also take loans thinking that he can repay the amount after the harvest. Recent marriage of a sister/daughter orinability to get one's sister/daughter married has been identified as a risk factor. Recent suicides in a nearby village are identified as an additional risk factor. There could be an imitation effect because an individual who is facing some similar socioeconomic problem can relate to the earlier incident and contemplate suicide. Under addiction an individual may indulge in an act of self-harm without being aware of the consequences. Alternatively, getting intoxicated could be a reaction to get out of depression that can be associated with some socio-economic problem.

Change in the individual's behaviour including disputes with neighbours/others could be indicating the need for some psychosocial help. Personal health problem of the deceased was identified. From these, Illness gets aggravated due to poor economic condition because it makes care seeking difficult. Similarly, ill health can lead to a loan to meet medical expenses and also reduce the ability to work aggravating the economic condition. If the sick person is some other member then the breadwinner has the added frustration and helplessness in not being able to provide appropriate care for an ailing parent/spouse/child.

Death of another member in the family before the incident was identified in 10 per cent of the cases. The near ones death could have been because of not receiving appropriate health care. Inability to provide care is largely because of the poor economic condition rooted in the larger agrarian crisis. Suicide history in the family could be identified in 6 per cent of the cases. This could be indicative of a genetic factor. However, as mentioned earlier such individual factors are predisposing in nature and they can be intensified with some additional risk factors. On average, 4.8 risk factors were identified.

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Conclusion

The policy implication from the above-discussion calls for an emphasis on the larger crisis; that of low returns and declining profitability from agriculture and that of poor non-farm opportunities. Risk management in agriculture should address yield, price, credit, income or weather related uncertainties among others. Improving water availability will facilitate diversification of cropping pattern, but this should go hand in hand with policies that increase non-farm employment. Improving agricultural extension that addresses deskilling because of technological changes and also facilitates appropriate technical know-how for alternative forms of cultivation such as organic farming will be of help. Availability of affordable credit requires revitalisation of the rural credit market. There is also a strong case for regulating private credit and input markets. A challenge for the technological and financial gurus is to provide innovative products that reduce costs while increasing returns. Organising farmers through a federation of self-help groups (SHGs) with government, banks and other stakeholders playing a pro-active role would be welcome. Besides, public institutions, there is need for a greater involvement from the civil society.

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A Study on Agrarian Crisis in India

Introduction

Twenty-first century India has emerged as a major economic power in the world, with the growth rate of the Gross Domestic Product reaching impressive levels and the poverty ratio coming down significantly. The Structural Adjustment Programme in 1991 that the policy of globalisation was concretely introduced in India. Based on this policy and the directives of the World Bank, International Monetary Fund and World Trade Organisation, the Indian economy was substantially overhauled. The Export-Import policy was liberalised; the import and customs duties of many products were drastically lowered or totally dropped so that they could be imported without any restriction. The government started reducing its investment in agriculture and the industrial sector allowing the private sector to take over. The restructuring of the public distribution system really affected the availability of food grains to the poor at subsidised rates. All such measures had implications for the farm sector.

Objectives Of The Study

1. To identify the actual reasons for crisis and its effects on agricultural farmers life and their economic activities.
2. To analyze the impact of crisis in food production and its marketing field.
3. Give suggestions for recovering agriculture and its allied sector from its crisis.

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Trends in Agricultural Production of Food grains in India :

Optimum food grain production is most important need of the peoples in each nation. It is essential part of food security policy of the country. Recently government has providing facilities to the food grain growers in India. Because of government support food grain production in India is increasing gradually. As far as food grains output in concerned, the total production increased from 50.8 million tonnes in 1950-51 to 187.0 million tonnes in the Eighth Plan and further to 202.9 million tonnes in the Ninth Plan. The Food grain output in the Tenth Plan was 202.2 million tonnes even less than the annual average recorded in the Ninth Plan. However, according to the Third Advance Estimates for the year 2010-11 released on April, 2011, the food grains production rose to the record production of 235.9 million tonnes in this year.

Food grain Production in India During the reform periods Year Food Grain production (in million tonnes)

YEARS	Percentage	YEARS	Percentage
1990-91	176.39	**2000-01**	196.81
1991-92	168.38	**2001-02**	212.85
1992-93	179.48	**2002-03**	174.78
1993-94	184.26	**2003-04**	213.19
1994-95	191.50	**2004-05**	198.36
1995-96	180.42	**2005-06**	208.59
1996-97	199.43	**2006-07**	217.28
1997-98	193.12	**2007-08**	230.78
1998-99	203.61	**2008-09**	234.47
1999-2000	209.80	**2009-2010**	218.20

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Source: Reserve Bank of India

(Estimated Trend Equation in Food grain production in India during 1990-91 to 2009-10.)

The above table explains the food grain production in India during the post reform periods. In the year 1990-91 the food grain production was 176.36 million tones and the year 1998-99 it was 203.61 million tones. It rose further to 208.59 million tonnes in 2005-06 and 2009-10 it is 218.20 million tonnes. Agricultural Exports during the Reform Periods India's foreign trade is deeply associated with agriculture sector. Agriculture accounts for about 14.7 % of the total export earnings. Besides goods made with the raw materials of agriculture sector also contributes about 20% in Indian exports. In other words, agriculture and its related goods contribute about 38% in total export of the country. In the period 1990-91 agricultural export was Rs.6012.72 (18.49 percentage) crores and the export was increased to Rs.89522.59 (20.33 percentage) crores. The percentage of agricultural export to total national exports is continuously declining from 1999-2000 to 2009-10, ie from 15.91 percent to 10.59 percent respectively.

Causes For Agricultural Crisis: The main causes are as follwingly stated.

a) Liberal Import of Agricultural Products:

The main reason for the crash of prices of agricultural products, especially of cash crops, in India was removal of all restrictions to import these products. The removal of quantitative restrictions and lowering of import duties were according to the restrictions of the World Trade Organizations (WTO), the crash in the prices of agricultural products is directly related to the liberalisation policy of the government.

b) Cutback in Agricultural Subsidies:

In the post-reform period the government reduced different types of subsidies to agriculture, and this has increased the production cost of cultivation. Cutback in Agricultural subsidy and control of fertilizers over the last few years has adversely affected the agricultural sector. It has increased the input cost and made agriculture less profitable.

c) Lack of Easy and Low-cost Loan to Agriculture:

After 1991 the lending pattern of commercial banks, including nationalized banks, to agriculture drastically changed with the result that loan was not easily available and the interest was not affordable. This has forced the farmers to rely on moneylenders and thus pushed up the expenditure on agriculture.

d) Decline in Government Investment in the Agricultural Sector:

After the economic reforms started, the government's expenditure and investment in the agricultural sector have been drastically reduced. This is based on the policy of minimum intervention by the government enunciated by the policy of globalisation. The rate of capital formation in agriculture came down, and the agricultural growth rate was also reduced.

e) Restructuring of the Public Distribution System (PDS):

As part of the neo-liberal policy, the government restructured the PDS by creating two groups : Below Poverty Line (BPL) and Above Poverty Line (APL)-and continuously increased the prices of food grains distributed through ration shops. As a result, even the poor people did not buy the subsidised food grains and it got accumulated in godowns to be spoiled or sold in the open market.

f) Special Economic Zones:

The economic reform, the system of taking over land by the government for commercial and industrial purposes was introduced in the country. As per the Special Economic Zones Act of 2005, the government has so far notified about 400 such zones in the country. Very often it is fertile land which has been acquired. The SEZ deprives the farmers of their land and livelihood, it is harmful to agriculture. In order to promote export and industrial growth in line with globalisation the SEZ was introduced in many countries.

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Conclusion:

The production of food grains, oilseeds, pulses and other commercial crops is increasing continually in India. But capital formation level is decreasing in the agricultural sector due to the unfavorable policy of the government regarding investment promotion. Globalization is a necessary but not a sufficient condition for high growth of production, India has undertaken economic reforms, both internal and external. The agricultural sector in India is facing a crisis today. The solution of the problem is not in a few packages but in drastic changes in the present economic policies related to agriculture. All farmers, agricultural labourers, societies, Government and People's Organisations should work collectively to revive agriculture and "Save India from Agrarian Crisis".

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A Study on Poverty among Agricultural Labourers in Tirunelveli District

Poverty is multi-dimensional in character, scope and content. Poverty has an economic face, a social face and a psychological face. Poverty's economic face includes joblessness, unemployment, lack of finances to satisfy the family's basic needs and child labour. Poverty's social face is manifested in high levels of illiteracy, violent behaviour, high levels of teenage pregnancy and single parenthood, high levels of subsistence abuse and a large number of idle men and women. Poverty's psychological face is associated with low esteem, lack of knowledge, feeling of hopelessness and dependency (Mellor, 2001).

The Economic Survey 2008-09 (Indian Budget) states that 710 million are below the poverty line. The Planning Commission's estimate of poverty for 2004-05 is 27.5 per cent. The Suresh Tendulkar Committee Report has revised it as 37.2 per cent. While the urban poverty estimate has remained the same as 25.7 per cent, it has changed for rural India from 28.3 per cent to 41.8 per cent (Ramakumar, 2010). The N.C. Saxena Committee reports 50 per cent of rural population below the poverty line if one takes into account the calorie intake criterion. The Arjun Sengupta Report of National Commission for Enterprises in the Un-organised Sector (NCEUS) on the conditions of work and promotion of livelihood in the unorganised sector from 1993-94 to 2004-05 states that more than 77 per cent are below the poverty line as they spend less than Rs.20 a day on food. (Suanjita Ray, 2010). For this study the poverty line income for the sample households for the year 2009-10 was worked out by using consumer price index for agricultural labourers.

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Statement of Problem

Poverty and unemployment are the twin chronic socio-economic problems faced by India. The success of India lies in eradicating these two evils from our society. Several efforts are made both by Centre and State Governments to reduce poverty among the agricultural labourers in India. Eventually, Tamil Nadu has made remarkable progress in certain sectors of its economy but this had led to no perceptible improvement in the living conditions of agricultural labourers. Among the landless agricultural labour households in Palayamkottai block of Tirunelveli District, female headed families, people living in the single crop areas and families without dairy farming are the worst affected lot. Poverty is still a major economic and social problem inspite of the multifarious poverty alleviation programmes. So, this warrants a study focusing attention on the problems affecting these vulnerable sections. Hence, the researcher has under taken this study.

Objectives of the Study

1. To study the socio-economic conditions of agricultural labour households and to examine the relationship between the level of poverty and their economic backgrounds.
2. To evaluate the standard of living of agricultural labour households and the various factors determining their standard of living.

Methodology

In Tirunelveli District, 70 per cent of the people depend on agriculture and among the people who are engaged in agriculture are 24.80 per cent. There are 19 blocks in this district. In the 19 block, Palayamkottai block is selected for this study. Totally, there are 25 revenue villages and nearly 11,759 agricultural labour households in Palayamkottai block. Finally, in the 19 rural revenue village selected, there were 4,695

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agricultural labour households. From each revenue village 10 per cent of the agricultural labour households were selected randomly for the study. Hence, a total of 470 sample households were selected. Applying appropriate statistical tests on the collected data, the valid, reliable, and dependable results and conclusions can be drawn. In this study, simple averages, percentage and frequency distribution were employed to study the socio-economic status, income, consumption and employment levels and wages of agricultural labourers.

Results and Discussion

Level of Poverty

Frequency classes representing different income levels for the agricultural households were worked out on the basis of per capita income and the total household income and the level of poverty. The distribution of households based on the per capita income groups is given in the following table.

Table: 1 – Distribution of Agricultural Households based on Per capita Income Groups

Per capita Income Range (in `)	No. of Households	Percentage to Total
<6,275	46	9.79
6,276 – 6,425	201	42.77
6,426 – 6,575	83	17.66
6,576 – 6,725	3	0.64
Below Poverty Line	**333**	**70.85**
6,726 – 6,875	100	21.28
6,876 – 7,025	37	7.87
Above Poverty Line	**137**	**29.15**
Total (BPL + APL)	**470**	**100.00**

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Table 1 evident that, 70.85 per cent of the households were under poverty line, while the rest 29.15 per cent of the households were above poverty line based on the per capita income limit of Rs.6,725.

Index based Poverty

Poverty is usually measured within the frame work of minimum income required to meet the basic needs of person. It has been suggested that a more reasonable way of identifying the poor is to use a number of indicators rather than income or consumption alone.

Quality of Life Index

In the present study an attempt has been made to construct Quality of Life Index or Standard of Living Index based on important indicators that will account for all needs of the labour households. As stated elsewhere in the study, three indices viz., Index of Consumption Expenditure (ICE), Index of Quality of Residence (IQR) and Index of Basic Facilities (IBF) were constructed with the relevant indicators. Then, the Standard of Living Index (SLI / QLI) score was constructed as a composite score by summing up the scores for all the indicators in the above three indices for individual households.

After computing the Standard of Living Index Scores / Quality of Life Index scores for the labour households, Analysis of Variance was conducted between below poverty and above poverty households with respect to standard of living index scores to know whether significant difference exist in the standard of living of below poverty and above poverty households. The result of the analysis is presented in Table 2.

Table: 2 – ANOVA between below Poverty and Above Poverty Households with respect to Standard of Living Index Scores

Source of Variation	Sum of Squares	df	Mean Squares	F	Sig.
Between Groups	163.547	1	40.887	4.269	.005
Within Groups	1163.133	97	12.507		
Total	1326.679	98			

The calculated 'F' value was greater than the critical value of 3.92, and found significant at 5% level with 1 and 97 d.f. Therefore the first hypothesis namely 'there is no significant difference between below poverty and above poverty households with regard to standard of living scores' is not proved. Hence it was concluded that there is a significant difference between below poverty and above poverty households with regard to standard of living scores.

Break Even Analysis

Break even analysis has been used to relate the poverty index (SLI) with the poverty line income at the household level. The analysis of relating the income levels (per capita income of households) with the composite index of poverty will be very useful in determining the poverty levels among agricultural labour households. The break even point is that value of the index at which poverty line income equals the net per capita income of the households. The following linear regressions were fitted for deriving the break even point.

$Y = b_0 + b_1X$ ..... (1) and

$PL = a_0 + a_1X$ ..... (2)

where,

Y = net income (per capita income)

X = value of quality of life or standard of living index (scores)

PL = poverty line on the basis of per capita income in the households

In the Poverty Line Regression, the poverty line for the households were taken as a constant, thus a_0 is a constant and a_1 is equal to zero for all the values of the index.

If the Break Even point is defined as Y = PL, then $b_0 + b_1X = a_0 + a_1X$

$b_1X = a_0 - b_1 (a_1 = 0)$

Then $X = (a_0 - b_0 / b_1)$

The estimated regression equation (1) was given below

$Y = 6125.04 + 48.39X + \mu$ $R^2 = 0.65$

The second regression between the constant poverty line of Rs.6,725 (PL), as Y and the value of quality of life index as X was given below

$PL = 6725 + 0\,X + \mu$

Now Break Even Point at poverty line can be given as $X = (a_0 - b_0 / b_1)$

= (6725 – 6,125.04) / 48.39 = 12.40. The value of Quality of Life Index for the subsistence level of per capita net income of Rs.6,725 was 12.40.

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For analysing the level of poverty, four rings of poverty for the agricultural labour households were identified. They were destitute with a per capita net income of less than Rs.6,275 followed by very very poor with Rs.6,276- 6,425, very poor with Rs.6,426-6,575 and poor with Rs.6,576-6,725.

By fixing 'a_0' as 6,275, 6,425, 6,575 and 6,725, the value of quality of life index score (BEP) for the above four poverty rings were obtained as 3.10, 6.20, 9.30 and 12.40 respectively. Frequency classes for the different index based poverty levels were formed by using the break even points.

The distribution of Destitute, Very very poor, Very poor, Poor and Non poor with the frequencies for all households are given in table 3.

Table: 3 – Level of Poverty based on Quality / Standard of Living Scores for Households

Poverty Classes	Score Range	No. of Households	Percentage to Total
Destitute	0 – 3	0	0
Very Very Poor	3 – 6	31	6.60
Very Poor	6 – 9	62	13.19
Poor	9 – 12	218	46.38
BPL		**311**	**66.17**
Non Poor (APL)	>12	159	33.83
Total (BPL + APL)		**470**	**100.00**

From Table 3 it is evident that 66.17 per cent of the households were below poverty line as per standard of living scores and the rest 33.83 per cent of the households were above poverty line. It could be observed that the incidence of destitution was not present in any of the households. In addition, the percentage (46.38%) of poor was high in these households.

Incidence and Intensity of Poverty

The different measures employed to measure the incidence and intensity of poverty among the sample agricultural labourers was Head Count Ratio, Income Gap Ratio and Sen's Poverty Index. In order to measure the inequality in the distribution of income among agricultural households Gini Ratio was employed. The results of the different measures of poverty with respect to with single and double cropping area households of agricultural labourers were furnished below.

Intensity of Poverty among Single and Double Cropping Area Households

The table 5.49 shows that the head count ratio for household in single crop cultivation area was 0.7514, while it was 0.5577 in double crop area. The analysis revealed that the proportion of households lying below poverty line was more among the household in single crop area than households in double crop area.

Table: 4 - Measurement of the level of Poverty

Poverty Measure	Single Crop	Double Crop	All Households
Head Count Ratio (H)	0.7514	0.5577	0.6884
Income Gap Ratio (I)	0.3460	0.2899	0.3326
Gini Ratio (G)	0.0308	0.1650	0.1296
Sen's Poverty Index	0.2751	0.2270	0.2891

The Income Gap Ratio for the households in single crop area was 0.3460 which was higher than the income gap ratio for the households in double crop area which was 0.2899. This indicated that poverty was more among the single crop area households than double crop area households.

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The Gini Ratio calculated for households in single crop, double crop area and all households together were 0.0308, 0.1650 and 0.1296 respectively. The results reveal that inequality in the income distribution was more in double crop area households when compared to all households and single crop area households.

The Sen's Poverty Index for the households in single crop area was 0.2751 which was higher than the households in double crop area which was 0.2270. Therefore the hypothesis that 'there is no significant difference in the intensity of poverty among single crop and double crop area households' is not proved. Hence, it indicated that the poverty was more among the single crop area households than double crop area households.

Conclusion

India is severely facing the problem of poverty. Even today, every third poor man of the world is an Indian. It means one third of the world's poor people are living in India. Further, in India out of five Indian youth, one is unemployed and of every four Indian farmers, one is in utter poverty. It is found that 70 per cent agriculturists are distressed, disappointed with farming. Further, in the single crop area poverty is high. The earning of the agricultural labourers is not sufficient to cover even the basic necessities of life. Further, the era of globalization, agriculture is facing structural transformation. A move from subsistence agriculture to commercial agriculture is in progress. In this process, the agricultural labourers are the worst affected lot. The male labourers are slowly thrown out of agricultural employment and they are forced to seek some other employment. The surplus land must be redistributed to the landless agricultural labourers and they must be the owners of the land. This will guarantee sufficient income and employment for these vulnerable sections and lift them above poverty.

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Farmers Suicides in India

1.1 Introduction

Agriculture is the India's culture since time immemorial. Even today, Agriculture is a way of life and the principle source of livelihood for more than 52 per cent of its population (Economic Survey 2009-10). Hence agriculture plays a key role in the overall economic and social well being of the country. Farmers' suicides in India reflect the failure of basic support structures in socio – economic spheres in rural areas in India is reflected in the suicides of the farmers. Sainath rightly points out that 'Almost every sector failed the farmer – the government, the political class, intellectuals, planners, human right groups, a once-activist judiciary and the media'. Farmer who gives food for the rest of his co-citizen is resorting to suicide hence farmer suicide are not just poverty deaths but it the problem is complex and manifold which involves a concrete study.

Most of the studies in the Indian Context, related to the suicide so far have investigated the sociological aspect of the problem only. However, with globalization countries are facing economic problems like losses incurred in the markets and changes occurring in the income. Agriculture sector has a pivotal role in Indian economy. In Indian planning agriculture sector ignored except few five years plan. Indian planning has not be given appropriate priority to agriculture. There are a lot of limitations for protection to agriculture in new economic policy. In globalization era grant in aid of agriculture were drawn and in other hand import of agricultural products allowed without restrictions at large amount. In the processes of industrialization there are drastic changes in climate, due to this agriculture productivity suffered. Banking sector is not ready to provide credit /loan to Agriculture for avoiding risk. Farmers were trapped by private debt. According to some economist and socialist Agriculture sector is a bone of Indian Economy therefore farmer's must have some protection but lack of protection and favorable policies to agriculture , lead to suicides of farmers at large. On this background, this present paper focused on the trend of farmers suicide, causes of farmer's suicide, consequences and remedies.

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1.2 Trend of Suicides in India

"As per Accidental Death and Suicides in India (ADSI) reports for relevant years, 290,470 self-employed persons in farming/agriculture committed suicide during 1995-2011," Minister of State for Agriculture Harish Rawat said in Rajya Sabha in a written reply to a question whether three lakh farmers committed suicide between 1995 and 2012. The minister quoted the data from the National Crime Records Bureau's (NCRB) latest annual report on suicides, the ADSI-2011.

According to Rawat government's steps to revitalize agriculture sector and improve condition of farmers also included "increasing credit flow to agriculture sector to Rs 5,09,039 crore as of March, 2012, and setting a target of Rs 5.75 lakh crore for 2012-13." As per the Census of India, 1991, number of agricultural workers was 185.3 million, including 110.7 million cultivators and 74.6 million farm labourers, the minister added. "As per Census of India, 2001, number of agricultural workers was 234.1 million, comprising 127.3 million cultivators and 106.8 million agricultural labourers," the minister informed the upper house. A total of 152 farmers committed suicide due to various reasons, including crop failure and drought, in 2012-13, said by the government.

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1.3 Reasons for Farmers Suicides

There are various economic, social, political, individual and environmental reasons of farmer's suicide in India. The reasons of this crisis are complex and manifold, they are dominantly related to public policy and economic strategy.

- Absence of adequate social support infrastructure at the level of village.
- Uncertainty of agricultural enterprise in India.
- Lack of income –earning opportunities from subsidiary occupations
- Inadequate facility for value addition to agriculture produce
- Indebtedness of farmers. Rising cost of cultivation. Lack of irrigation facilities.
- Lack of credit availability for small farmers. There has been minimal financial support from the government for small farmers.
- Lack of Government Vision and clarity of intention to benefit the poor and small farmers.
- Reduction of agriculture subsidies, Environmental pollution
- Exploitation of natural resources (water, forest)
- The drinking habit which atrophies the productivity of the farmer.
- Extravagant expenditure on marriages. Inability to arrange finance for marriage of daughter
- Illness of family members, Bad health and illness and inability to meet the necessary expenditure on medicine and health services
- Government has destroyed important public institutions, Crop failure and low return

On the outlook, it appears that Farmer indebtedness, crop failure, lack for good prices to their crops led to the suicide of farmers in India. But after the thorough study it was identified that the usage of more fertilizers, lack of sufficient institutional credit to farmers, decline in productivity, price for the crops, lack of minimum agriculture infrastructure are also responsible for farmer suicide. Crop failures resulting from drought, scant or no rainfall, and pest attacks, Poor power supply Increasing prices of chemical fertilizers and other essential inputs; Poor quality of seeds, fertilizers and pesticides. Failed bore-wells and all-around scarcity of water for agriculture and household use, inadequate crop insurance are also responsible factors for farmer suicide.

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1.4 What happens to the families after a farmer commits suicide?

- Farms are confiscated due to inability to pay back high interest loans.
- Harassment of the family by corrupt moneylenders.
- Widows burdened with the new responsibility as the sole breadwinner.
- Children sometimes lose both parents to suicide. Forcing their education to a halt, especially if they have to work in order to provide for their needs

1.5 Remedies:

Farmers need protection through protective legislation as nothing is typically done to help them settle their debts or tackle the unprecedented price rise that leads them to commit suicides. Mere edge sympathy

by political parties and government officials is not enough to bridge the widening demand-supply gap in the agricultural sector.

- Minimum Support Price mechanism for agricultural produce should appropriate with consideration increase in agricultural inputs.
- Increase import duty on cotton: Tariff barriers should used to discourage import
- To integrate surface and groundwater irrigation schemes and integrates the line department in order that the schemes are implemented efficiently.
- Set up a Distress Fund that will provide support to banks in chronically drought prone areas, and permit some debt relief to cultivators in extreme distress.
- Focus on increasing agricultural productivity with sustained growth and lower costs of production.
- Develop a land use strategy with particular reference to drought-prone areas.
- Promote and provide incentives for sustainable agriculture
- Promote relevant public research in agriculture, particularly dry land agriculture, for the develop ment of drought and disease resistant seeds of cereals and pulses.
- Analyze the relationship between input costs and market prices, and suggest appropriate and timely interventions by the state/central government agencies, in order to ensure remunerative prices to the farmers
- Monitor the adverse effects of droughts and pests on agriculture and bring in the required initiatives by the appropriate agencies to mitigate distress on account of these calamities.
- Oversee the settlement of land records, registration of all tenancies, and issue of passbooks to all cultivators including tenants.
- Crop failures are a disaster for farmers and their families. Therefore government should make legal provision about crop insurance because they needy farmers take money from private lenders or banks or other finical institutions but when the crops fail, they are left with no option other than death.
- Set up a commission with statuary powers that takes decisions on the issues such as genetic modi fication technology and its impact on Indian agriculture, agriculture pricing policy and cropping pattern.
- Government should increase public expenditure on rural development (Deshmukh, 2011).

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1.6 Conclusion

Although suicide is a deeply personal and an individual act, suicidal behaviour is determined by a number of individual and social factors. The incidence of suicides in India has increased during the last couple of decades, which mark India's greater integration with the world economy and increasing shift towards production and distribution characterised by lesser presence of the state. However, it would be erroneous to attribute rising suicides directly to globalisation till more convincing empirical evidence is obtained on the causality. The fact that suicides are increasing is a disturbing feature and reflects that vulnerabilities in the economy and society are increasing. India's high economic growth in recent decades has been accompanied by rising inequality, particularly in urban areas, and extensive informalisation of the economy. Lack of adequate livelihood opportunities, low skills, inadequate access to formal credit and lack of social security support often combine to produce destructive outcomes like suicides. The major

reasons for the farmer suicides are also discussed and so are the solutions. The government and also NGO's should initiate the schemes in the larger interest of farmers without comprising them on any issues. For the farmer suicides there are no immediate or short cut solutions, government , society and civil society should come together to lift the morale of the farmer along with the long term polices in the agriculture and in the farmer life, that has to be initiated with definite time frame. The government must amend laws that are governing the farmers in the Indian agricultural sector. If the government does not make any vital recommendations or legal provisions to offer relief to the trend of farmer suicide in the affected states, the whole country will suffer the consequences.

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Agricultural Crisis and Globalisation in India

Problems Of Agrarian Sector And Their Consequences

Fifteen years of economic liberalisation have adversely affected Indian agriculture. The most prominent manifestation of this is in the drastic decline in the growth rate of foodgrains. The rate of growth of agricultural output was gradually increasing in 1950-1990, and it was more than the rate of growth of the population. In the 1980s the agricultural output grew at about four per cent per annum. Thus India became self-sufficient in food and started exporting wheat and rice. But during the 10-year period after the start of liberalisation, the rate of growth declined to two per cent. According to the Mid-term Appraisal of the Tenth Five Year Plan (2002-07), the rate of growth of the GDP in agriculture and allied sectors was just one per cent per annum during the year 2002-05. As a result, per capita availability of foodgrains decreased; the growth rate of population became higher than that of foodgrains, and India started to import foodgrains at a much higher price than that in the domestic market.

Secondly, unemployment in the agricultural sector increased during the reform period as agriculture was not profitable due to the fall in the price of farm products. As a result, the number of people who are employed in the primary sector and the area under cultivation decreased, which in turn caused a decline in rural employment. According to the National Sample Survey, the annual rate of growth of the employment in the rural areas was 2.07 per cent in 1987-1984, while it declined to a mere 0.66 per cent in 1993-2000, which corresponds to the period of liberalisation..

Consider the Following Table Showing Trends in Share of Agriculture and Allied Sectors in India's GDP:

Table-1

Trends in Share of Agriculture and Allied Sectors in India's GDP

Period	Percentage share
1950-51	56.70
1960-61	52.48
1970-71	46.00
1980-81	39.93
1990-91	34.04
2000-01	26.18
2006-07	21.65
2007-08	17.80
2010-11	14.5
2011-12	13.9

Source-Economic Survey, 2010-11

It is interesting to note that the growth rates of agriculture in India's GDP had been growing during early periods, but in the last few years, it is constantly declining. This is evident from the table 2, which presents the long-term growth rates of agriculture in comparison with the whole economy.

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Measures To Remove Agrarian Crisis In Indian Agriculture

While larger investment outlays are necessary, the emphasis and focus must be not on the magnitude of investment expenditure, but on the composition of improvements that increase the product capacity in agriculture.

This requires:

Government to actually implement the various money-lending Acts that already exist to prevent the alienation of the farmers land-holding.

- Rationalise all soil and water conservation programmes into a single unified watershed programme under a single agency at the ground level .
- Increase the price of canal water, electricity and fertilisers to cover costs of providing them at reasonable levels of efficiency, ensure proper assessment, and prompt collection of dues from users.
- Better and easier banking and micro-financing should be promoted
- Finally, need to enhance purchasing power of rural population.

Globalization:

It was with the Structural Adjustment Programme (SAP) in 1991 that the policy of globalisation was concretely introduced in India. Based on this policy and the directives of the World Bank, International Monetary Fund and World Trade Organisation, the Indian economy was substantially overhauled. The Export-Import policy was liberalised; the import and customs duties of many products were drastically lowered or totally dropped so that they could be imported without any restriction. The government started reducing its investment in agriculture and the industrial sector allowing the private sector to take over. The restructuring of the public distribution system really affected the availability of foodgrains to the poor at subsidised rates. All such measures had implications for the farm sector. This article analyses how the policy of globalisation has affected agriculture in India.

The agricultural sector in India is facing a crisis today. The globalisation process, which started in the 1990s, is the main reason for this crisis. The solution of the problem is not in a few "packages" but in drastic changes in the present economic policies related to agriculture. For this, the government should be ready to take bold steps. Farmers, agricultural labourers and people's organisations in civil society should work collectively to assist and persuade the government to make the necessary changes. It is high time that the government and the people realised that India can become a real "superpower" only when the vast majority of the people, especially the farmers in the rural areas, become prosperous and are really empowered.

Conclusion:

The only remedy to the crisis is to do all that is possible to make agriculture a profitable enterprise and attract the farmers to continue the crop production activities. As an effort towards this direction, the government should augment its investment and expenditure in the farm sector. Investment in agriculture and its allied sectors, including irrigation, transport, communication, rural market, rural infrastructure and farm research, should be drastically increased, and the government should aim at integrated development of the rural areas. Therefore, without a serious effort to confront and address these remedial measures, realising the target of 4 per cent sustained growth in agriculture will remain a dream. Hence, there is urgent need for redressal.

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Agrarian Crisis and Farmers Suicide in India

Introduction:

The agricultural crisis is affecting a majority of the people in India. The farmers who produce food materials for the country are in deep distress. The marginalised people like the Dalits and tribals, who depend on agriculture, are getting unemployed and struggling for their livelihood. The ordinary people, especially the poor, have lost their food security. What is highlighted today in the national scene is the image of "incredible India" and "shining India". We hear often about India as a country with a very high economic growth, a country with the highest numbers of billionaires in Asia, and a country of world renowned information technology. But we do not hear enough about the serious problems in agriculture. Those who govern us do not seem to be concerned about this problem; probably they do not want to. But we cannot easily ignore this problem any longer.

The Structural Adjustment Programme (SAP) in 1991 that the policy of globalisation was concretely introduced in India. Based on this policy and the directives of the World Bank, International Monetary Fund and World Trade Organisation, the Indian economy was substantially overhauled. The Export-Import policy was liberalised; the import and customs duties of many products were drastically lowered or totally dropped so that they could be imported without any restriction. The government started reducing its investment in agriculture and the industrial sector allowing the private sector to take over.

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The rural farm economy:

Indian farmers have seen rise in prices of agricultural inputs such as fertilizers, seeds, electricity, water etc. during the last two decades. Without a corresponding rise in market prices or the minimum support prices, rise in input prices affected the profitability of the farmers. As a result of this, farmers became interested either to leave agriculture in order to move towards other occupations, or they have fallen prey to money-lenders.

The rising cost of production has made the farmers depend on informal sources of credit since the transactions costs are too high to receive formal credit along with the problem of moral hazards. Rising input prices and falling market prices have reduced the economic sustainability of Indian agriculture. Many such families were caught up in cycles of debt and destitution, which ultimately led to the suicide of the head of the family. Thus, the survivors were reduced to landlessness due to debt. Among those committed included medium and large landowners who were also affected by a high level of un-payable debt.

Major Issues of agarian crisis:

Large land owners have been able to benefit from support price, when the government has occasionally provided such support. The absence of support price had serious implications to the farmers. Declining opportunities in non-farm employment has further aggravated the crisis. It seems that in areas where suicides have occurred, non- farm options are getting limited. There are also instances where members of families have returned to land after losing work in urban areas or have faced lack of opportunities in the non- farm sector outside the village. It is a matter of serious concern that non-farm employment opportunities are shrinking in off-farming seasons.

The tendency towards commercial (cash) crops increased in the late eighties, and this tendency is not limited to big and medium sized landholders alone. Even the landless and small landholders have been acquiring land on lease for cash crop cultivation. In the absence of credit and other inputs like facilitation

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and support price, dependence on cash crops may have contributed to the agrarian crisis in the rural areas. Thus, the life of farmers is governed by loans taken mostly to support farming.

Life histories have been sharp increase in the dependence on loans to enable cultivation. The tendency to take loans increased in the nineties. Many farmers tried to diversify their employment opportunities with new loans. Some had gone in purchase of tractors in order to rent it out. Medium- and large-sized landholders followed these strategies, but many did not succeed in their efforts, resulting in higher debt burdens. These are the conditions and the contexts that forced the victims to take the extreme step of suicide.

Farmers Sucides in India:

The success of the East Asian countries in raising the living standard of the poor and their subsequent empowerment are setting tone of the renewed discourse of land reform as an important strategy of empowerment and development of people. By resorting to appropriate land reform policies, countries like China, Japan, Taiwan, Singapore and Korea have consolidated their socioeconomic position and recorded a remarkable growth in income generation and poverty alleviation. Therefore, land reform is considered one of the most potent means of poverty alleviation and economic rejuvenation.

The spate of suicides in the states of Andhra Pradesh, Punjab, Karnataka and Maharashtra, coupled with the declining share of agriculture in the Gross Domestic Product (GDP) and increasing burden on the agrarian system belies the lofty, almost ideal, claims put forth in the National Policy on Agriculture. These suicides point to a greater crisis in the agrarian system as a whole where the suicide is a symptom of a greater malaise that threatens millions of farmers and the landless agricultural labourers in the sub-continent. The suicides to the failure of the state and its political economic policy. In less developed countries, an estimated 100 million agricultural households or approximately 500 million people are absolutely landless. Most of them are out of their living only as tenant farmers or agricultural labourers.

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The Reasons for Agrarian Crisis:

Liberal Import of Agricultural Products:

The main reason for the crash of prices of agricultural products, especially of cash crops, in India was removal of all restrictions to import these products. The removal of quantitative restrictions and lowering of import duties were according to the restrictions of the World Trade Organizations (WTO), the crash in the prices of agricultural products is directly related to the liberalisation policy of the government.

Cutback in Agricultural Subsidies:

Lack of Easy and Low-cost Loan to Agriculture:

After 1991 the lending pattern of commercial banks, including nationalized banks, to agriculture drastically changed with the result that loan was not easily available and the interest was not affordable. This has forced the farmers to rely on moneylenders and thus pushed up the expenditure on agriculture.

Decline in Government Investment in the Agricultural Sector:

After the economic reforms started, the government's expenditure and investment in the agricultural sector have been drastically reduced. This is based on the policy of minimum intervention by the government enunciated by the policy of globalisation. The rate of capital formation in agriculture came down, and the agricultural growth rate was also reduced.

Restructuring of the Public Distribution System (PDS):

As part of the neo-liberal policy, the government restructured the PDS by creating two groups- Below Poverty Line (BPL) and Above Poverty Line (APL)-and continuously increased the prices of food grains distributed through ration shops. As a result, even the poor people did not buy the subsidised food grains and it got accumulated in godowns to be spoiled or sold in the open market.

Suggestions:

1. Subsidy and concessions given to agriculture but removed in the post-reform period should be restored. This is a must to make agriculture remunerative. India should assert its right to give sufficient subsidy to its farmers to offset the rising cost of cultivation and protect their livelihood.
2. Bank loans should be easily made available to the farmers, especially since the input cost of agriculture has gone up. 3. The government should augment its investment and expenditure in the farm sector.
4. There is a need for periodic revision of the procurement prices for farm produce making those remunerative. This will help the farmers to meet the increasing expenses for farm inputs and ensure at least remunerative income.
5. The government should revise the policy on Special Economic Zones as it goes against the interest of farmers and the agricultural sector. It should not acquire fertile agricultural land for SEZs.

Conclusion:

The agricultural sector in India is facing a crisis today. The globalisation process, which started in the 1990s, is the main reason for this crisis. The solution of the problem is not in a few "packages" but in drastic changes in the present economic policies related to agriculture. Farmers, agricultural labourers and people's organisations in civil society should work collectively to assist and persuade the government to make the necessary changes. It is high time that the government and the people realised that India can become a real "superpower" only when the vast majority of the people, especially the farmers in the rural areas, become prosperous and are really empowered.

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Economics of Agricultural Crisis: A Study in India

i. Introduction and Background

With the advent of structural adjustment programmes (SAP) in 1991, the policy of globalization was concretely introduced in India. Based on this policy and the directives of the world bank, the Indian economy was substantially overhauled. The export levels in agriculture from have drastically come down and the government started reducing its investment in agriculture and industrial sector allowing the private sector totakeover. The prominent manifestation of this is in the drastic decline in the growth rate of population. Later, India started to import food grains at a much higher price than that in the domestic market. Again, employment in the agricultural sector was not profitable due to the fall in the price of farm products. One of the reasons of fall in farm prices is inherent in trade liberalization, the farm prices in India considerably declined, as the same products could be bought at lower prices in the international market. In addition, the number of people who are employed in the primary sector and the area under cultivation decreased, which inturn caused a decline in rural employment.

ii. Objectives

- To the examine the factors influencing agricultural crisis in India.
- To suggest suitable policies to overcome the agricultural crisis in India.

II. Factors influencing agricultural Crisis in India

i. Impact of Corporate Land Grab on Agriculture

As far as the corporate landgrab is concerned, it may be noticed that till July 31 2007, the BOA has granted formal approvals to 362 SEZs involving 55,000 hectares and in-principle approval to 186 SEZs involving above 140,000 hectares. Apart from SEZs, real estate projects like new privately promoted towns and satellite townships around urban centres have grabbed lakhs of hectares of peri-urban land. MoUs signed by different state governments for mining and other mega industrial projects also entail substantial corporate landgrab.

ii. Impact of the Crisis on Agricultural Labourers

Agrarian crisis not only affects peasants but also agricultural labourers, as rich farmers try to pass on part of the burden of their crisis on labourers. It is seen that, on the one hand the employment opportunities decline and real wages of agricultural labourers stagnate and even decline in some areas on the others.

It is seen that empirical data from field reports clearly suggest contrary trends, with such increase being observed only in some regions of Andhra Pradesh and Tamil Nadu. In addition, Agricultural wages growth in traditionally high-wage regions like Kerala, Punjab, Haryana and western UP has been getting depressed clearly.

iii. Employment

In the peak liberalization era, while the employment growth in the whole of the economy came down from 2.06 per cent per annum in 1983-84 to 1993-94 period to 1.82 per cent in 1993-94 to 2004-05 period, the employment growth in agriculture had almost collapsed to zero (0.10 per cent). The stagnation of non-farm employment growth by late 1990s compounded this problem. The relative share of non-farm workers among all rural labourers has marginally declined of late.

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iv. Farmers' Suicides

Poor agricultural income and absence of non-farm avenues of income is indicative of the larger malaise in the rural economy of India. One manifestation of this has been the increasing incidence of farmers' suicides. The suicide mortality rate (SMR, suicide death for 100,000 persons) for male farmers in India had increased from 12.3 in 1996 to 19.2 in 2004 and then reduced to 18.2 in 2005, whereas SMR for male non-farmers increased from 11.9 in 1996 to a peak of 14.2 in 2000 and thereafter declined to 13.4 in 2005. During 2001-05, there were 86,922 farmers' suicides, of which, 86 per cent were males. Across major states, the states where SMR for male farmers is higher that of the national average of 17.5 and SMR for male non-farmers in that state are Kerala, Maharashtra, Chhattishgarh, Karnataka, Tamil Nadu and Andhra Pradesh. Among smaller states/union territories the incidences are high in Pondicherry. Dadra & Nagar Haveli, Delhi, Goa and Sikkim.

Public policy and media attention have already highlighted the farmers' suicides in parts of Kerala, Maharashtra, Karnataka and Andhra Pradesh. In selected districts of these states, the central government and the respective state governments have announced measures to deal with distress.

Conclusion

It is clear from the above- discussions that, the crisis is mainly due to the low returns and declining profitability from agriculture and that of poor non-farm opportunities. Specifically, to over come crisis in agriculture prosperity in agriculture were crisis improving water availability will facilitate diversification of cropping pattern, but this should go hand in hand with policies that increase.

Further, availability of affordable credit requires revitalization of the rural credit market. There is also a strong case for regulation private credit and input markets. A challenge for the technological and financial gurus is to provide innovative products that reduce costs while increasing returns. Organizing farmers through a federation of self-help groups (SHGs) with government, banks and other stakeholders playing a pro-active role would be welcome. Besides, the role of public institutions and need for a greater involvement from the civil society.

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Crisis of Agriculture Sector Economy Growth in India

1.1 Introduction

Agriculture Sector of Indian Economy is one of the most significant parts of India. Agriculture is the only means of living for almost two-thirds of the employed class in India. As being stated by the economic data of financial year 2006-07, agriculture has acquired 18 percent of India's GDP. The agriculture sector of India has occupied almost 43 percent of India's geographical area. Agriculture is still the only largest contributor to India's GDP even after a decline in the same in the agriculture share of India. Agriculture also plays a significant role in the growth of socio-economic sector in India. In the earlier times, India was largely dependent upon food imports but the successive story of the agriculture sector of Indian economy has made it self-sufficing in grain production. The country also has substantial reserves for the same. India depends heavily on the agriculture sector, especially on the food production unit after the 1960 crisis in food sector. Since then, India has put a lot of effort to be self-sufficient in the food production and this endeavor of India has led to the Green Revolution. The Green Revolution came into existence with the aim to improve the agriculture in India.

1.2 Agriculture in Tamil Nadu

Agriculture is the most predominant sector of the economy of Tamil Nadu, a state in India. 70% of the states population is engaged in agriculture and allied activities for their livelihood. Tamil Nadu has as an area of 1.3 Lakh km with a gross cropped area of around 58.43 lakh hectares of which the Gross Irrigated Area is 33.09 lakh hectares which is 57% and the balance 43% of the area are under rainfed cultivation. Tamil Nadu is the home land of Dr M.S. Swaminathan, known as the "Father of the Green Revolution" in India. The state is historically known for its agriculture from ancient times. Annual food grains production in the year 2007-08 was 100.35 lakh mt. But now this is steadily declining due to industrialisation, growth of real estate business and migration of the younger generation out of villages for education and white collar jobs.

1.3 Indian agriculture since 1947

Over 50 years since its independence, India has made immense progress towards food security. Indian population has tripled, but food-grain production more than quadrupled: there has thus been substantial increase in available food-grain per capita. Prior to the mid-1960s India relied on imports and food aid to meet domestic requirements.

1.4 Before Independence

The agriculture sector was backward and lacked scientific approach. To improve the condition of the agricultural sector the centre appointed Mr. JA Voeleker in 1889 as agricultural chemist. Years of extensive research resulted in the setting up of Agricultural Research Institute at Pursa, Bihar (in 1903). In spite of the best efforts by the government, the productivity remained low. So the government set up the Royal Commission on Agriculture in 1926. Based on their findings the Imperial Council of Agricultural Research (ICAR) was formed and during the period agricultural flourished.

1.5 After Independence

The government backed the agricultural sector by the way of research and by setting up Commodity Committees. The first agricultural university was set up in 1961 at Pantnagar in UP. In the 1950' and 1960's improved agricultural practices, better seeds and use of fertilizer, soil and water conservation, land

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development, land consolidation, agricultural credit and marketing and price incentive resulted in improved agricultural productivity.

1.6 Green Revolution

The Green Revolution is referred to the period between 1967 to 1978.The population was growing faster than the rate of food grain production at that period. The government realized the need for dramatic improvement in food grain production.

1.7 Plight of the Farmers

The World Development Report clearly says that to reduce poverty and hunger, the growth of the agricultural sector is the only solution. Higher costs of production without a corresponding increase in prices, is seriously impacting the overall viability of undertaking farming. This also explains why the per capita production of food grain is going down. As a result of these factors, agriculture scientists are saying that it is high time that we urgently start taking corrective steps on a war footing otherwise the agricultural sector will totally collapse and the country's food security will be jeopardized. During the 1980's in spite of three years of scanty rainfall and a drought during the middle of the decade, India managed without large scale food imports, because of the increase in food grain production and the existence of a large buffer stock insulating against any agricultural crisis.

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1.8 Changes in Agricultural Exports

By compiling the 10 year data (Annexure 1) as shown in Fig. 1, it is found that the export of overall agricultural commodities, which was 11641.12 MT in the year 2001-02, increase to 15279.20 MT in 2005-06 and slightly decrease to 14623.86 MT in 2009-10. Contrary to this the value of total exported agricultural commodities, which was Rs. 29728.61 Crore in the year 2001-02 rose to Rs. 49217.00 Crore in 2005-06 and further increase to Rs. 89522.59 in 2009-10.

1.9 Impact of Globalization on Indian Agriculture

The liberalisation of India's economy was adopted by India in 1991. Facing a severe economic crisis, India approached the IMF for a loan, and the IMF granted what is called a 'structural adjustment' loan, which is a loan with certain conditions attached which relate to a structural change in the economy. The government ushered in a new era of economic reforms based on these conditions. These reforms (broadly called Liberalisation by the Indian media) can be broadly classified into three areas: Liberalisation, privatization and globalization. Essentially, the reforms sought to gradually phase out government control of the market (liberalisation), privatize public sector organizations (privatization), and reduce export subsidies and import barriers to enable free trade (globalization). There was a considerable amount of debate in India at the time of the introduction of the reforms, it being a dramatic departure from the protectionist, socialist nature of the Indian economy up until then.

1.10 Indian Agriculture today

Agriculture employs 60% of the Indian population today, yet it contributes only 20.6% to the GDP. (Isaac, 2005) Agricultural production fell by 12.6% in 2003, one of the sharpest drops in independent India's history. Agricultural growth slowed from 4.69% in 1991 to 2.6% in 1997-1998 and to 1.1% in 2002-2003. (Agricultural Statistics at a Glance, 2006) This slowdown in agriculture is in contrast to the 6% growth rate of the Indian economy for almost the whole of the past decade. Farmer suicides were 12% of the total suicides in the country in 2000, the highest ever in independent India's history. (Unofficial estimates put them as high as 100,000 across the country, while government estimates are much lower at 25,000. This is largely because only those who hold the title of land in their names are considered farmers, and this ignores women farmers who rarely hold land titles, and other family members who run the farms.) (Sainath, P)

1.11 The Crisis facing Indian Agriculture

The biggest problem Indian agriculture faces today and the number one cause of farmer suicides is debt. Forcing farmers into a debt trap are soaring input costs, the plummeting price of produce and a lack of proper credit facilities, which makes farmers turn to private moneylenders who charge exorbitant rates of interest. In order to repay these debts, farmers borrow again and get caught in a debt trap. The current crisis in Andhra Pradesh, Kerala and Maharashtra, and analyse the role that liberalisation policies have played. As was mentioned earlier, AP's experience is particularly relevant in this analysis because of its leadership.

1.12 Conclusion

It is clear that the liberalisation policies adopted by the government of India played a dominant role in the agrarian crisis that is now being played out. However, this is not to say that privatisation, liberalisation and globalization are per say bad, or inherently inimical to an economy. It is the 'one size fits all' brand of liberalisation adopted by the IMF and the World Bank which forces countries to privatize, liberalise and globalize without exception which has failed. Without taking into account the state of an economy, and in this case, the state and nature of the agricultural sector in India, the IMF and the World Bank, with the cooperation of the Indian government, embarked on mismatched reforms, which have caused misery and despair among millions of Indian farmers, driving large numbers of them to suicide.

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Impact of Globalization and Farmer's Suicides in India

1. Introduction

Agriculture employs 60 % of the Indian population today, yet it contributes only 20.6 % to the GDP. Agricultural production fell by 12.6 % in 2003, one of the sharpest drops in independent India's history. Agricultural growth slowed from 4.69 % in 1991 to 2.6 % in 1997-1998 and to 1.1 % in 2002-2003. This slowdown in agriculture is in contrast to the 6 % growth rate of the Indian economy for almost the whole of the past decade. Farmer suicides were 12 % of the total suicides in the country in 2000, the highest ever in independent India's history. This is largely because only those who hold the title of land in their names are considered farmers, and this ignores women farmers who rarely hold land titles, and other family members who run the farms. Institutional credit (or regulated credit) accounts for only 20 % of credit taken among small and marginal farmers in rural areas, with the remaining being provided by private moneylenders who charge interest rates as high as 24 % a month. An NSSO-2 survey in 2005 found that 66 % of all farm households own less than one hectare of land. It also found that 48.6 % of all farmer households are in debt.

With the introduction of economic reforms since 1980s, the plight of the weaker sections became worse as most of them were small and poor farmers. Faced with many structural constraints, they are dangerously getting pushed out of the system, as the entry of machines and highly skilled workforce has resulted in fewer numbers of man-days, wages and irregularity in employment for the semiskilled and unskilled. The cumulative effect of all these led to miserable conditions for the people in India, in general and for farmers in particular. An analysis of the impact of globalization on the crucial agricultural sector is being taken up.

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2. Globalization and Agriculture

Globalization combined with liberalization has led to the decline of public investment in agriculture. In the pre-globalization period, the country's food grain production was 3.5 % whereas in the post-globalization period it fell to 1.7 %. One factor for this fall is reduction in subsidies given to farmers, which resulted in higher prices of the food grains in the market. On the other, in India the average income of the common man did not increase correspondingly.

3. The Crisis Facing Indian Agriculture Debt

The biggest problem Indian agriculture faces today, and the number one cause for farmers committing suicides is debt. Forcing farmers into a debt trap is soaring input costs, the plummeting price of produce, and a lack of proper credit facilities, which makes the farmers turn to private moneylenders who charge exorbitant rates of interest. In order to repay these debts, the farmers borrow again and get caught in a vicious debt trap. The need is to examine each of the causes which has led to the current crisis in Andhra Pradesh, Kerala and Maharashtra, and analyse the role that liberalization policies have played.

4. Debates on Suicide

First debate tries to locate the suicide as part of multiple crises. The crises are ecological, economic, and social, each inter-linked with the other. The ecological crisis is the result of intense use of hybrid seeds, chemical fertilizers and pesticides, causing the erosion of soil fertility and increasing crop-susceptibility to pests and diseases. Heavy indebtedness led to the economic crisis. In the last five years India has witnessed unprecedented agrarian distress. The per capita production of food grains has witnessed a decline, but more than that rural India has experienced a massive deflation. The third debate attempts to locate the

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reasons for the suicide in adapting the World Bank model of agriculture or what is called McKinsey Model of development that created spaces for industry-driven agriculture which ultimately translated into agri-business development including Information Technology. This model of development has not only exacerbated the crisis leading to an environmental catastrophe but also destroyed millions of rural livelihoods.

5. Farmer Suicide in India

Depicts year wise number of suicides by farmers in India the period from 1997 to 2006 for nine years. Of the nine years the number farmers' suicide is higher or three years 2002, 2004 and 2005. In 2002 the number of suicides 15,308 farmers committed suicides, in 2004 the total number of suicides by farmers were 15, 929 and in 2005, 14,973 farmers have committed suicide. The India was reeling under severe drought during these three years.

According National Institute of Mental Health, United States of America, "suicidal tendencies are caused by emotional disorders, chemical imbalances and genetic traits. Major psychiatric illness, including bipolar disorder, depression, schizophrenia and substance abuse, which increase the risk of suicide, are inherited" (Guruswami M et al, 2008). These neurobiological factors predispose one to suicide. Srijit Mishra (2006) opines that an adverse economic condition acts as the trigger for the act of suicide. He further points out that suicide is an interaction between neurobiological factors and socio-economic factors.

6. Growing Indebtedness and Farmers' Suicides

A direct outcome of the squeeze in farm incomes and dwindling employment opportunities has been a phenomenal rise in the level of indebtedness within the peasantry. The NSS 59th round Survey on Indebtedness of Farmer Households conducted in 2003 reported that 48.6 % of farmer households were indebted. A similar survey in 1991 found only 26 % of farmer households to be indebted. The incidence indebtedness was the highest in Andhra Pradesh where four out of five surveyed farmers were in debt followed by Tamilnadu with nearly three-fourths of farm households reporting indebtedness. In Punjab, Kerala and Karnataka, the proportion was nearly two-thirds and in Maharashtra, Haryana, Rajasthan, Gujarat, Madhya Pradesh and West Bengal more than half of the farmers surveyed were in debt. The Survey further showed that moneylenders had emerged as the most significant source of credit for the indebted farmers, with 29 % of farmers sourcing their credit from them. 12 % of the farmers sourced their credit from traders of inputs and output. Only 56 % of the farmers had taken loans from institutional sources like banks, cooperatives or the Government.

The continuing trend of farmers' suicides, currently being witnessed in the Vidharbha region of Maharashtra, is a sign of extreme despair and hopelessness of the peasantry plagued by repeated crop failures, inability to meet the rising cost of cultivation and rising indebtedness. According to unofficial figures, the number of suicides by peasants has gone up to more than 2 lakhs across the country since the mid-1990s. The proximate cause of such suicides is the inability to cope with the burden of debt, which peasants are unable to repay. In most cases, the debts are contracted to private moneylenders, as the massive decline in agricultural credit from banks and cooperatives has reduced access especially of small cultivators to institutional credit.

7. Conclusion

The Investment in Agriculture is declining, more so of public investment in agriculture. The problems of agriculture has increased with the MNCs entering into the seed sector, As globalization making its inroads into agriculture, farmers is resorting to suicide, the growth rates are swindling downwards. The farmer in the India is in the dire straits. The condition of agriculture in general and Indian farmer in particular is still very pathetic. The Government of India should take proper initiative to improve the terms of trade of agriculture and farmers livelihood. The government should evolve a comprehensive agricultural policy and provide agriculture its due. The agriculture infrastructure should be strengthened and the morale of farmer will definitely increase.

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Agricultural Labourers and Social Security Measures in India: A Great Challenge

I. Introduction

The agricultural labourers are numerous in number and scattered in all the villages in India. Due to the crisis of agricultural sectors, agricultural labourer's condition is being poor. Unlike the other industrial labourers, agricultural labourers suffered a lot. Agricultural labour is hardly ever covered by any rules and regulations. Law, if at all it exists, is flouted more often than it is observed. In brief, it may be observed that the situation of an agricultural labour differs substantially from that of an industrial labour; he is an unorganized lot, his bargaining power is weak, and generally, the supply of agricultural labour exceeds its demand. Even though the social security measurers applicable to them, they are not using properly because of their poverty, illiteracy, ignorance, not having any proper union facilities. The paper focuses the challenges of agricultural labourers and how far the social security measures adopted by the agricultural labourers and what are the conditions need to improve the agricultural labourers in their living status.

II. Agricultural Labourers in India: An Overview

a) Problems of Agricultural Labourers in India

The phenomena of underemployment, under-development and surplus population are simultaneously manifested in the daily lives and living of the agricultural labourers. They usually get low wages, conditions of work put an excessive burden on them, and the employment which they get is extremely irregular. Agricultural workers constitute the most neglected class in Indian rural structure. Their income is low and employment irregular. Since, they possess no skill or training, they have no alternative employment opportunities either. Socially, a large number of agricultural workers belong to scheduled castes and scheduled tribes. Therefore, they are a suppressed class. They are not organized and they cannot fight for their rights. Because of all these reasons their economic lot has failed to improve even after four decades of planning.

Agricultural labourers are not organized like industrial labourers. They are illiterate and ignorant. They live in scattered villages. Hence they could not organize in unions. In urban areas workers could generally organize themselves in unions and it is convenient for political parties to take interest in trade union activities. This is almost difficult in case of farm labour. Accordingly, it is difficult for them to bargain with the land owners and secure good wages. Most agricultural workers belong to the depressed classes, which have been neglected for ages. The low caste and depressed classes have been socially handicapped and they had never the courage to assert themselves. They have been like dump-driven cattle. In some parts of India, agricultural labourers are migratory, moving in search of jobs at the time of harvesting. Government measures to improve their lot by legislation have proved ineffective so far due to powerful hold of the rural elite classes in the rural economy.

Due to all the above mentioned factors, the bargaining power and position of agricultural labourers in India is very weak. In fact, quite a large number of them are in the grip of village money lenders, landlords and commission agents, often the same person functioning in all the three capacities. No wonder, the agricultural labour is the most exploited class of people of India. There is generally direct and day to day 'contact between agricultural labourers and the landlords' on whose farm they are working. Unlike industrial workers, this direct contact between the employer and employees is a distinct feature of agriculture labourer. Thus partly because of factors beyond their control and partly because of their inherent bargaining weakness, the farm labourers have been getting very low wages and have therefore to live in a miserable sub-human life.

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At the bottom of the agricultural cadre in India are those labourers whose conditions are not very different from those of serfs. Agricultural serfdom has been most prevalent in those parts of India where the lower and the depressed classes and most in numerous. The ethnic composition of villages which governs the social stratification is responsible for the survival of the slavish conditions. In Gujarat, Maharashtra, Kerala, Tamil Nadu, Karnataka, Bihar, Orissa, Madhya Pradesh, a large aboriginal population live and the condition of this agricultural labours is very much like that of slaves. These are called in different names in different States.

III. Unorganized Sector Workers and Social Security Measures

In India, a major chunk of labor force is employed in the unorganized sector. The unorganized / informal employment consists of causal and contributing family workers; self employed persons in un-organized sector and private households; and other employed in organized and unorganized enterprises that are not eligible either for paid, sick or annual leave or for any social security benefits given by the employer.

The unorganized sector in India comprises roughly of 93per cent of the population in the working age group (36.9 crore). Of the 457.5 million workers in 2004-05, only 7 per cent were in the organized sector, and had access to statutory social security benefits. The remaining workforce including (the agricultural workers 23.7 crore, construction workers: 1.7 crore, rest of the sector (mining, manufacturing, service): 11.5 crore) had been socially excluded and suffered from persistent deprivation associated with general low standards of living and social insecurity. The unorganized sector makes a significant contribution to the national wealth; yet, workers in this sector do not have access to sufficient and reliable social security. Although the unorganized workers have some access to risk-management mechanisms such as micro-finance, their access to statutory benefits like health care, old age pension, etc., has been quite poor. These workers adopt informal strategies such as borrowings, sale of assets, etc, which are very expensive and their continued dependence on such strategies only renders them more vulnerable.

The governments at the central and state levels have found it challenging to formulate social security schemes for unorganized workers for the following reasons: A large proportion of these workers are poor, illiterate, vulnerable and isolated. A vast majority of them do not have fixed employer and employee relationship. The unorganized sector work is usually temporary, seasonal and changing in nature, and many occupations within this sector are home-based. Notwithstanding the attempts of the government to provide social security in the form of pensions and other benefits, the problems of minuscule coverage and paltry amounts of benefits were often noticed.

IV. Social Security Measures for Agricultural Labourers

Agricultural labour is hardly ever covered by any rules and regulations. Law, if at all it exists, is flouted more often than it is observed. In brief, it may be observed that the situation of an agricultural labour differs substantially from that of an industrial labour; he is an unorganized lot, his bargaining power is weak, and generally, the supply of agricultural labour exceeds its demand. With a view to providing social security to unorganized workers, including landless agricultural labourers, the Government has enacted the Unorganized Workers' Social Security Act, 2008. The Act provides for constitution of National Social Security Board to recommend social security schemes viz. life and disability cover, health maternity benefits, old age protection and any other benefit as may be determined by the Government for unorganized workers.

The Government has taken the following initiatives for unorganized workers, including landless agricultural workers. The "Aam Admi Bima Yojana" providing for death and disability cover to rural landless households between the age group of the 18 to 59 years, with effect from 02.10.2007. The Rashtriya Bima Yojana for BPL families (a unit of five) in unorganized sector on 01.10.2007. The scheme providing for smart card based cashless health insurance cover of Rs. 30,000/- per family per annum on a family floater basis became operational from 01.04.2008. Indira Gandhi National Old Age Pension Scheme provides for old age pension of Rs. 200/- per month to persons above the age of 60 years and for the persons above the age of 80 years the amount of pension has been raised to Rs. 500/- per month.

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V. Conclusions and suggestions

The unorganized sector plays a vital role in terms of providing employment opportunity to a large segment of the working force in the country and contributes to the national product significantly. The contribution of the unorganized sector to the net domestic product and its share in the total NDP at current prices has been over sixty per cent. In the matter of savings the share of household sector in the total gross domestic saving mainly unorganized sector is about three fourth. Thus unorganized sector has a crucial role in our economy in terms of employment and its contribution to the National Domestic Product, savings and capital formation. The social security initiatives of the Centre, State, and NGO's indicated that the needs are much more than the supps provided and the efforts must be targeted and vast enough to cover the growing unorganized workers. Social security must be targeted to particular vulnerable groups like informal workers, migrant workers, women and children etc. However, multiple social assistance schemes will not be effective. It will be meaningful to choose the most cost effective ones among them for application across the board. Formal social security system cannot be exclusively relied upon in a developing country like India. It is necessary to reform and to extend their applications where and when appropriate. However, there is considerable scope for improvement in most of the promotional and protective social securities programmes in efficient utilization of funds through better administration. Urban informal sector is a sector where mostly migrant workers are found. They are landless poor who come to the cities and find themselves in a difficult situation, staying in most unhygienic conditions. They do not have support of the trade unions. Steps may be taken to improve their lot with social security measures. The disabled workers are also in a disadvantageous position for whom special schemes are needed.

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Declining Trend in Agriculture GDP and Agriculture Productiviy – Agricultural Crisis in India

Introduction:

Agriculture sector is vital for the food and nutritional security of the nation. The sector remains the principal source of Livelihood for more than 58% of the population Though its contribution to the national GDP has declined to 14.2% due to high growth experienced in industries and services sectors. Compared to other countries, India faces a greater challenge, since with only 2.3% share in world's total land area, it has to ensure food security of its population which is about 17.5% of world population. This leads to excessive pressure on land and fragmentation of land holdings. Against the backdrop of the burgeoning population's demands for foodgrains, degrading natural resource base, emerging concerns of climate change and other challenges, the Department of Agriculture and Cooperation(DAC) has focused on mobilizing higher investment in agriculture, bridging yield gaps that exist across the states/ regions, timely and adequate supply of quality inputs, and providing adequate support services to the farmers to make agriculture a remunerative vocation on a sustainable basis. Increasing agricultural production with limited natural resources in a sustainable manner for ensuring food and nutritional security and providing income security to farmers are the major challenges before the Government.

Agriculture sector has touched a growth rate of 4.4% in the second quarter of 2010-11 thereby achieving an overall growth rate of 3.8% during the first half of 2010-11. The sector witnessed a growth of 5.1 per cent in 2005-06, 4.2 per cent in 2006-07, 5.8 percent in 2007-08, (-) 0.1 percent in 2008-09 at2004-05 prices. The low growth rate of 0.4 percent recorded by this sector in 2009-10 was mainly due to poor rainfall in 2009. As per the Advance Estimates (AE) of Central Statistical Organization for the year 2010-11, the agricultural sector contributed about 14.2 per cent to the GDP, at 2004-05 prices. There has been a

continuous decline in the share of agriculture in the GDP from 17.4 percent in 2006-07 to 14.2 percent in 2010-11 as per Advance Estimates at 2004-05 prices. Falling share of agriculture in GDP is an expected outcome in a fast growing and structurally changing economy. (Annual Report -2010-2011, Ministry of Agriculture, Government of India). In this backdrop, an attempt was made to analyse the share of agriculture in gross domestic product, trends in agricultural production and agricultural exports.

Methodology:

The data for the study were collected from secondary sources such as CSO Report, and the Report of the Directorate General of Commercial Intelligence and Statistics. The present study analysed the trends in agricultural production and exports in India with simple percentages and charts.

Results And Discussion

Agriculture GDP:

As one of the world's largest agrarian economies, the Indian agriculture sector contributed approximately 14.6% of India's GDP (at 2004-05 prices) during 2009-10.

The share of agriculture and allied sector contributes 17.4 percent in 2006-2007. It had declined to 14.2 percent in 2010 -2011. It shows that though the actual gross domestic product had increased, the percentage share of agriculture had declined. It implied that the importance of agricultural sector in the structure of Indian Economy had been declined.

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The year 2010-11 experienced normal South West monsoon rainfall (June-September). At met sub-division level, 31out of 36 met sub-divisions received excess/normal rainfall and 5 met subdivisions namely, Assam & Meghalaya (-23%), Gangetic West Bengal (-31%), Jharkhand (-41%), Bihar (-22%) and East Uttar Pradesh (-23%) received deficit rainfall during this period. The country as a whole received 912.8 mm of rainfall against the normal rainfall of 893.2 mm which represents a deviation of 2 percent higher than the Long Period Average (LPA). Out of 597 districts for which rainfall data were available, 173 districts (29%) received excess rainfall, 240 districts (40%) normal rainfall, 173 districts (29%) deficit rainfall and the remaining 11 districts (2%) received scanty rainfall.

Agricultural Production:

The factors behind the declining share of agriculture in total gross domestic product might be either declining production of agriculture or increasing contribution of other sectors in the total economy.

The area under food grains production had declined from1240.68 lakh hectares in 2007-08 to 1213.66 lakh hectares in 2009-10, which led to the production decline of 230.78million tonnes in 2007-08 to 218.20 million tonnes in 2009-10. It led to decline in the yield(kg/hectare) from 1860 in 2007-08 to 1798 in 2009-10. Further, the area under oilseed production had declined from 266.93 lakh hectares in 2007-08 to 261.08 lakh hectares in 2009-10, which led to the production decline of 29.76 million tonnes in 2007-08 to 24.93 million tonnes. The sugarcane production had declined from 277.75 million tonnes in 2009-10 compared to the production in 2007-08(348.19 million tonnes).The production of cotton had also declined to 23.94million tonnes as compared to the previous years.

Agricultural Exports:

Two remarkable developments had taken place in India's agricultural exports during the post-liberalisation period. One the agricultural export had grown at a much faster rate since the initiation of liberal economic policies where the agricultural exports in value terms had grown annually from 18.9 percent during 1990's to 15.2 percent during 2000's.

The export of the agricultural and allied sector in 2004-05 is 380.78 crores and gradually increased to 452.2 crores in 2005-06. The exports had shown an increasing trend in the successive years as 1102.96 crores in 2010-11 and 1793.31 crores in 2011-12.

Conclusion:

To conclude, the area under food grains production, oilseeds, sugarcane and cotton had declined in the study period. The yield per hectare had also shown a declining trend. Due to decline in the area under cultivation and yield, the agricultural production had also declined. Hence the share of gross domestic product had shown a declining trend. It indicates the problem of food crisis in the future for the growing population though agricultural exports had shown an increasing trend.

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Impact of Climate change on Agriculture sector in India

Inrodution

The impact of climate change on agriculture could result in problems with food security and may threaten the livelihood activities upon which much of the population depends. Climate change can affect crop yields (both positively and negatively), as well as the types of crops that can be grown in certain areas, by impacting agricultural inputs such as water for irrigation, amounts of solar radiation that affect plant growth, as well as the prevalence of pests. India is a large country with 15 agro-climatic zones, with diverse seasons, crops and farming systems. For a majority of people in India, to this day, agriculture is the main source of livelihood Impacts on Indian Agriculture in various direct and indirect ways. This obviously means an impact on the lives and livelihoods of millions of Indians. change is already a reality for a majority of Indian farmers even as plans are being evolved at the government level mostly to create adaptive capabilities; meanwhile, Indian farmers are being forced to adapt to several Climate change -related changes by themselves because they have no other choice.

Impacts of Climate Change on the Agricultural Sector

Agricultural production is carried out through the selection of crops suitable for the climate of a Specific region and application of proper farming methods. Therefore, agriculture is a climate dependent bio-industry with notable regional characteristics. Climate change affects the hydrology including underground water level, water temperature, river flow, and water quality of lakes and marshes, by impacting precipitation, evaporation, and soil moisture content. In particular, the increase of precipitation by climate change leads to an increase of outflow while the temperature rise increases evaporation, resulting in the reduction of outflow.

Tropical Wet and Dry Agro-Ecological Regions

The tropical wet and dry agro-ecological regions comprising the south-eastern coastal plain from Kanyakumari to the Gangetic Delta have both rain-fed and irrigated agriculture. Rice is the predominant crop cultivated both in kharif and Rabi seasons. After the rice is harvested pulses like black gram and lentil, and oilseeds such as sunflower and groundnut are cultivated using the residual moisture. Besides agriculture, coastal and brackish water fisheries are important economic activities. Similar to other agro-ecological zones, these areas are also highly ulnerable to changes in climate. For example, in Orissa, seawater incursion has reached 2.5 kilometres inland over the previous two decades. This has negatively impacted more than 600 families and their livelihoods, primarily in the Satabhaya and Kanhupur areas. Along these eastern coastal and inland areas, rainfall is now increasingly unpredictable and has become incompatible with established crop schedules.

River Deltas, Coastal Areas, and Mangroves

Some of the area's most vulnerable to climate change are the coastlines of tropical countries such as India. The river deltas are already facing the burden of climatic change and these adverse impacts are expected to increase in the coming century. For example, negative effects are already visible in the Sunder bans, the wetlands at the mouth of the Ganga and Brahmaputra river systems. The Sunder bans wetlands harbor one of the most globally important wildlife habitats, the largest mangrove forest. The Sunder bans wetlands have long been highly susceptible to seasonal ocean currents, tides, waves, winds, and cyclonic storm surges that cause rapid soil erosion on the one hand and salt deposition on the other. This leads to a

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constantly changing local ecology. Thus, the climatic uncertainty and high anthropogenic pressure resulting from climate change is exacerbating the already high pressures on this region. One of the most vulnerable aspects of the Sunder ban wetlands are its mangroves. Changes in temperature and CO2 levels, changed rainfall patterns, frequency of storms, and rise in sea level directly threaten the mangrove ecosystems and diminish their ability to cope with changes.

Impacts of Climate Change on Indian Agriculture

The droughts of 1987, 1999~2000, and of 200to severe problems of food security because of these buffer stocks. Despite this progress, food production in India, on an aggregated scale, is still considerably dependent on the rainfall quantity and its distribution. The summer monsoon (June through September) contributes to 78% of India's annual rainfall and is a major water resource. It is important to recognize that the Green Revolution was largely confined to the irrigated areas. In the past 50 years, there have been around 15 major droughts, due to which the productivity of rain fed crops in those years was affected. Limited options for other income and widespread poverty continue to threaten the livelihoods of millions of small and marginal2~2003 could generally be managed and did not lead farmers in this region.

The food security of India may be at risk once again in the future due to continued population growth. By 2050, India's population is projected to grow to 1.6 billion. This rapid and continuing increase in the population implies a greater demand for food. The demand for rice and wheat, the predominant staple foods, is expected to increase to 122MT and 103Mt, respectively, by 2020, assuming medium income growth. The demand for pulses, fruits, vegetables, milk, meat, eggs and marine products is also expected to increase very sharply. This additional food will have to be produced from the same or possibly shrinking land resource base, because there is no additional land available for cultivation. It is estimated that the average yields of rice, wheat, coarse grains, and pulses need to increase by 56, 62, 36 and 116%, respectively, by 2020. Although there is pressure to increase production in order to meet higher demands, there has lately been a significant slowdown of the growth rate in production and yield from the cultivated areas. The annual rate of growth in food production and yield peaked during the early years of the Green Revolution, but since the 1980s, it has declined since the 1980s.

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Conclusion

This paper argues that the economic impact of climate change on agriculture should be analyzed within a disaggregated modeling system that captures spatial characteristics and agricultural productivity changes. With respect to the former, we propose a new conceptual framework for modeling the yield effects of climate-induced crop movements. A succinct formal approach like this can yield some interesting general conclusions, but we also see it as the kernel of a larger commitment to empirical research that will be necessary to better understand linkages between climate change and agriculture and especially to identify the regional economic and social trade-offs that face policymakers.

Scientific diagnosis and assessment of the impact of climate change on the agricultural sector is Essential for formulating the vision of future agriculture and the direction of agricultural administration. Specifically, it can provide useful information for formulating the long-term agricultural development Plan for each region and the adaptive measures for farming households. The multiple challenges the East Asian Region is facing in terms of climate change, degradation of ecosystems, food insecurity require an integrated approach. The challenges and many of the Solutions are understood. Now is the time to get down to earth and take urgent action on solving tho Issues towards a sustainable, inclusive and resource efficient path. The notion that green growth and Climate-smart agriculture can help to solve urgent issues has been the basis for developing and starting the roadmap for the East Asian Region.

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Performance of Growth of Food Grains Production in India During Pre and Post Liberalization Period

India's agriculture progress over the past four decades has been quite impressive. The agriculture sector has been successful in keeping pace with rising demand for food. The contribution of increased land area under agricultural production has declined over time and increases in production in the past two decades have been almost entirely due to increased productivity. Contribution of agricultural growth to overall progress has been widespread. Increased productivity has helped to feed the poor, enhanced farm income and provided opportunities for both direct and indirect employment. The success of India's agriculture is attributed to a series of steps that led to availability of farm technologies, which brought about dramatic increases in productivity in 70s and 80s often described as the Green Revolution era.

This paper attempts to estimate the growth and trend in the area production and yields of food grains in all India since green revolution era during pre liberalization and post liberalization periods from the year 1975-76 to 1989-90 and 1990-91 to 2004-05.

Frame Work of Analysis

The analysis in this study is based on time series secondary data for the period of 1975-76 to 2004-05 for all India level. The secondary data were collected from secondary published sources, viz, various publications. Any changes in the production of food grains crop depends basically on the changes in area under the crops and its average yield. If the area, production and yield of food grains total change in the output can be decomposed into the area effect, yield effect and interaction effect separately. The compound growth rates of area / production / yield were calculated by using the following model.

$\text{Log } Y = \log A + t \log B$

Where Y = area / production / yield

t = time variable

Compound growth rate = Ant log of (b)-1 x 100

The compound growth rate were calculated for the three periods viz., (1) Pre liberalization Period (1975-76 to 1989-90), (2) Post liberalization period (1990-91 to 2004-05) and (3) The overall period (1975-76 to 2004-05). It was intended to test the difference in the growth rates between the two-time period by using Students t Test, the growth rates for the two periods were significantly differences.

Results and Discussion

The area under Rice increased by; 14.57 per cent and the productivity by 103.54 per cent over the study period during 1975-76 to 2004-05. During the same period the area production; and productivity of Wheat expressed an increase of 50.86, 98.21 and 199.00 per cent respectively. Relatively higher increase of wheat as compare to that for Rice was due to smaller base value of wheat.

Although the yield of coarse cereals increased by 94.86 per cent, but the area under these crops by 37.10 per cent, resulted in the total production in increased by 22.58 per cent over the study period. It indicates that the large increase in the area, production and productivity of Wheat and Rice in India sufficiently absorbed the relatively small decline in case of coarse cereals.

The Pulses experienced a decline in the area of 2.18. But the production is increased in 37.03 percent although increase productivity in 40.00 per cent. The total food grain production in India also increased by

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116.42 per cent, which is largely attributed to increased in their yield 119.90 per cent. Followed by 2.61 per cent increased in the area under food grains.

The area production and productivity of Rice, Wheat, Coarse cereal, Pulses and Total Food grains in India registered a significant increase over and the thought the study period. The annual Compound Growth Rate of Rice was 0.413, 2.542 and 2.120 and wheat was 0.842, 3.378 and 2.514 respectively. The significance of F-value for Rice, Wheat, Coarse Cereal and Total pulses are reveals that there was a marked difference in the growth rates of area production and productivity between two periods i.e pre liberalization period and post liberation period. Area, production, and productivity; of these crops have significantly declined during post liberalization period it is impossible to bring large amount of additional land under agriculture and also the process of substitution of the less profitable crops with the crops like Rice, Wheat is almost over. Thus, the decline in the compound growth rate of the area under these crops looks obvious. The decline in the growth rate of the yield of these crops during the post liberalization period catches attention.

During the pre liberalization period although there was a significant decline in the area under the total food grains by 0.075 per cent, yet a significant increase in the productivity of the total food grain by 2.662 per cent resulted into the significant change in the total production and product also. During the post liberalization period, there was a decline in the area by 0.310 per cent, but there was increase in production and productivity by 1.315 and 1.629 per cent.

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Conclusion

The total production of the food grains, in India has increased form 1975-76 to 1989-90 and the increase in production of food grains was relatively less during 1990-91 to 2004-05. The yield of coarse cereals also increased, it is relatively higher and decline in the area, resulted in increase the total production. of coarse cereals. However, the trend of increase or decrease in the growth rates was not different during the two study periods. Likewise, the area of pulses declined in the pattern of decline was similar during both the periods.

During pre liberalization period the production and productivity of pulses increased. The production decreased during the post liberalization period. Which indicated the difference in the behaviour of production between the two study periods. The decline in the area under coarse cereals and pulses may largely be due to their replacement by higher profitable cereals like rice and wheat. During the pre liberalization period although there was a significant decline in the area under the total food grains, yet a significant increase in the productivity of the total food grain, resulted into the significant change in the total production and productivity also. During the post liberalization period, there was a decline in the area under food grain, but there was increase in production and productivity.

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Economics of Flower Cultivation at Pattukkottai Taluk of Thanjavur District (Crisis of Agricultural Sector)

Flower occupy an important place in the culture and heritage of India. Flowers are used for the ornamental purposes and auspicious purposes in the tradition of Tamil Nadu. Flowers are loved by each and everyone because of its natural beauty, colors, fragrance and attractions. In Tamil Nadu flowers are considered as a symbol of prosperity. Festivals of Tamil Nadu which have been celebrated with faith and reasoning use flowers as the most important thing. Ceremonial functions, religious functions, customary functions and offering to god are performed with flowers which are commonly known as "PUSHPAM" and "POOKAL" in Tamil Nadu. Garlanding of mankind is a event that takes place during wedding, honouring a person or a political leaders or done only by the use of flowers. Whether it is birth of death, decoration or devotion everything is symbolized with flowers in Tamil Nadu. Female are very much of fond of placing the flowers or flower chains on their head who have long hair which is a traditional style of women even form the ancient times. Tamil Nadu women, consider flower as a sign of beauty and an indicator of prosperous married life. When they become widow they never keep flowers on their long tailed hair style. Flowers become and essential and necessary thing in the day to day life of Tamil people.

Pattukkottai Taluk which is located Thanjavur district is known as "SANCTUARY OF FLOWERS" in Thanjavur district. Changing land use pattern and cropping pattern never affected this village. Since a long time, flower cultivation is carried – out on a large scale at Pattukkottai Taluk. The village is very much suitable for cultivation of flower due to the appropriate soil type and climatic conditions. Flower cultivation does not require water as needed for other crops. Paddy needs Water losing whereas sugarcane required sufficient moisture of soil by periodical irrigation. But flowers will thrive on minimum quality of water and watering or irrigation needs to be supplemented twice in a week. Above all, farmers of this village have been cultivating flowers from generation to generation.

There are many temples are located in and around Pattukkottai which are cited in and around Pattukkottai which are cited in vedic puranas. These temples have auspicious celebration around the calendar year. Every Tamil month is known for celebrations of functions at temples. Hence, flowers find a continuous encouraging demand form that. Besides this, various functions by the households in and around Pattukkottai find flower market at Pattukkottai as a centre. Combined demand for flowers for domestic and temple purposes generate a market for flowers. Keeping all the above said factors the present study, "Economics of flower cultivation at Pattukkottai Taluk of Thanjavur District" Framed the following objectives.

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Objectives of the Study

1. To analyse the family size and household wealth composition pattern of the flowers cultivated.
2. To compare the cost structure of the chosen varieties.
3. To asses the profit received form these varieties.

Area and Time of the Study

The study area is Pattukkottai Taluk in Thanjavur District. The period of study is May 2011 – May 2012.

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Methodology

The flower cultivating farmers are identified form the study area and 75 flower farmers were selected by using random sample method from the total large number of 800 flower cultivators in and around Pattukkottai Taluk. Primary Data were collected from the cultivators with the help of detailed questions. The study used simple statistical tools like average and means. Diagrams were used to interpret the data.

The respondents in the study area cultivated five varieties of common flowers which are having consistent demand in the market. They cultivated Rose, Mullai, Jasmine, Crossandra (Commonly known as "Kanakambaram") and Kakkarattan which is also known as duplicate jasmine. Kakarattan resembles jasmine but do not have scented aromatic smell.

The land use pattern also shows that the practice of respondents to acquire land on leased-in base to extend the cultivation. The land owning pattern in the study area comprised of own land and leased-in land where the respondents had to pay an amount for leasing.

The total area cultivated by the respondents in the study area was 302 acres in which 105 acres were owned land and 177 acres were leased-in land. Under the own land area each 24.8 percent was cultivated with rose, mullai and jasmine respectively. Crossandra was cultivated under 21.0 acres of owned land. Where as Kakarattan was worked out only 6 acres.

The comparative cost analysis revealed that the highest sapling cost was incurred for rose cultivation. This was very high both in terms of percentage to the total cost and absolute form. It was Rs.6,300 per acre and 17.7 percent of the total cost of cultivation. Mullai and Jasmine had more or less same with mild difference. For Mullai it was Rs.1,600 where it was Rs.1,500 per acre. The sapling cost for crossandra was minimum in absolute terms but high in proportion to its total cost compared to kararattan. In the case of planting cost, Rose and Mullai had the same cost where as all the other three varieties, Jasmine, Crossandra and Kakarattan were less.

Irrigation cost for all the four crops except Kakarattan was same. This was also the case with weeding and trimming. Even in the case of fertilizer application kakarattan incurred a little higher when compared to other flowers. It was 3.5 percent of its total cost of cultivation which was more than double than the other varieties.

On a whole, the total average cost of cultivation computed from the primary data revealed that the cost of cultivation of Rose was as high as Rs.35,525 acre where it was Rs.34,675 per acre for Mullai. This was followed by Jasmine with Rs.29,375 per acre. The cost cultivation for crossandra per acre was worked out as Rs.22,815. The minimum of Rs.14,480 per acre was incurred for the cultivation of Kakarattan.

The study is interested and intended to calculate the net income of the respondents. The gross income was calculated by multiplying the yield with the average market price existed during the study period. Then the average total expenditure (total cost) was deducted from the total revenue and net income was calculated. The net annual from income from Kakarattan was very high when compared with other flowers. It was worked out to Rs.1,68,020 per acre. It is to be noted that the total cost is also low in Kakarattan cultivation.

The income from flowers varies with the yield, demand for the flower and average market price existed. When yield is more and demand is also in excess to its supply the market price fluctuated highly and resulted in higher income earnings. The demand is determined by the season festivals and temple functions. This enabled the flower cultivators to show interest in flower cultivation and fetched them a lucrative earnings.

The study mainly observed that the cost of cultivation of rose was higher. After rose, cultivation of Mullai was higher than the other flowers. The less cost was incurred for the cultivation of kakarattan.

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On the income side, the study found that the maximum income earned was by the kakarattan-cultivating respondents.

The labour is the main problems, who will not be available during the busy seasons. Above all the income earned by the farmers are only meeting out transport charges and intermediary charges paid at the market. The flower cultivators always face an element of uncertainly as flower depends on seasons and functions.

The flower cultivators in the region suggest to have perfume factory at Pattukkottai. They also request the authorities to make Pattukkottai Taluk as a specialized center in the production of aromatic flowers. These flower and its essence can be used to produce bio-cosmetic products, Which becomes very familiar in recent times.

Roses can be used to produce 'Gulganth' an eatable which can also be used as an cooling agent and medicine. Steps should be taken to introduce products which can be produced with the help of aromatic flowers as its ingredients. The flower cultivators suggest a flower market where they can directly sell their produced without intermediaries.

It is also found that the flower vendors, who make garlands and "poocharams" (flowers arranged in a row) earn more income than the producers. Female flower vendors are very common through out Tamil Nadu who buy flowers at the market and make "Poocharams" and selling length or count and cell. These vendors are able to earn more attractive income without any risk and uncertainty. They do not face any risk of cultivation. This temporal and spatial variation exist in marketing of the agricultural produce.

The Agricultural Crisis

Tamil Nadu has been one of the most socially and economically progressive states in the country. The inclusive development process which was ushered in by the Justice Party in the 1920s prepared the ground for the State to achieve impressive economic growth within a strong framework of social justice.

The State has a relatively modern economy compared to most other states in the country. The past trend of growth of the non-farm sector has been one of the strengths of the Tamil Nadu economy, which has to some extent, provided alternate employment to the distressed rural folk at times of agrarian crisis. However, a number of disquieting trends have been observable in the economy over the last few years. Between 1993-94 and 2005-06, the compounded annual growth rate of Gross State Domestic Product (GSDP) of Tamil Nadu was 4.96 per cent and the per capita GSDP grew at 4.02 per cent. The corresponding GSDP growth rates during the periods of the Ninth Plan (1997-2002) and Tenth Plan (upto 2005-06) were 4.9 percent and 5.9 percent respectively. These rates were lower than the growth rates of the all India GDP which stood at 5.5 percent and 7.0 percent for the same periods. Further, the nature and pattern of the growth process in Tamil Nadu has been somewhat skewed, with both, spatial and sectoral imbalances.

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Growth of Banana Cultivation in Tamil Nadu Districts

Introduction

During 1991, the country initiated economic reforms aimed at far-reaching changes in regulations, fiscal policy, trade policy, exchange rate, role of market forces, private sector participation in economic activities and government controls and intervention in market. The agricultural sector was not targeted directly by the reforms for a couple of years, but it was affected indirectly through changes in the exchange rate, export liberalization and terms of trade resulting from disprotection to industry. Annual growth rate in total gross domestic product (GDP) has accelerated from below 6 per cent during the initial years of reforms to more than 8 per cent in the recent years. Agriculture, which accounted for more than 30 per cent of total GDP in the beginning of reforms failed to maintain its pre-reform growth or keep pace with growth in the non-agricultural sector **(Chand, 2002)**. On the contrary, it witnessed a sharp deceleration in growth after the mid-1990s.

The only measure taken during the early years of reforms that had a direct impact on agriculture was decontrol of fertilizers and reduction in the fertilizer subsidy. The disprotection to industry resulted in improvement in terms of trade for agriculture during the initial years of reforms. Another factor, which contributed positively to agricultural growth during the initial years of reform was a substantial hike in minimum support prices given by the government, mainly to reduce the gap between domestic and international prices that resulted largely from devaluation of the overvalued exchange rate.

With the above backdrop the present paper attempt to estimate whether the policy changes has positive (or negative) impact on the growth of Banana cultivation in Tamil Nadu in during the pre and post-reform periods.

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Data And Methodology

Data

The required data were collected from the Seasonal and Crop Report of Tamil Nadu for the respective Years. The study covers the period from 1980 to 2010.

Growth Model

The least squares growth rate 'r' is estimated by fitting a least squares linear regression trend line to the logarithmic annual values of the variable in the relevant period. More specifically, the regression equation takes the form

$$\text{Log } X_t = a + bt + e_t$$

where this is equivalent to the logarithmic transformation of the compound growth rate equation

$$X_t = X_0 (1+r)^t$$

In these equations, 'X' is the variable, 't' is time period and $a = \log X_0$ and $b = \log (1+r)$ are the parameters to be estimated, 'e' is the error term. If b^* is the least squares estimates of 'b' then the average annual percentage growth rate 'r' is obtained as (antilog b^*) –1 and multiplied by 100, to express it as percentage.

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Results And Discussions

Growth Rate Of Area, Production And Productivity

Among the different indicators in the pre-reform period, production has registered the highest growth rate of 8.84 per cent followed by 5.88 per cent in productivity and 2.76 per cent in area. The post-reform period evidenced that the production has registered maximum growth of 5.12 per cent followed by area reported to be 3.11 per cent and productivity witnessed growth rate of 1.94 per cent during the period under review.

The overall mean growth rate of area during the post-reform period has increased to 3.11 per cent when compared to the pre-reform period. Both production and productivity witnessed a declining trend in the liberalized regime too.

Conclusion

The area has increased in Tamil Nadu districts in the banana cultivation during the post-reform period when compared to protected regime, while production and productivity has declined in the reform period. Particularly Salem district witnessed in the growth rate of area and production was negative trend in the pre-reform period and it turned positive in the post-reform period, whereas productivity has declined in the liberalised regime.

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Agricultural Crisis in India: Causes and Consequences

Introduction

Indian agriculture is at crossroad as agriculture has become an economically unviable activity compared to other enterprises. It means the incomes derived from these activities are not sufficient enough to meet the expenditure of the cultivators. The poor farmer is squeezed between high input costs and low returns. The issue of viability depends on numerous social, economic and cultural factors which would have substantial subjective elements. It would also vary from crop to crop, time to time, region to region and group to group. As farmers are considered to be rational in their decision making, no wonder they give up crop cultivation and shift their occupation to some other avenues. When agriculture is not yielding remunerative income the life of the farmers become very desperate. As a first step, they alter their crop pattern by cultivating commercial crops which may yield profit comparatively. If the problem persists, the smart farmers give up the agriculture activity and take up alternative occupation and convert the land for alternative uses. Once the agricultural land is converted for alternative uses, it becomes totally irreversible again for agriculture. A few such factors are dependence on Rainfall Climate, lack of easy credit to agriculture, decline in government investment in the agricultural sector and conversion of agricultural land for alternative uses.

Rainfall and Climate Dependency

Agriculture depends largely on the natural climate including rainfall unlike other sectors. Nearly 60% of India's farmers depend on rains for irrigation and a failed monsoon will severely hit the cultivation of crops such as rice, wheat, soya bean, sugarcane and cotton take a severe hit.

Liberal Import of Agricultural Products:

The fluctuations in the prices of agricultural products are directly related to the liberalisation policy of the government. The policy of removal of quantitative restrictions and lowering of import duties adopted in India were according to the agreements of the World Trade Organisations (WTO). The main reason for the crash of prices of agricultural products, especially of cash crops, in India was removal of all restrictions to import these products.

Decrease in Agricultural Subsidies:

The Government of India announced several subsidies in order to encourage crop cultivation, time to time. Providing subsidies were unavoidable as the cost of cultivation was increasing .Moreover, to raise the output of agriculture and to improve the productivity levels additional investments are needed. In the post-reform period, the government reduced different types of subsidies to agriculture, and this has increased the production cost of cultivation. No doubt that this move has adversely affected the agricultural sector. It has increased the input cost and made agriculture less profitable.

Absence of Easy Credit to Agriculture

The lending pattern of commercial banks, including nationalised banks, to agriculture is not easy In general . It is part of the policy of privatisation that banks, even nationalised banks, look for profit over their social responsibilities to the people. This has forced the farmers to rely on moneylenders and thus pushed up the expenditure of cultivation. Moreover, high cost of cultivation based on the modern agricultural practices hurts the farmer's equation badly causing difficulties in paying back their loans and pushed into indebtedness.

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Consequences of Agricultural Crisis

It is alarming that India is moving towards a point of no return, from being a self-reliant nation of food surplus to a net importer of food. All these indicate that the agricultural sector in India is facing a crisis today. It is argued that the root cause of the crisis was that agriculture is no more a profitable economic activity when compared to other enterprises. It means that the income derived from these activities is not sufficient enough to meet the expenditure of the cultivators. And therefore, unless agriculture is made a profitable enterprise, the present crisis cannot be solved.

Conclusion

Indian agriculture is at crossroad and one of the major challenges is to reverse deceleration in agricultural growth .Main reason for deceleration in agricultural growth is decling investment particularly public in agriculture research and development and irrigation ,combined with inefficiency of institutiones providing inputs and services including rural credit and extension .other factor such as land fragmentation ,out- dated tenancy laws ,lack of modern market and rural infrastructure ,appropriate input pricing police ,etc ,are also responsible for agrarians and ecological crisis in the country. The crisis of stagnation in agriculture needs urgent attention .the government has renewed focuses on agriculture and promoting public private partnership to accelerate growth in the rural economy.

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An Economic Assessment of Agriculture Sector in Tamil Nadu

Introduction:

Agriculture continues to be the most predominant sector of the State economy, as 70% of the population is engaged in Agriculture and allied activities for their livelihood. The State has as an area of 1.3 Lakh sq.km with a gross cropped area of around 63 L.Ha.. The Government's policy and objectives have been to ensure stability in agricultural production and to increase the agricultural production in a sustainable manner to meet the food requirement of growing population and also to meet the raw material needs of agro based industries, thereby providing employment opportunities to the rural population. Tamil Nadu has all along been one of the states with a creditable performance in agricultural production with the farmers relatively more responsive and receptive to changing technologies and market forces.

The Agriculture Department has taken up the challenge to achieve higher growth rate in agriculture by implementing several development schemes and also propagation of relevant technologies to step up the production. Intensive Integrated farming system, massive Wasteland Development Programme, comprehensive watershed development activities, water management through Micro irrigation systems, Organic farming, Soil health improvement through Bio-fertiliser including Green Manuring, adoption of Integrated Nutrient Management (INM) and Integrated Pest Management (IPM) technologies are given priority through various programmes, besides crop diversification to fetch better return and value addition to agricultural produce are also given priority to improve the economic status of the farming community.

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Importance of the study:

- To find out economic position and performance of agriculture sector
- To promote modern agriculture practices in the study area.
- To analysis the agriculture problems and adaptation, option.

Agriculture in Tamil Nadu:

Agriculture is the most predominant sector of the economy of Tamil Nadu, a state in India. 70% of the state's population is engaged in agriculture and allied activities for their livelihood.[1] Tamil Nadu has as an area of 1.3 Lakh km^2 with a gross cropped area of around 58.43 lakh hectares of which the Gross Irrigated Area is 33.09 lakh hectares which is 57% and the balance 43% of the area are under rainfed cultivation.

Tamil Nadu has historically been an agricultural state and is a leading producer of agricultural products in India. In 2008, Tamil Nadu was India's fifth biggest producer of Rice. The total cultivated area in the State was 5.60 million hectares in 2009–10. The Cauvery delta region is known as the Rice Bowl of South India. In terms of production, Tamil Nadu accounts for 10% in fruits and 6% in vegetables, in India. Annual food grains production in the year 2007–08 was 100.35 lakh mt. Mango and banana are the leading fruit crops in Tamil Nadu accounting for over 87% of the total fruit production. The main vegetables grown are tapioca, tomato, onion, brinjal (eggplant), and drumstick. The state is the largest producer of bananas, flowers, tapioca, the second largest producer of mango, natural rubber, coconut, groundnut and the third largest producer of coffee, sapota, Tea and Sugarcane. Tamil Nadu's sugarcane yield per hectare is the highest in India. The state has 17,000 hectares of land under oil palm cultivation, the second highest in India. Among states in India, Tamil Nadu is one of the leaders in livestock, poultry, and fisheries production. Tamil Nadu had the second largest number of poultry amongst all the states and accounted for 17.7% of the total poultry population in India.

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Land Use Pattern:

Land is one of the main factors of production. The land resource constitutes the fundamental base for all human activities. The land use pattern had undergone many changes over the years. Of the total geographical area of 130.27 lakh hectares of the State, the gross cropped area was 58.24 lakh hectares during 2008-09, which worked out to 44.7 per cent. The net area sown had witnessed a gradual decline from 56.38 lakh ha. in 1950s to 56.32 lakh ha. in 1990s and further declined to 50.43 lakh ha. in 2008-09. When compared to the previous year, the net area sown had perceived a marginal decline from 50.62 lakh ha. in 2007-08 to 50.43 lakh ha. which was due to the increase in fallow lands and land put to non-agricultural uses.

Cropping pattern and climatic condition in the state of Tamil Nadu:

Tamil Nadu is the eleventh largest state in India by area and the seventh most populous state. It is the second largest state economy in India and largest economy of South India as of 2012, after overtaking Uttar Pradesh and Andhra Pradesh in the two years since 2010 when it was the fourth largest contributor to India's GDP. The state ranked among the top 5 states in India in Human Development Index as of 2006. Tamil Nadu is also the most urbanized state in India. The state has the highest number (10.56%) of business enterprises and stands second in total employment (9.97%) in India, compared to the population share of about 6%. The region has been the home of the Tamil people. Since Tamil Nadu is home to many natural resources.

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Important crops:

The principal food crops are rice, maize, jowar (cholam), bajra (cumbu), ragi, and pulses (Bengalgram, Redgram, Greengram, Blackgram and Horsegram). The cash crops include cotton, sugarcane, oilseeds, coffee, tea, rubber, coconut, gingelly and chillies. The important horticultural products are bananas and mangoes. The state is the largest producer of bananas, flowers, tapioca, the second largest producer of mangoes, natural rubber, coconut, groundnut and the third largest producer of coffee, sapota, tea and sugarcane

State support for agriculture:

1. Adoption of System of Rice Intensification technology.
2. Promotion of Precision Farming - adoption of drip fertigation with all scientific practices.
3. Restoration of Soil Health – Need based Macro and Micro Nutrient application as per Soil Health Card recommendations.
4. Quality seed supply – Promotion of newly released High Yielding / Hybrids. Special steps to enhance the availability of quality pulses seeds and oilseeds.
5. Encouraging production of Vermi Compost at Farm Hold Level and Municipal Compost production and Bio-input production by Self Help Groups for enriching soil health.
6. Promotion of Micro Irrigation – especially for high water intensive crops like sugarcane and coconut
7. Special focus to enhance the productivity of pulses through DAP spraying / Micro Nutrient application and timely plant protection.
8. Steps to promote soil and moisture conservation measures, compartmental bunding, establishing farm ponds and adoption of dryland development technologies to enhance productivity of rainfed crops.

Problems faced by Agriculture Sector:

- Though not many direct reform initiatives have been taken for the sector, the indices of terms of trade between agriculture and non agricultural sector showed that it has moved somewhat against agriculture.
- The growth rates in yields achieved in the eighties could not be sustained in most of the crops in the nineties. With the agriculture being exposed to international markets the productivity levels do not compare well with other countries.
- The overall growth in capital formation in agriculture has been inconsistent with the share of public sector showing a negative growth rate of 0.22%. The State Governments did not allocate sufficient funds for agriculture and rural development. There is a need to have long term agricultural trade policy to induce investments necessary for production and processing technologies consistent with international markets.
- One serious impact of various policies like subsidization of inputs is the distortion in the use of inputs and resources. The increased and inappropriate use of chemicals, pesticides and fertilizers and resulting vulnerabilities due to spread of monoculture have had in the long run an adverse impact on the productivity, environment and health.

Conclusion:

The discussions in the general processes of agricultural growth, of necessary conditions for such growth, and of policies to promote it have highlighted a number of challenges, including the large scale of structural change and wide scope required (involving technical, infrastructural and institutional change; input, output, financial and labour market development; farm and non-farm growth); difficulties in getting technical change to deliver the productivity increases that are required to generate sufficient returns to the large investments required; technical and political issues in designing and implementing long term, targeted, transparent, efficient and flexible policies, particularly in small countries with limited resources.

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Technological Crisis in Banana Cultivation in India

Introduction

A popular peasant saying that "abundance of water destroys life; paucity of water destroys life" signifies agriculture's link with monsoon. The vagaries of nature have been associated with ups and downs in cultivation. In addition, disease and pests can also affect crops. When the produce is good, a glut in the market can through low prices lead to poor returns from cultivation. Increasing cost can also adversely affect returns. Spurious inputs could also leave the farmer in a quandary. The increasing dependence on inputs from the market has also brought about greater demand for credit, which adds another important dimension to the difficulties. There are multiple risks in agriculture – income, yield, price, input, technology and credit among others. In recent years, one observes an increasing incidence of farmers' suicides. Suicide being a multifaceted and complex phenomenon, the risks are identified either in the neurobiological or socio-economic domain. The former are predisposing in nature and are internal to the individual whereas the latter are the precipitating ones and are external to the individual. A relatively higher suicide among a particular sub-group is indicative of a larger socioeconomic malaise.

The features of the current agrarian crisis are briefly elaborated as follows. First, there have been a decline in the trend growth rate of production as well as productivity for almost all crops from the mid-nineties. Further, the value of output from agriculture has been declining from late nineties. Second, there is an excessive dependence of a large section of the population on agriculture (in 2004-05 nearly 64 per cent of the rural persons were from households whose members major activity status was either self-employed in agriculture or agricultural labour). This also indicates that rural non-farm employment opportunities are limited. Third, with declining size-class of holding and an increasing preponderance of marginal holdings (63 per cent as per 2000-01 agricultural census) along with poor returns from cultivation indicates that income for farm households is very low. Fourth, the much talked about green revolution had a greater focus on rice and wheat under irrigated condition bypassing crops and regions under rainfed or dry land conditions (which is three-fifths of the 141 million hectares of net sown area in the country during 2003-04). There has been a failure to capitalise on the vast network of institutes to provide and regulate new technology (including the usage of biotechnology), and a virtual absence of extension service. Fifth, the neglect of agriculture in plan resource allocation has led to a decline of public investments in irrigation and other related infrastructure. Sixth, supply of credit from formal sources to the agricultural sector is inadequate leading to greater reliance on informal sources at higher interest burden. Last, but not the least, with changing technology and market conditions the farmer is increasingly being exposed to the uncertainties of the product as well as factor markets.

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Issues in Agrarian Crisis

In addition to the weather related uncertainties, the farmer is also faced with market, spurious inputs, technology and credit related vulnerabilities among others. Production or yield loss is an important risk. Weather, pests and disease of plants, spuriousquality of inputs could be the possible reasons. The risk is real because even today crop loss can adversely affect the consumption requirements of many farmer households. Price shocks are also matter of concern. The conventional argument was that such incidents happened during a good year and the increase in production should compensate the farmer. An implicit assumption in this is that prices are based on local supply and demand. Integration with the global market has led to greater price volatility. The farmers are price-takers in the product as well as in the input markets. Such a situation could lead to increase in input costs and decrease in output prices, and hence,

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decline in profitability and returns from cultivation. As indicated earlier, returns from cultivation per farmer household in 2002-03, as per SAS, was Rs.11,259/- only and the paid out expenses was more than two-fifths of the total value of output. With such low levels of income, it would be difficult to meet day-to-day consumption requirements. The farmer cannot use his own resources for carrying out next year's cultivation or be in a position to use saved resources to tide over any crisis. Saving from these for bad years is impossible. What is more, normal social obligations such as education, marriage and healthcare expenses on account of family members turn out to be burdensome.

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Factors Leading to the Crisis in Agriculture Sector in Indian

Introduction:

Agriculture was considered to be the backbone of Indian economy and its contribution to the National Income is also high. Majority of the population still relies on agriculture for employment and income. The agriculture sector of India has occupied almost 43 percent of India's geographical area. India is the first in the world in the production of milk, pulses, jute and jute-like fibers; second in rice, wheat, sugarcane, groundnut, vegetables, fruits and cotton production; and is a leading producer of spices and plantation crops as well as livestock, fisheries and poultry. Agriculture is still the only largest contributor to India's GDP even after a decline in the same in the agriculture share of India. Agriculture also plays a significant role in the growth of socio-economic sector in India. Agriculture in India is undergoing a structural change leading to a crisis situation. The rate of growth of agricultural output is gradually diminishing in the recent years. The relative contribution of agriculture to the GDP has been declining over time gradually. The performance of agriculture by crop categories also clearly indicates the slowing down process of agriculture in India. The onset of deceleration in agriculture began from early nineties and it became sharp from the late nineties. The trends in the area, input use, capital stock and technology also reflect the agricultural downfall and the farmer's response accordingly. It is shocking that India is moving towards a point of no return, from being a self-reliant nation of food surplus to a net importer of food. All these trends indicate that the agricultural sector in India is facing a crisis today.

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Major Factors Responsible for the Agricultural Crisis are:

- Decline in the land available for agriculture due to ever expanding cities and industries and SEZ's.
- Liberal import of agricultural products,
- Reduction in agricultural subsidies,
- Lack of easy credit to agriculture and dependence on money lenders,
- Decline in government investment in the agricultural sector
- Decline in land fertility due to non-requipment of required ingredients in soil.
- Decline in irrigation facilities due to non-continuance of rivers, nalahas etc.
- Poor economic condition of the farmers resulting in use of low quality seeds, fertilizers etc.
- Successive division of land amongst the family members leading to very small area
- Environmental pollution resulting in greenhouse gases and unpredictable climate changes

Remedies to Overcome Crisis Problems are:

- The Government of India has allowed 100 per cent foreign direct investment (FDI) under automatic route in storage and warehousing including cold storages and the development of seeds.
- Department of Agriculture and Cooperation under the Ministry of Agriculture in India formulated and implemented many national policies and programmes aimed at achieving rapid agricultural growth through optimum utilisation of land, water, soil and plant resources of the country.

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- A dedicated Sub-Mission on Agricultural Mechanization has been proposed for the 12th Plan which includes custom-hiring facilities for agricultural machinery as one of its major components.
- In the 12th Five Year Plan, the Government intends to increase the share of expenditure on agricultural research and development (R&D). The Government will focus on strengthening the Agricultural Technology Management Agencies (ATMA) concept through improved integration with KrishiVikasKendras (KVKs).

Conclusion

The root cause of the crisis was that agriculture is no more a profitable economic activity when compared to other enterprises. It means that the income derived from these activities is not sufficient enough to meet the expenditure of the cultivators. And therefore, unless agriculture is made a profitable enterprise, the present crisis cannot be solved.It revealed that the agricultural crisis would be affecting a majority of the people in India and the economy as a whole in the long run. The solution of the problem is not in a few "packages" but in drastic changes in the present economic policies related to agriculture. All farmers, agricultural labourers, societies, Government and People's Organisations should work collectively to revive agriculture and **"Save India from Agriculture Crisis".**

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Women's in Indian Agriculture Sector

Introduction

Women play important role for the development of any economy, women's contribute to two – thirds of the world's work hours and produce 50 per cent of the world's food supplies, account for 60 per cent of the work force and contribute up to 30 per cent of the official labour force (1996). One – fourth of the households world wide are headed by women and in the other one – third of the households 50 per cent of the total earnings are contributed by females (1995). It is estimated that the money value of the invisible, non- monetized contribution of women towards the family is 25-39 per cent of the Gross National Product in developing countries.

In India, the Economic Reforms was set up in the year of 1990 with globalization and liberalization as its hallmark, to enhance the quality of life of the economically vulnerable population particularly women. But it is a paradox that with all the constitutional safeguards, legal provisions and development efforts. In Indian women's by and large have been suffering socially, economically and politically in rural areas.

In India total geographical area is 328.73 million hectares. The reported area for land use is 306.04 million hectares and net area cultivated is about 142.60 million hectares i.e. about 46.6 per cent of the total area. In Indian forests area account for about 68.97 million hectares i.e. 22.5 per cent of the total land area. Also nearly 13.97 million hectares are cultivable wastelands and 9.91 million hectares are fallow lands. Only about 30 per cent of the total cropped area is irrigated and the remaining area is rain fed.

Indian population census of India 2001 explains, there are about 402.5 million rural workers of which 127.6 million are cultivators and 107.5 million are agricultural labourers explains population and agriculture workers.

According to 55th of National Sample Survey (NSSO, 2001), agricultural labour households constitute nearly 32.2 per cent of the total rural households. The self-employed in agriculture account for 32.7 per cent of the total rural households. In fact, the proportion of agricultural labour households increased from 30.3 per cent in 1993-94 to 32.2 per cent in 1999-2000.

Women have played a important role in the conservation of basic life support systems such as land and water. They have protected the health of the soil through organic re cyclining and promoted crop security through the maintenance of varietal diversity and genetic resistance. There fore, without the total intellectual and physical participation of women, it will not be possible to popularize alternative systems of land management to shifting cultivation, soil erosion, promote the care of the soil and the health of economic plants and farm animals. The women play a efficient role in agricultural development and allied fields including in the main crop production, horticulture and post harvest activities. The nature and extent of women's involvement in agriculture, no doubt, varies greatly from region to region. Even within a region, their involvement varies widely among different ecological sub-zones, farming systems, castes, classes and stages in the family cycle. But regardless of these variations, there is hardly any activity in agricultural production, except ploughing in which women are not actively involved. In some of the farm activities like processing and storage, women predominate so strongly that men workers are numerically insignificant.

In rural area, the prosperity of the household depends on the prosperity of agriculture and allied occupation in any particular point of time vis-à-vis the role of women in innumerable activities connected with farming, dairying and sericulture.

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Agriculture Employment

The employment is available for fewer days per year for agriculture. It is therefore becoming essential for men to migrate in search of better-paid work. Women are filling this vacuum. Women are forced to accept work in agriculture in their own village under very bad conditions because they cannot migrate as easily as men. The most of the women's are depends on work for family farms, especially during the peak periods of sowing and harvesting, has become very common.

Agriculture Decision Making activities in Women

In rural areas of our country, both husband and wife are jointly responsible for making decisions on matters like family obligations, specific housing charges and purchase of household articles. However women's suggestions are not given due consideration in the decisions pertaining to agricultural sector and important family matters.

In generally, women have less access to information about technology by virtue of their inferior educational status and relative isolation from public life. Thus, there is a hesitation to come out and interact.

Conclusion

Most importantly, the women should have a penchant for self- empowerment through enhancing their knowledge and skills. State and central government policies should be framed to provide legal support and instill confidence in women. Porgrammes should be developed exclusively for women to build leadership skills for managing agricultural community based development activities. Access of technology, inputs and credit has to be ensured predominantly through women extension workers.

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Production and Export Prospects of Indian Spices

Introduction

India has been known from prehistoric times as the land of spices. This led to the landing of the Portuguese navigator, Vasco da Gama at Calicut in 1498. Until the 1970s, India had a virtual dominance in the international spices trade. India still continues to be the largest producer, consumer and exporter of spices in the world. Indian spices flavour foods in over 130 countries and their intrinsic values make them distinctly superior in terms of taste, colour and fragrance. The USA, Canada, Germany, Japan, Saudi Arabia, Kuwait, Bahrain and Israel are the main markets for Indian spices. North America (USA and Canada) and Western Europe are the most important regions having the import demand for many of the spices. Our growth in spices export is remarkable though not spectacular considering the historical importance of India as a land of spices. The demand for organic products is steadily increasing in the western markets at 20-25 percent every year and that of organic spices is about 2 percent. The medicinal value of spices is getting attention. Value added spices like encapsulated spices; oils and oleoresin are assuming significance in view of convenience. With the reported use of spices oils and oleoresins in soft drinks, food and medicines demand for Indian spice oils and oleoresins is bound to shoot up. In this context, the present paper attempts to evaluate the trends in the area, production, yield and export of Indian spices.

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Spices Scenario

Spices are the basic building blocks of flavour in food applications. The estimated growth rate for spices demand in the world is around 3.19 percent just above the population growth rate. Almost all the states in the country produce one or other spices.

Among the export of different spices, maximum share was from chilli (40 percent) followed by cumin (11 percent), turmeric (11 percent), coriander (6 percent) and black pepper (5 percent) during 2009-10. However, in terms of value, mint products and spice oil & oleoresins contributed 44 percent of the total export earnings. Chilli, cumin and black pepper contributed 20 percent, 10 percent and 8 percent, respectively to the total export earnings. During 2010-11, the export of ginger, tamarind and value added products like spice oils, oleoresins and curry powders increased both in volume and value. However, in case of pepper, large cardamom, turmeric, nutmeg and mace the export increase was in terms of value (up to 22 percent) only.

Black Pepper

There is an increasing production trend in the past decade with increased productivity. Area under pepper has crossed 2.33 lakh hectares during the crop year 2003-04. During 2009-10 the area was 1.96 lakh hectares with a production of 51 thousand tonnes and productivity of 260 kg ha^{-1}. Pepper productivity in India is one of the lowest in the world. In India, it is grown in mixed or homestead conditions with the population of vines being significantly lower (ca. 200-250 ha^{-1}). Indian pepper fetches premium price because of its high intrinsic qualities over that of other competing countries. In 2009-10, India exported about 19,750 tonnes valued at Rs.313.9 crores with a reduction in volume and value over 2007-08.

Cardamom

During 1990s, India's production had been showing a consistently increasing trend from 4,250 tonnes in 1992-93 to 7,900 tonnes in 1995-96, but declined to 6,625 tonnes during the subsequent crop year with a lower rate of decline. The increasing trend in production from the crop year 1997-98 is being maintained till date with 13,650 tonnes in 2007-08 and 15,720 tonnes in 2009-10 from 90,200 hectares.

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This is due to favourable climate, improved technologies, planned developmental programs and remunerative price. The productivity level has improved in 1990s and reached 186 kg ha^{-1} during 2005-2006. India exported 1,975 tonnes of cardamom valued at Rs.165.7 crores in 2009-10 and recorded an increase of 163 percent in volume and 250 percent in value as compared to 2008-09.

Ginger

Indian production has been showing a steady increasing trend from 29.59 thousand tonnes in 1970-71 to 385 thousand tonnes during 2009-10. This is due to the improvement in both area and productivity. While Meghalaya, Arunachal Pradesh, Sikkim and other north-east states together accounted for more than 52 percent of total production with 26 percent of area, the region comprising Kerala, Karnataka, Orissa and Tamil Nadu accounted for the rest of the production with 72 percent area during 2007-08. The yield level of ginger in the country has increased over the years from 1,371 kg ha^{-1} during 1970-71 to 3,583 kg ha^{-1} during 2009-10. The increase in production during the period was largely due to increase in area. India exported 5,500 tonnes of ginger valued at Rs.46.75 crores in 2009-10 and recorded a reduction of 18 percent in volume but 67 percent increased in value as compared to 2007-08. Maximum export of ginger is in the dry and powder forms and fresh ginger export which accounts for about 2,230 tonnes mainly from the north-east states to Bangladesh.

Turmeric

The turmeric producing states have shown fluctuations in their production level due to changes in the rate of productivity and area of cultivation. The market price has also played an important role in annual production. India produced 792.9 thousand tonnes from an area of 180.9 thousand hectares with the productivity of 4.38 tonnes ha^{-1} during 2009-10. Andhra Pradesh occupies first position both in terms of average area and production of turmeric, but in terms of productivity, Andhra Pradesh occupies the third position. India exported a record at high level of 50,750 tonnes of turmeric valued Rs.381.2 crores in 2009-10 with an increase of 3 percent in volume and 140 percent in value as compared to 2007-08. India is the major supplier of turmeric in the world market with competition from Vietnam, Indonesia and Myanmar. UAE is the major importer with 6,719 tonnes of our total export.

Tree Spices

Tree spices constitute a group of diverse crops where the product of commerce is predominantly used as spice. Clove, nutmeg, cinnamon, comboge, kokum, tamarind, etc are the predominant tree spices cultivated in India. The production of clove in India during 2009-10 was 1,160 tonnes from an area of 2,600 hectares. Nutmeg is cultivated in an area of 15,500 hectares with the production of 8,000 tonnes. About 3,275 tonnes of nutmeg and mace was exported to other countries with earnings of Rs.91.8 crores and the major importers are UAE, Vietnam, Singapore and USA. Cinnamon is commercially cultivated in Kerala, Karnataka and Andaman & Nicobar Islands with production of 1,670 tonnes from an area of 1,000 hectares.

Diversification of Uses

Value added products including spice oils and oleoresins, mint products, curry powder/paste/condiments, and spice powders contributed around 58 percent in value towards the total export earnings. During 2009-10, 14,300 tonnes of curry powder blends valued at Rs.189.2 crores has been exported to UK, Saudi Arabia, UAE and USA. Export of spice oils and oleoresins recorded an all time high of 6,750 tonnes valued at Rs.708.7 crores in 2009-10. Major spice oils exported are pepper oil, nutmeg oil, mustard seed oil, clove oil, celery seed oil and ginger oil and in case of oleoresins, paprika oleoresin followed by capsicum, pepper, garcinia and turmeric oleoresins are exported. USA is the major importer of spice extracts followed by Germany, UK, South Korea and China.

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Imports

The total import of spices in India during 2008-09 is about 83,545 tonnes valued at Rs.765.4 crores. The import value has increased by 19 percent as compared to previous years. The major spices imported are pepper, poppy seed, clove, cardamom, ginger fresh and cassia. Out of the total import of pepper (10,750 tonnes), more than 60 percent is light (immature) pepper for oleoresin industry extraction and re-export. Over the years, India's share in world spices market has not appreciated much and its monopoly as a supplier of spices is threatened by countries like China, Brazil, Vietnam, Pakistan, Egypt, Turkey and other African and Caribbean countries. India also faces shortage of exportable surplus because of increasing domestic demand. Sharp fluctuations in the quantum and value of exports and in the unit value realization have characterized the spices trade in recent years.

Conclusion

Considerable efforts will have to go to improve the present post harvest processing and storage systems and in educating the farmers and traders in handling/processing the produce hygienically. The envisaged increase in share of value added products in the export basket of spices indicates that processing facilities needs strengthening both on farm and outside.

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A Study on the Role of Indian Women in Agriculture

Introduction

Women's role in agricultural operations is very significant. They contribute about three-fourth of the labour required for agricultural operations. Their involvement in agriculture is besides their usual obligation of discharging domestic work. Most of their contribution to the farm sector goes unnoticed and unaccounted. This booklet focuses on the various agricultural activities in which the women are involved and their percent of contribution in each of them. In Indian society, women have a multi dimensional role. They have a major role to play in the development process also. For the last few years, programmes for women have been receiving particular attention under community and rural development programmes. The desirable socio-economic development can be achieved only when women in large are stimulated and motivated to accept and adopt new techniques.

The largest number of women in India, is engaged in farming operations either as cultivators or as supervisors or as agricultural labourers. They are the main decision makers and participants in various agricultural operations like seed sowing, transplanting, weeding, harvesting, threshing, application of manure, storage of seeds and food grains and post harvest home level processing. Apart from all these they also involve in bringing fodder from field, chaff cutting, feeding and cleaning of cattle, maintaining cattle shed, compost making etc. In view of all these things, woman is recognized as a partner of man in agriculture and she is included in the effort of bringing new technology to the farmers because of her intimate involvement in agriculture as a manager, decision maker and labourer. The status of rural women is improving day by day. Their participation in various functions of farming are as follows.

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Women as Agricultural Labour

Women contribute about 3/4th of the labour required for agricultural operations. Their involvement in agricultural operations is besides their usual domestic work. Most of the contributions made by women to the farm sector also goes unaccounted as they are not directly paid.

Wheat based fanning systems

In the plains females were involved in storing the produced and activities like winnowing, threshing, harvesting and sowing were carried out jointly by both males and females.

Fruit cultivation

In the plains, the level of participation of women was lowest in land preparation, while it was highest in top dressing, manuring (42%). The other major activities carried out jointly by both males and females were preservation (57.9%), plant protection (68.4%), transplanting/sowing 57.9% and weeding (52.6%).

Women in Livestock Rearing

It was found that the milking operation was carried out exclusively by females, in all the cases studied. The other major operation carried out by females in the hills were collection or cutting fodder (90%), cleaning (82.5%) taking out animals for grazing (67.5%) etc. The level of participation of women was equal to those of men in the marketing, medical care and livestock breeding (50% each). In the plains also, the highest level of participation was in the milking operation and others were feeding (58.7%) and cleaning (56.5%). On an average female labour participation was rated as 65% in dairy enterprise. If the magnitude of participation of females in different activities is divided into four broad categories , it was observed that the domestic chores performed by a female in the household occupied the prominent place followed by dairying and as a labourer.

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Women in Sericulture

Sericulture is a small scale industry which is an important entrepreneur for rural families. The role of women as agricultural labourer in mulberry cultivation is important because mulberry garden requires labour from the beginning for pruning, weeding, application of farm yard manure, fertilizers and other jobs. An acre of land optimally requires 10 labourers out of which 7 would be women. The main work involves plucking of leaves for feeding the silkworms. **At the rearing houses the activities that are performed by women are as follows:**

1. Cleaning the rearing house, before the silkworm are raised.
2. Getting the trays ready for further extension of bed.
3. Feeding the worms after the 3rd instar which has to be done 4-5 times per day.
4. Changing the bed in each of the trays. (at least 56-60 trays will be there, by the time they reach the 5th instar)
5. Placing the worms in the mountages i.e. around 120 of them.
6. Harvesting the cocoon.
7. Cleaning the cocoon and removal of floss grading.
8. Marketing of cocoon though very few women takes up this job, as it takes time in the market. -

Women in Fisheries Activities

Fresh water fisheries mostly involves pisciculture in backyard ponds. Fishing, fish selling and occasional spawn collection are the principal occupation in fresh water fisheries. The women folk in freshwater fisheries were observed to involve in fishing in drying pools and puddles, fish marketing and net weaving. In brackish water sector the women folk were observed to involve themselves in a wide variety of fisheries activities. Their most significant contribution was noted to be in fish drying which is one of the most widely practised method of fish preservation. Spreading of fish in hot sun, turning them from time to time, keeping a constant vigil to protect them from crows, kites etc. and packing them back in baskets before sunset was their daily routine. Net weaving, transport of fish and fish marketing have also shown significant involvement of women.In marine fisheries fish drying was the activity that carried out mostly by women followed by selling of fish, and their transporting. In marine fisheries sector, females generally do not attend to the jobs of net weaving or mending. These jobs are mostly done by males.

Women in Decision Making Process

In none of the areas of farm decision making, except storage of farm produce, women were deciding at their own. In that also only 14.83% were deciding independently. As land is (In important factor of production, sale and purchase of land was consulted with women and decision was taken jointly in most of the house holds. Female participation was more in deciding the type of storage, purchase and sale of land followed by purchase and sale of animals and farm machinery.Involvement of women in decision making was found to be more in age group of 36-45 years, as compared to younger women who were considered unexperinced.

Conclusion

It becomes evident from the result that are mentioned in this booklet that women labour played a significant role in crop production, economic activities of family wage earnings, in several other enterprises like dairy, fisheries and also in decision making process regarding the adoption of new farm technology. Although farm women have opportunities of upgrading their skills, a visible inequality of women workers still exists. It may be suggested here that a well developed institutional network to teach modem farming methods to farm women should be developed at village so that agricultural productivity and rural income

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can be increased. The studies revealed that the rural women spent more time in household activities. Only low economic group of rural women participate in farm operations. They have no fixed working hours or wages. Government should come forward to fix the working hours and wages per day to protect their interests. Voluntary organizations should help the rural women to organize themselves into groups and unions for their self help.

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Challenges Faced By the Agriculture Sector in India

Introduction

This is an attempt, through the review of literature, to understand the historyand characteristics of the Indian agriculture sector, its transition from traditional to commercial agriculture and the problems it faces. Modern agricultural practices and the relationship with Environmental depletion have also been assessed. The article discusses some of the Developmental challenges faced by the Indian agriculture sector in particular and developing Nations in general illiteracy, poor socioeconomic conditions, lack of technical Knowledge and awareness, small land holdings, modernization leading to barren land And disasters leading to rural poverty, weather-dependent farming systems, low per Capita income, underdeveloped physical infrastructures and inefficient bureaucratic procedures associated with the comparatively high cost of agricultural production. Natural disasters and human-induced environmental degradation are closely associated with improved farming systems.

History and Characteristics

Agriculture in India has a long history, dating back ten thousand years. It began by 9000 BC as a result of early cultivation of plants and domestication of crops. With the development of agricultural implements and techniques, settled life soon started. Double monsoons led to two harvests being reaped in one year. Until British Rule, the Indian economy had been known for centuries for its self-contained village communities, consisting of agriculturists, cottage industrialists, village craftsmen, artisan professions, unskilled workers and village officials. These communities played a major role in not only meeting the needs of the village economy but producing and exporting various products to foreign countries. During those times agriculture was a way of living and the farmer produced merely for self consumption.

The middle ages saw irrigation channels reach a new level of sophistication in India and Indian crops affecting the economies of other regions of the world under Islamic patronage However, during the British Period, when the industrial revolution was going on in England (1780-1820), the British forced farmers to switch over to commercial crops like cotton and indigo and started providing financial assistance to farmers through *zamindars* and British agents to export the surplus cash crops to England. There was continuous exploitation of natural resources and economic wealth from India till Independence was achieved. Due to this economic drain, there was permanent loss of India's national income and wealth. The result was that by the mid-nineteenth century, traditional handicrafts were completely wiped out and artisans lost their hereditary occupations. This led to their migration to agriculture for their livelihood and made this sector over crowded, a process called 'deindustrialization', which led to stagnation in the Indian economy.

The Indian Agricultural Research Institute (IARI), established in 1905, was responsible for research leading to the Green Revolution of the 1970s. The Indian Council of Agricultural Research (ICAR) is the apex body in agriculture and allied fields, including research and education. The Union Minister of Agriculture is the President of the ICAR. The Indian Agricultural Statistics Research Institute develops new techniques for the design of agricultural experiments, analyses data in agriculture, and specializes in statistical techniques for animal and plant breeding. Recently the Government has set up a Farmers' Commission to evaluate the agriculture program .However their recommendations have had a mixed reception.

Agriculture provides gainful employment to nearly two-thirds of the population and contributes about 30% to the national income. It supplies raw material to various agro-based industries and earns foreign exchange. Today, India ranks second worldwide in farm output and is the largest producer of fresh fruit, anise, fennel, badian, coriander, tropical fresh fruit, jute, pigeon peas, pulses, spices, millets, castor oil

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seed, sesame seeds, safflower seeds, lemons, limes, cow's milk, dry chilies and peppers, chick peas, cashew nuts, okra, ginger, turmeric guavas, mangoes, goat milk and buffalo milk and meat Coffee. It also has the world's largest cattle population. It is the second largest producer of cashews, cabbages, cotton seed and lint, fresh vegetables, garlic, eggplant, goat meat, silk, nutmeg. mace, cardamom, onions, wheat, rice, sugarcane, lentil, dry beans, groundnut, tea, green peas, cauliflowers, potatoes, pumpkins, squashes, gourds and inland fish. It is the third largest producer of tobacco, sorghum, rapeseed, coconuts, hen's eggs and tomatoes. India accounts for 10% of the world fruit production with first rank in the production of mangoes, papaya, banana and sapota. Despite this, the share of agriculture in the GDP is declining although it is the largest economic sector and plays a significant role in the India's socio-economic development. India's population is growing faster than its ability to produce rice and wheat and as most of her population depends on rural employment for a living, this is a cause of concern for policy makers. The rural sector in India, as in several other developing countries, is still evolving and poses a variety of challenges. Some of the common problems faced are discussed in this article.

Problems Faced By The Agriculture Sector – India

Rudimentary infrastructure and policies leads to slow agricultural growth

Slow agricultural growth is a matter of concern as most of India's population is dependent on rural employment for a living. Current agricultural practices are neither economically nor environmentally sustainable and India's yields for many agricultural commodities are low. Poorly maintained irrigation systems and lack of good extension services are among the factors responsible. Farmers' access to markets is hampered by poor roads, rudimentary market infrastructure, and excessive regulation. India has inadequate infrastructure and services because of low investment. Farming equipment and infrastructure are scarce outside the provinces of Punjab and Haryana. Because many of the farms are small, the farmers cannot afford irrigation systems that would increase productivity. Most big farms are family-owned and run and do not take advantage of economies of scale - the concept that the cost per unit falls as output quantities increase, because the problem of land absenteeism in big farms which hinders the development of land to increase productivity because the tenant who cultivates the land has little care for its development or productivity. Low investment in big and small of farms leads to lower production, inefficiency and higher costs, one of the causes of food inflation in India. According to the World Bank, India's large agricultural subsidies are hampering productivity-enhancing investment such as agricultural research and extension, as well as investments in rural infrastructure, and the health and education of the rural people. Though trade reforms in the 1990s helped to improve the incentive framework, overregulation of the agricultural domestic trade increased costs, price risks and uncertainty, undermining the sector's competitiveness. The government intervenes in labour, land, and credit markets.

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The average size of land holdings is small

The average size of land holdings is less than 20,000 m^2 and subject to fragmentation due to land ceiling acts and, in some cases, family disputes. Such small holdings are often overmanned, resulting in disguised unemployment and low productivity of labour.

Poor socio-economic condition of farmers

Illiteracy, the root cause of farmers' poor socioeconomic condition, should be tackled vigorously. Though the government is taking the initiative by adopting policies like universal education, a highly centralized bureaucracy with low accountability and inefficient use of public funds limits their impact on poverty. Lack of technical knowledge and awareness are also responsible for low productivity, adding to the problem of poverty among farmers. Other causes are the slow progress in implementing land reforms, inadequate or inefficient finance and marketing services for farm produce and inconsistent government policy. Agricultural subsidies and taxes often change without notice for short-term political ends.

Use of technology is inadequate

Adoption of modern agricultural practices and use of technology is inadequate, hampered by ignorance, high costs and impracticality in the case of small land holdings. In India, farming practices are too haphazard and non-scientific and need some forethought before implementing any new technology. The screening of technology is important since all innovations are not relevant or attractive to all areas.

No proper management of irrigation

Irrigation in India can be broadly classified into two parts, each having different issues. There are a few major problems with surface irrigation. Irrigation facilities are inadequate and there is no effective system management for how much water is stored, how much is used for irrigation or what value can be added to this water. Consequently, farmers depend on rainfall, specifically the Monsoon season. A good monsoon results in robust growth for the economy as a whole, while a poor monsoon leads to sluggish growth. With groundwater, the major problem is of equity. Those who are better able to extract water take away disproportionately from groundwater aquifers, causing various problems. One is that if groundwater is close to coastal areas, it may get mixed with salt. In other places, the groundwater level drops drastically and wells go dry, making it difficult to get drinking water. Over-pumping made possible by subsidized electric power is leading to an alarming drop in aquifer levels. The World Bank says that the allocation of water is inefficient, unsustainable and inequitable. It creates dual problems related to the availability of drinking water and access of groundwater to the poor.

The agriculture sector faces the disastrous consequences of hazards

Unique geo-climatic conditions make India vulnerable to hazards and disasters, both natural and human-induced. Common natural hazards are floods, cyclones, landslides, forest fires, avalanches, earthquakes, tsunamis and pest/disease outbreaks in plants and animals. Manmade disasters include fire, spurious seed, fertilizers and pesticides and price fluctuation. Natural hazards are events that occur within hours with disastrous consequences. Drought, which is characterized by lower than normal precipitation and slow onset, is a progressive phenomenon caused by soil conditions and atmospheric changes over a period of time. It impacts crops, livestock and human beings as well as non-agriculture sectors dependent on it. In such scenarios, with inadequate risk mitigation support and almost negligible nonfarm employment, a farmer's life (especially small and marginal ones) is complex and difficult. One cannot have any control over natural disasters but with better preparedness, we can mitigate manmade disasters and the losses to farmers. About 60% of the landmass is prone to earthquakes of varying intensities, over 40 million hectares is prone to floods, about 8% to cyclones and 68% to drought.

Dependence of agriculture on weather

Agriculture in India and many other developing countries depends on the monsoon because irrigation facilities are not fully developed. If the monsoon fails or it rains heavily or untimely, it ruins agricultural production. Agriculture is also a gamble with temperature. Too high a temperature negatively affects the productivity of a crop. The present insurance system in India does not cater much for any loss of crop due to unfavorable and unavoidable climatic conditions or pest epidemics.

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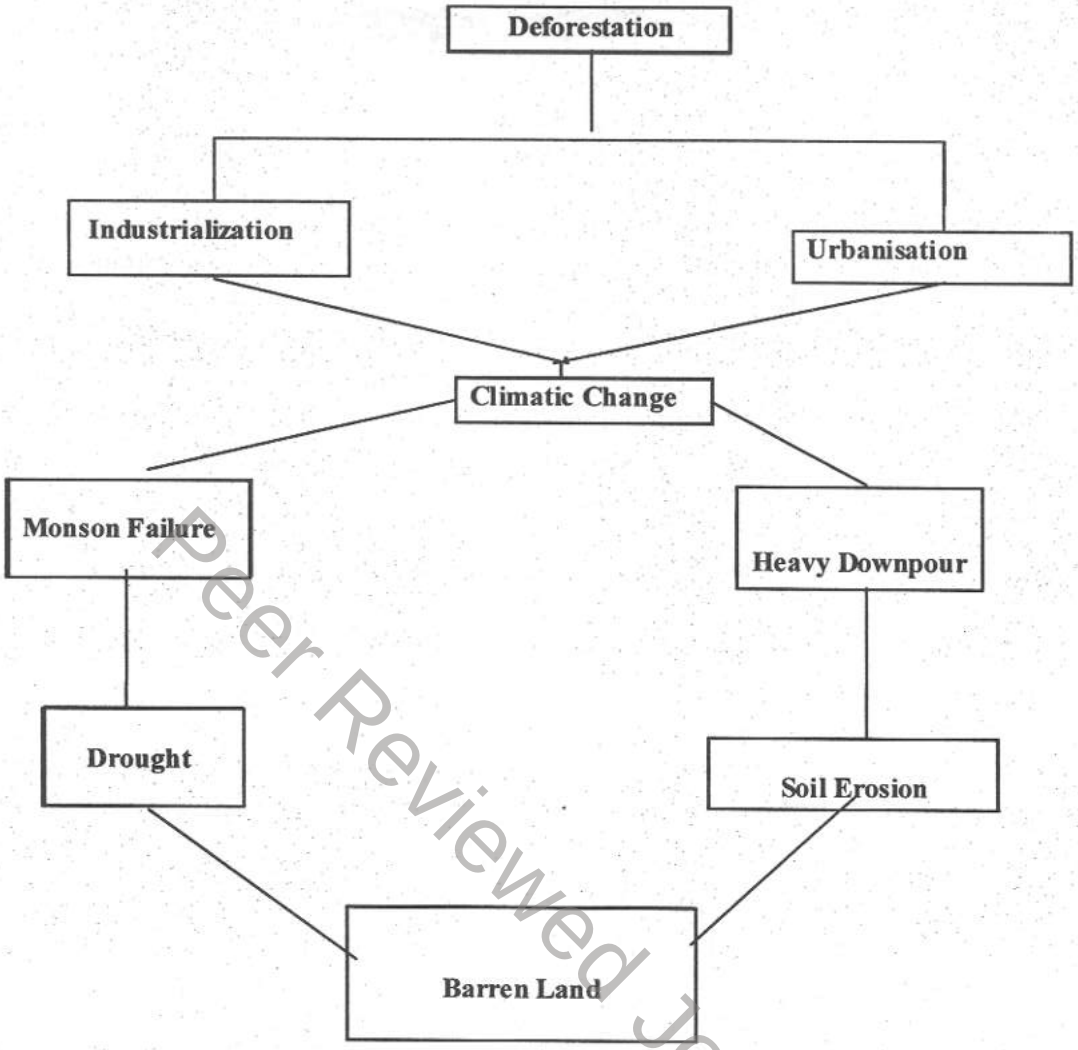
The vicious circle of climatic change.

Flow Diagram of the Vicious Circle of Climatic Change



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Conclusion:

The sake of industrialization and urbanization, more and more trees have been cut, leading to global warming, barren land and an imbalance in climatic conditions. Barren land is caused by soil erosion from heavy downpours with flash floods, due to deforestation and dry land and drought due to monsoon failure. Distressed farmers then have to sell it off to traders and builders who earn money by reselling it at exorbitant prices for commercial purpose like urbanization and industrialization. Global warming is further aggravated by such practices. The vicious circle starts again. The shrinking of farm land paves the way to food security problems. Dry land is not nature-made but manmade. Nature is flourishes richly but when man goes on cutting trees, over a period of time the area becomes barren and unproductive due to the absence of surface water and ground water recharge. Rural poverty has two characteristics: the poverty of rural human beings and the poverty of weather prone rural areas. The degradation of natural resource may be caused by drought or flood because of global warming or by modern farming methods which affect the land negatively, ultimately making rural people poor. The first one leaves the land barren and the second one, though costly, leads to large scale economies. Because of high returns, farmers are tempted without giving thought to its ill effects. The poor who cannot afford it fall further into the trap of poverty because they cannot compete with rich farmers while casual labourers lose their jobs with the introduction of mechanization. To remove rural poverty, small farmers and women must be integrated into the development effort, so that they also contribute to the removal of poverty.

Relentless Crisis in Indian Agricultural Sector: A Case Study of Tamil Nadu.

Introduction

India with the turn of Twenty first century emerged as a major economic power in the world by showing impressive growth rate of the gross domestic product (GDP) reaching impressive levels and the poverty ratio coming down phenomenally. With this it is indeed very unfortunate to note that our fellow citizen in the villages where the large majority of its people reside is in the grip of a severe agrarian crisis. The crisis in Indian agriculture is "unparalleled since independence and reminiscent only of the agrarian crisis of pre-war and war days -Prabhat Patnaik"[1]. Though, agriculture plays an important role in economic development of country such as provision of food to the nation, enlarging exports, transfer of manpower to non-agricultural sectors, contribution to capital formation, and securing markets for industrialization but still agriculture sector suffers a lot in the light of development in other sectors.

The Crisis in Indian Agricultural Sector

Performance of Indian economy is dependent upon the growth of Agriculture sector of the Indian economy. Its importance day by day has come down with the percentage of budget on this sector is also declining. Agriculturist as well as Agricultural labourers constitute the vital input in the agriculture production there is complete transformation of agricultural labours to non-farm sector for livelihood and agriculturalist selling the patch of land for non-agricultural use as they seem to be non-remunerative. Not only this situation prevails but also the agricultural labourers are migrating to different parts of the country for earning their livelihood and in this way there is in-equilibrium between labour demand and supply.

Agriculture forms the 56.7 backbone of Indian economy and even though large industrialization in last 60 years, agriculture still occupies a place of pleasure. Agriculture resulting in technology extension and production fatigues. No wonder that the farmers, who keep others alive, are now forced to take their own lives and 40 per cent of them want to quit farming, if there is an alternative option. case of the small and marginal farmers who have a larger share in fertilizers subsidy in comparison to their share in cultivated area. A reduction in fertilizers subsidy is, therefore, likely to have adverse impact on farm production and income of small and marginal farmers as they do not benefit from higher output prices but do benefit from lower input prices. Hence, subsidies provided in India suffer from both inclusion errors (wrong kind of people benefitting) and exclusion error (deserving people left out of subsidies)

The pricing policy of Government of India with the introduction of Minimum Support Price (MSP) of agricultural produce aims at ensuring remunerative price to the farmers for their produce with view to encourage higher investment and production. The MSP for major produce each year based on the recommendation of the Commission for Agricultural Costs Prices (CACP) which take various factors including cost of production that too for only twenty four crops are covered under MSP i.e., only major crops get the benefit, which results in disappointment of farmers of other crops who are in disadvantageous position. Though all the farmers risk in investing in agriculture only few get the benefits of pricing too. The mechanism of MSP farmers reduce the degree of price risks factors to certain extent should be extended to all the farmers irrespective of the crop they bring up and must be more relevant and more attractive to the future generation of farmers. The National Commission on Farmers (NCF) recommended converting the MSP into minimum remunerative prices (MRP), which implies that mere support in price fixation, does not farmers to desire extend. Hence, remunerative price would certain amount of monetary gain for the pro-

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duce. The cost of production is invariably higher than the MSP fixed, the NCF recommended MRP should be at least more than 50 percent of cost of production per quintal. The Standing Committee on Agriculture (2008) also agreed with NCF. Overall, income from cultivation is inadequate. It becomes difficult for the farmer to plan for all possible risks: vagaries of nature (primarily, inadequate or excessive water), market related uncertainties such as increasing input costs and output price shocks, unavailability of credit from institutional sources or excessive reliance on informal sources with a greater interest burden and new technology among others. The Agriculture and allied sectors, comparatively contributed large share, since Independence to GDP but, has drastically come down over the years and also in the recent years. While the Service sector gained momentum and contributed much to the GDP of the country of above 50 percent.

Agriculture's contribution has a constant decline from 55.4 percent in 1951-52 to 14.6 percent in 2009-2010 while the contribution of Industry to GDP had doubled up from 15.4 to 28.5 percent from 1951-52 to 2009-2010. On the other hand the contribution of service sector has shown a massive growth from 29.3 percent to 56.9 percent to GDP in 1951-52 to 2009-2010 respectively. There is complete changes in the occupational structure of the rural masses as the there is rural exodus to urban for the sake of employment. Since, the agricultural sector finds to be not at all attractive and provides season employment; rural people have to find an alternative employment to keep up their livelihood. The crisis in Indian agriculture has two dimensions – agricultural developmental and agrarian livelihood.

India, more than 1786 peasants would have committed suicides which work out to 47 suicides a day and 1 in every 38 minutes. Over 78,000 peasants would have quit farming altogether which works around to 2000 a day. In a typical 38 days, more than 3000 to 4000 children would have died of malnutrition and hunger.

In the agriculture sector the proportion of cultivators has declined over the last two decades by about 20 per cent, they have become labourers. Similarly, in the secondary sector the proportion of workers in household manufacturing has fallen, indicating a change in status, from that of the self-employed to wage worker. This has resulted in high "casualisation" of the labour force; one-third of the men and two-third of the women have become casual workers in the urban areas. The proportion is even higher in the rural areas. As per the 1991 Census, 90.60 percent of the total 286 million main workers in India were in the unorganized sector. Only 9.40 percent of the total labour force in the country was accounted for by the organized sector. Sector-wise, as many as 99.2 percent of those employed in the primary sector, 75 percent of those employed in manufacturing sector, 78 percent in building and construction, 98 percent in trade and commerce and 61.5 percent of those employed in transport, storage and communication were in the unorganized sector.

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Not only the above factors slide them to downward but further government intensify their hardship with further move with allowing foreign direct investment in the retail, banking, insurance sectors would only intensify the process of neo liberal economic policies putting the common man especially rural massed in calamitous state. Liberalisation, privatization and globalization policies were putting heavy burdens on the living conditions of agricultural workers and common people. Agricultural workers were under the clutches of landlessness and unemployment. The last 10 years 2001-2011 has witnessed one of the largest migrations from rural to urban India, not seen in 90 years. All this only points out to a total collapse in agriculture and most of the new migrants forced to live in shanty towns with no basic facilities. This has given rise to phenomenon of "footloose" migrant with no steady employment or abode. Large scale migration takes place as in case of Ganjam district of Orissa, where nearly 400,000 Oriya migrant workers are now employed in the Power looms of Gujarat, working in 12 hours shifts at extremely low wages. The global economic crisis has only worsened the situation, with many of these workers being laid off thus resulting in social tensions back home. Another instance of this agrarian crisis was in the Wayanad district of Kerala in the early years was Wayanad which had always been known as an in-migration district (Gulf of Kerala),

found thousands of peasants, day labourers and other workers leaving the region en mass to the neighboring state of Karnataka, because of the agrarian crisis that saw thousands of peasants committing suicide. More than five thousand indebted farmers, mainly cotton farmers, have committed suicide in Andhra Pradesh alone since 1998 as its government which had entered into a state-level Structural Adjustment Programme with the World Bank, raised power tariff five times even as cotton price fell by half. Over a thousand farmer suicides have also taken place in Punjab, and a similar number in the Vidarbha region of Maharashtra where suicides continue at present. During the four years from 2001, over 1,250 suicides are recorded in the single district of Wayanad in Kerala as prices to the local growers of coffee, tea and spices have nose-dived even more steeply than global prices once large companies have taken over purchase and marketing. Thus by 2003 the price of coffee to the grower was only one-quarter and that of tea and pepper only one-third of the prices prevailing in 1999.

The Crisis in Tamil Nadu Agricultural Sector:

In Tamil Nadu, the agriculture which is the backbone has been in a crisis from the period 1993-94 to 2005-06. The contribution of the primary sector to the Gross State Domestic Product (GSDP) has declined from about 25 percent in 1993-94 to 13.3 percent in 2005-06. Throughout the period of 1993 to 2006, the value addition from agriculture and allied activities was fluctuating; the contribution of this sector was the highest in 1998-99 and the lowest, between 2002-03 and 2003-04. Although the decline was attributable to the drought conditions, which prevailed in the State during the latter period, the sector as a whole is yet to fully emerge from the crisis to attain even the value addition of Rs 23,170 crore in 2000-01. In fact, the total food grains production even in 2004-05 at 61.46 lakh tonnes was just about 80 percent of the production in 2001-02, when the State produced 76.89 lakh tonnes.

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Increasing urbanization in the State is creating a competition for resources like land, labour and water, which has impacted the agricultural sector. The net sown area showed a decline from 42.8 percent of the total area during the Triennium Ending (TE) 1979-80 to 37.05 percent in TE 2003-04. The decline was partly because of the severe drought situation in the State, but is also attributable to the increasing conversion of agricultural land for other purposes. In addition to this, the area under current and other fallows crossed 20 lakh hectares during the last two decades, accounting for more than 15 percent of the area of the State. Tamil Nadu's delta districts of Tiruvarur and Nagappattnam farmers committed suicide due to agrarian crisis and two farmers died of heart attack mainly due to the worries of crop loss in the two districts farmers' suicide due to agrarian crisis. Farmers who committed suicide were able to access institutional credit. All were indebted from private sources at the rate of interest ranging from 24 percent to 60 percent. Landless peasants who leased lands and were share cropping. None of them had any savings. None of them had pump sets or a diesel engine to pump water from the river or canal during the scarcity time. All were small peasants who took extreme steps and took- off their life. The increased industrialization and impressive road and rail net works helped people in the country side to get alternative employment.

There are suicides reported in Thirunelveli, Kanyakumari, Tirupur, Pudukkottai and Cudalore districts. Even though agriculture in the state list under Indian constitution, the central government is mostly responsible for the failure of agriculture. The government of India is doing everything in agriculture. There is an agriculture minister, Indian council of Agriculture research, Genetic engineering approval committee, central patent act, farmers rights act; trade mainly controlled by the central government, minimum support price is fixed by the central government etc. What is that central government is not doing in agriculture. The distress among agriculturists can be better conceived in the context of the following facts: one, the average size of holding has declined from 1.25 ha in 1976-77 to less than 1 hectare now, resulting in increasing marginalization of farmers; secondly, the high level of indebtedness of farmers and the inadequate flow of credit, particularly to small and marginal farmers, from organized financial institutions, as borne out by the survey of indebtedness in the 59th round of NSS data. In Tamil Nadu however, nearly 56 percent of the

population continues to be dependent on agriculture and allied activities and hence, the falling relative share of agriculture is a reflection of the severe challenge to the livelihoods of thousands of rural families.

One of the consequences of agrarian distress has been an increase in landlessness and a decline in the proportion of cultivators; this may have added to the pressure on an already overcrowded agricultural labour market. As per the NSS data, the proportion of households without any access to land in the total rural households has increased from 38.7 per cent in 1993-94 to 40.9 per cent in 1999-00 and further to 43.1 per cent during 2004-05. A state wise disaggregation for the 1990s in this regard is given in; except Haryana and Kerala, landlessness has been on the rise in all the major states. Clearly, the lower end of the peasantry, many of whom are also in the agricultural labour market, may have been forced to sell or give up their land due to the growing difficulties of cultivation. Thus, it is hardly surprising, as may be seen from, that within agricultural labour households, there has been a very significant increase in landlessness between 1987-88 to 2004-05; also, it is worth noting that the trend in the 1980s was in the opposite direction.The agricultural situation as whole reflects growing landlessness among the peasantry, and transfer of land for non-agricultural purposes. This results in declining trends in area, yield and production also are witnessed in Tamil Nadu.

The main problem in Tamil Nadu is agricultural labour shortage is due to government policies, where rural people do very minimum work under MNREGS jobs and at time people don't go to the work site at all. There is no quantum of work to be completed in a day. With this the low cost provision supplies available at ration shops like free rice, Thur dhal, Sugar, Palm Oil etc make agricultural labour mentality not to work rather than earn wages without work. also those who have already got, are suffering from no voltage or low voltage , coil burning etc.

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Crisis of Indian Agriculture in the Post Globalization

Introduction

India has implemented the Liberalization, Privatization and Globalization (LPG) policies in 1991 on the basis of directives of WTO, World Bank and International Monetary Fund, these measures substantially overhauled the Indian economy in the name of Structural Adjustment Programme (SAP). It is often heard that our country as with very high economic growth and world of renowned Information Technology (IT), it has been used almost in all sectors and the same has helped our country to boost our economy and increase the standard of living of our people. But it is never highlighted about the huge crisis faced domestic industries like Small, Medium enterprise and Indian agriculture and its allied sectors. Especially the Globalization has affected Indian agriculture and its allied sector at large. The problems envisaged by agriculture and its allied sector in India are highlighted as follows.

1. Drastic decline in the growth of agricultural sector

Period	Crop sector	Livestock	Horticulture crops	Non Horticulture	Cereals
1950-51 to 1959-60	3.3	1.42	0.74	3.52	3.95
1960-61 to 1969-70	1.70	0.41	4.87	1.09	2.10
1970-71 to 1979-80	1.79	3.92	2.86	1.49	2.40
1980-81 to 1989-90	2.24	4.91	2.63	2.12	2.89
1990-91 to 1999-00	3.02	3.79	5.95	2.07	2.24
2000-01 to 2009-10	3.06	3.90	3.35	2.89	2.31

Source: Report of the Steering Committee on Agriculture & Allied Sectors for Formulation of the 11th Five Year Plan (2007-2012)

From the above table the long term trend is observed by taking the moving average data. The agricultural GDP growth rate came down from 3.3 percent during 1950-1960 to 3.06 percent during 2000-2010. This table show that there is 0.24 percent low growth in the agriculture and its allied sector what was attained during 2000to 2010 compare with 1950 to 1960. But during the 10-year period after the start of liberalisation, the rate of growth declined to two per cent. According to the Mid-term Appraisal of the Tenth Five Year Plan (2002-07), the rate of growth of the GDP in agriculture and allied sectors was just one per cent per annum during the year 2002-05. As a result, per capita availability of food grains decreased; the growth rate of population became higher than that of food grains, and India started to import food grains at a much higher price than that in the domestic market.

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2. Decline in the food security

With the crop sector growth going down, the per capita net availability of food grain declined to the levels attained in 1950s. Net availability of food grain is estimated as gross production (-) seeds, (-) wastage, (-) export, (+) import, (+/-) changes in stock. In the decade of the 1990s, per capita availability of food grain fluctuated around 174 kg per annum. It was 186.2 kg in 1991. Since 2000, it has come down to 160 Kg and below. It was 151.9 Kg in the year 2001. Just for comparison, one should note that the per capita annual availability of food grain in USA is in the range of 1000 Kg. Correspondingly to the decline in food grain availability, the per capita per day calorie intake has also gone down from 2153 Kcal. (1993-94) to 2047 Kcal. (2004-05) in rural India and from 2071 Kcal. (1993-94) to 2026 Kcal (2004-05) in urban India (NSSO report no. 513).

3. Increase in unemployment in agriculture sector

Uunemployment in the agricultural sector increased during the reform period as agriculture was not profitable due to the fall in the price of farm products. As a result, the number of people who are employed in the primary sector and the area under cultivation decreased, which in turn caused a decline in rural employment. According to the National Sample Survey, the annual rate of growth of the employment in the rural areas was 2.07 per cent in 1987-1984, while it declined to a mere 0.66 per cent in 1993-2000, which corresponds to the period of liberalisation. It is not only the farmers but also the Dalits and tribals, who heavily depend on agriculture, became unemployed.

4. Increase in farmer's suicide

The suicide of farmers is the third fall-out of stagnation in agriculture. When agriculture was not yielding remunerative income, the life of the farmers became very desperate. Many of them committed suicide as a last resort. As revealed by Sharad Pawar, the Union Agricultural Minister, in the Lok Sabha in 2004, over one lakh farmers committed suicide in India after the economic reform started. According to the National Crime Records Bureau, 17,060 farmers committed suicide in the country in 2006 with Maharashtra having the highest number of (4453) suicide deaths. Punjab is the latest in the list of States having farmers' suicide. This is a record in the agricultural history of India. It points to the acute nature of the problem which has affected the vast majority of the population, and which has created a real crisis. But unfortunately, the government and the people do not consider it a crisis; their lack of seriousness and lukewarm response to the problem points to this reality.

Causes for the Crisis

There are lot of reasons for the above mentioned crisis due to globalisation and they are as follows.

1. Liberal Import of Agricultural Products

The main reason for the crash of prices of agricultural products, especially of cash crops, in India was removal of all restrictions to import these products. As, for example, when the Government of India reduced the import duty on tea and coffee from Sri Lanka and Malaysia, their prices in the domestic market got reduced drastically. Thus cultivation of such products became unprofitable and so their production was fully or partly stopped. Since the removal of quantitative restrictions and lowering of import duties were according to the restrictions of the World Trade Organisations (WTO), the crash in the prices of agricultural products is directly related to the liberalisation policy of the government.

2. Cutback in Agricultural Subsidies

In the post-reform period the government reduced different types of subsidies to agriculture, and this has increased the production cost of cultivation. According to Ramesh Chand, an economist, cutback in subsidy and control of fertilisers over the last few years has adversely affected the agricultural sector. It has increased the input cost and made agriculture less profitable. Since the decrease in subsidy to agriculture is part of the regulations of the WTO, it is related to the policy of globalisation.

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3. Lack of Easy and Low-cost Loan to Agriculture

After 1991 the lending pattern of commercial banks, including nationalised banks, to agriculture drastically changed with the result that loan was not easily available and the interest was not affordable. This has forced the farmers to rely on moneylenders and thus pushed up the expenditure on agriculture. The National Commission for Agriculture, headed by Dr M.S. Swaminathan, also pointed out that removal of the lending facilities and concessions of banks during the post-reform period have accelerated the crisis in agriculture. When the farmers were not able to pay back loan with high interest, they fell into the debt trap. Studies show that most of the farmers' suicides were due to the debt trap. It is part of the policy of privatisation that banks, even nationalised banks, look for profit over their social responsibilities to the people.

4. Decline in Government Investment in the Agricultural Sector

Studies show that after the economic reforms started, the government's expenditure and investment in the agricultural sector have been drastically reduced. This is based on the policy of minimum intervention by the government enunciated by the policy of globalisation. The expenditure of the government in rural development, including agriculture, irrigation, flood control, village industry, energy and transport, declined from an average of 14.5 per cent in 1986-1990 to six per cent in 1995-2000. When the economic reforms started, the annual rate of growth of irrigated land was 2.62 per cent; later it got reduced to 0.5 per cent in the post-reform period. The consequences were many. The rate of capital formation in agriculture came down, and the agricultural growth rate was also reduced. This has affected the purchasing power of the rural people and subsequently their standard of living.

5. Restructuring of the Public Distribution System (PDS)

As part of the neo-liberal policy, the government restructured the PDS by creating two groups—Below Poverty Line (BPL) and Above Poverty Line (APL)—and continuously increased the prices of food grains distributed through ration shops. As a result, even the poor people did not buy the subsidised food grains and it got accumulated in godowns to be spoiled or sold in the open market. As the in-take from PDS was less it has affected the food security of the poor, especially in the rural areas, and this has indirectly affected the market and the farmers.

6. Special Economic Zones

As part of the economic reforms, the system of taking over land by the government for commercial and industrial purposes was introduced in the country. As per the Special Economic Zones Act of 2005, the government has so far notified about 400 such zones in the country. Very often it is fertile land which has been acquired. According to Khasanoki, a writer, the government has acquired five million hectares of land for purposes other than agriculture between 1991 and 2003. This is almost half of what was acquired during the last 40 years. It was in the news that the government decided to acquire 10,120 hectares of land near Mumbai for the Reliance Company and reduced it to 5000 hectors due to public pressure. Since the SEZ deprives the farmers of their land and livelihood, it is harmful to agriculture. In order to promote export and industrial growth in line with globalisation the SEZ was introduced in many countries.

Suggestions for the Crises

The agricultural crisis is affecting a majority of the people in India. The farmers who produce food materials for the country are in deep distress. The marginalised people like the Dalits and tribals, who depend on agriculture, are getting unemployed and struggling for their livelihood. The ordinary people, especially the poor, have lost their food security. The crisis in agriculture is a crisis of the country as a whole and so needs urgent attention. The following suggestions are being offered for overcoming all the above crisis.

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1. Quantitative restrictions should be imposed on import of agricultural products. Since the import policy was the major reason for the crash in prices of many agricultural products, there should be restrictions on the quantity and customs duty of such products. Necessary import duty and quantitative restrictions should be imposed on imported goods to protect our farmers who should be given priority to the discipline of the WTO.

2. Subsidy and concessions given to agriculture but removed in the post-reform period should be restored. This is a must to make agriculture remunerative. One of the main disputes in the Doha Round of talks at the WTO is the high subsidy given by the United States and European Union to their farmers in spite of the WTO regulation. India should assert its right to give sufficient subsidy to its farmers to offset the rising cost of cultivation and protect their livelihood.

3. Bank loans should be easily made available to the farmers, especially since the input cost of agriculture has gone up. The government should seriously think of restoring the low rate of interest to farmers given by banks and other financial institutions as it had done before the reform period. In fact, the M.S. Swaminathan Commission for Agriculture has recommended a low rate of four per cent interest for the farmers.

4. The government should augment its investment and expenditure in the farm sector. One reason for the agricultural stagnation is low government expenditure. Investment in agriculture and its allied sectors, including irrigation, transport, communication and farm research, should be drastically increased, and the government should aim at integrated development of the rural areas. Effecting Implementation of National Rural Employment Guarantee Scheme can also become a means of revival of the rural economy.

5. There is a need for periodic revision of the procurement prices for farm produce making those remunerative. This will help the farmers to meet the increasing expenses for farm inputs and ensure at least remunerative income. According to the Swaminathan Commission, unless agriculture is made a profitable enterprise, its present crisis cannot be solved. The Commission has suggested 50 per cent more of the total production cost as supportive price for food grains.

6. The government should revise the policy on Special Economic Zones as it goes against the interest of farmers and the agricultural sector. It should not acquire fertile agricultural land for SEZs. When it does take over land for essential public utilities, it should give just compensation and initiate comprehensive rehabilitation measures. The recommendations of the Swaminathan Commission not to acquire land suitable for agriculture for non-agricultural purposes, to give adequate compensation for the acquired land and to distribute surplus land to the landless farmers should be seriously taken into account when the policy of SEZs is reframed. Over and above the policy of SEZs, there is a need for constitutional structures and mechanisms which will mandate the government, both Central and States, to implement the policy of relief and rehabilitation of people displaced due to SEZs and other developmental projects.

7. Bold steps should be taken to implement land reforms which were not implemented in most States. Feudal structures and landlordism based on large holdings of land by high caste and class people even now tend to keep a majority of the people, especially Dalits and backward castes, in the rural areas under their control and domination. Neo-liberal policies with privatisation will only reinforce and strengthen these unjust and exploitative structures. Therefore, there is a need for conscious efforts and positive steps from the government side to implement land reforms. Surplus land acquired thus should be distributed to the Dalit and adivasi farmers. According to Amartya Sen, the Nobel Laureate, though the economic growth rate of India is impressive, India cannot play a significant role in the global economic scenario unless it completes land reforms.

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8. The rural economy, particularly agriculture, will be greatly benefit if programmes meant for economically backward sections, including the Integrated Child Development Schemes, mid-day meals for school children and the National Rural Employment Guarantee Scheme, are effectively implemented. Food security of the poor will be ensured if the public distribution system is efficiently run. All these programmes will increase the purchasing power of the rural people and indirectly help agriculture itself.

Conclusion

The agricultural sector in India is facing a crisis today. The globalisation process, which started in the 1990s, is the main reason for this crisis. The solution of the problem is not in a few "packages" but in drastic changes in the present economic policies related to agriculture. For this, the government should be ready to take bold steps. Farmers, agricultural labourers and people's organisations in civil society should work collectively to assist and persuade the government to make the necessary changes. It is right time that the government and the people realised that India can become a real "superpower" only when the vast majority of the people, especially the farmers in the rural areas, become prosperous and are really empowered. The words of Dr M.S. Swaminathan are relevant here: "In a country where 60 per cent of people depend on agriculture for their livelihood, it is better to become an agricultural force based on food security rather than a nuclear force."

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Water and Sanitation in Tamilnadu Vision 2023: A Comment

Introduction

The Census 2011 figures on the state of sanitation in Tamil Nadu present a grim picture with little improvement from the previous decade. Even today, 45.7% of the state's population resorts to open defecation due to the absence of proper sanitation facilities. The fact that Tamil Nadu ranks only ninth on this list can offer little comfort. The situation is worst in rural areas where only 2% of the population is covered by the pipeline sewerage system. As a result, over 73% of rural population defecates in the open. The state's Total Sanitation Scheme (TSS) introduced in 2006, has failed to change the practice of open defecation.

Tamil Nadu Vision Document 2023

The Tamil Nadu Vision 2023 Document articulates that "Tamil Nadu shall provide piped and pressurized 24x7 water supply to 100% of its residents and ensure that all of them have access to safe sanitation including open defecation free and garbage free environment."

Objective

The focus of this paper has been an evaluation of the present policies of the Tamil Nadu government with respect to water and sanitation and the scope for realizing the vision in 2023.

Methodology

The comments are based on secondary data. The data were collected from the Census and Reports of Tamil Nadu Water Supply and Drainage Board (TWAD).

Comments: Sanitation

The government of Tamil Nadu is committed itself to the Socio-Economic development of the people living in rural areas. As per the census2011, Tamil Nadu about 51.55% of the people numbering 3.27 crores are living in rural areas of Tamil Nadu. Since majority of the state population live in rural areas, and Tamil Nadu being a welfare state more thrust is given to the development of rural areas.

The trend in basic amenities of Tamil Nadu for a decade (Table.1) reveals that whereas the number of households increased from 1.4 crores in 2001 to 1.8 crores in 2011 the drinking water supply through taps has increased from 62.5% to 79.8% and the provision of water closet has increased from 23.2% to 41.2%, a good improvement. At the same time, the percentage of households without toilet still remained at 51.7%.

	2001	2011
Households	1,41,73,626	1,84,93,003
Source of drinking water Tap water	62.5%	79.8%
Sanitation Water closet	23.2%	41.2%
No toilet	64.8%	51.7%

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Source: House listing and Housing census data 2011.

In respect of sanitation, the state's performance is not very impressive. In fact, in the case of open defecation, while the national average was 49.8 percent, the state's figure was 45.7 percent.

Table 2 Comments: Water supply

Sl.No.	Status	Numbers	Percentage
1.	Fully covered	85914	90.91
2.	Partially covered	8586	9.09
3.	Not covered	-	-
	Total	**94500**	**100.00**

Source: Managing Director, TWAD,Chennai.

The status of rural drinking water supply among the habitations of the state shows that the targeted habitations are 94500; out of it fully covered areas i.e. habitation which receives 40 lpcd (Liter Per Capita Per Day &above) are 90.91% and the percentage of the partially covered areas i. e habitation which receives 10-39 lpcd are 9.09%. However, during summer season and drought the availability of water supply per head will be reduced drastically.

Comments: Rural Water supply performance

Though the performance level of rural water supply is satisfactory in numbers, the real beneficiaries are meager in size.

(Table 3)

Year	Habitation benefitted	Expenditure (Rs.in crores)
2000-01	6617	545.76
2001-02	6865	439.87
2002-03	6628	563.82
2003-04	6510	484.08
2004-05	6520	451.93
2005-06	7540	526.66
2006-07	7742	555.75
2007-08	12549	749.69
2008-09	10255	824.48
2009-10	8193	872.02
2010-11	7004	666.04

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Source: Managing Director,TWAD,Chennai.

It is clearly revealed that as the size of habitation increases for a decade i. e from 2000 to 2011, the allocation on water supply has been reduced. There is an unequal proportion between the size of habitation and the size of expenditure. In 2000-01, the number of habitation benefited was 6617. The amount allocated for that is Rs.545.76 crores. At the same time, when the number of habitation increased from 6617 to 6865 in the year 2001-02, the allocated amount stood merely Rs. 439.87 crores. Though the number of habitations more than doubled in 2007-08 compared to 2000-01, the amount spent increased only by 27%.

Urban water supply performance:

The schemes on urban water supply gives a good picture of its performance. But the echo of rapid urbanization brings its level down.

Vision Tamil Nadu 2023

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Table 4 Urban Water Supply Schemes

Year	No. of urban schemes completed	Expenditure(Rs. in crores)
2000-01	55	139.00
2001-02	63	154.63
2002-03	72	166.65
2003-04	60	133.00
2004-05	55	120.01
2005-06	77	125.38
2006-07	55	81.16
2007-08	55	166.35
2008-09	50	289.88
2009-10	50	153.69
2010-11	47	101.53

Source: Managing Director, TWAD,Chennai.

The allocation of outlay on the number of urban schemes on water supply clearly that even though a large number of schemes introduced during the decade, the size or number of schemes completed has not increased considerably.

Water Supply: District wise Picture The district wise data regarding the coverage of Water Supply in Tamil Nadu were available as on First April 2011.

(*40 lpcd & above **10-39 lpcd ***0-9lpcd (Report as per updated YSR in IMIS website, lpcd-Litre Per Capita per day)

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Table 5 Coverage of Water supply in Rural Habitation* of Districts in Tamil Nadu

Sl.No.	District	Fully covered*	Partially covered**	Not covered***	Total
1.	Kancheepuram	3918	156	-	4074
2.	Thiruvallur	4021	45	-	4066
3.	Cuddalore	3379	78	-	3457
4.	Villupuram	4549	119	-	4668
5.	Vellore	5738	83	-	5821
6.	Tiruvannamalai	4262	139	-	4401
7.	Salem	4930	625	-	5555
8.	Namakkal	2922	643	-	3565
9.	Dharmapuri	3272	41	-	3313
10.	Krishnapuri	4245	158	-	4403
11.	Erode	3307	1153	-	4460
12.	Coimbatore	1471	514	-	1985
13.	Tiruppur	2583	886	-	3469
14.	The Nilgris	1199	20	-	1219
15.	Tiruchirapalli	2713	154	-	2867
16.	Karur	1782	475	-	2257
17.	Perambalur	547	21	-	568
18.	Ariyalur	1070	338	-	1408
19.	Pudukkottai	4367	73	-	4440
20.	Thanjavur	3748	154	-	3902
21.	Nagapattinam	2065	827	-	2892
22.	Thiruvarur	2521	61	-	2582
23.	Madurai	2229	98	-	2327
24.	Theni	726	43	-	769
25.	Dindigal	2588	678	-	3266
26.	Ramanathapuram	2150	182	-	2332
27.	Virudhunagar	1826	65	-	1891
28.	Sivaganga	2811	215	-	3026
29.	Tirunelveli	2246	237	-	2483
30.	Thoothukudi	1747	94	-	1841
31.	Kanniyakumari	982	211	-	1193
	State Total	**85914**	**8586**	-	**94500**

Source: Managing Director, TWAD, Chennai.

*A rural habitation is defined as a locality within a village where a cluster of families (i. e 20 families) reside. The population should be 100 or more for consideration for coverage under the rural water supply scheme (TWAD).

In Tamil Nadu, there are 94,500 habitations, of which, 8586 are partially covered and 85,914 are fully covered. The state has to find out the summer dry districts and give them much importance.

During the eleventh five year plan, the state's allotment were Rs.7555.35 crore on water supply and sanitation (Table 6) The component wise details are as follows:

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Table 6 Outlay on Water Supply schemes in Tamil Nadu

Sl. No	Component	Outlay (in crores)	Percentage
1.	Rural water supply	3002.00	39.73
2.	Urban water supply	3130.00	41.42
3.	Sanitation	151.49	2.01
4.	Sewerage	1271.86	16.83
	Total	**7555.35**	**100.00**

Source: www.tn.gov.in/spc

Experts say Government spending on water and sanitation is grossly inadequate. According to the Centre for Budget and Governance Accountability, Government spending under these heads has been on the decline (Business line, March13,2012).

Key challenges of Tamil Nadu in Water and Sanitation

The economic development of a nation depends much on the quality of its human resources. No country can advance when a large segment of its population lags behind in basic amenities like water and sanitation(Basant Mehta &Pragya Jain, 2003). Even though Tamil Nadu made achievements in many fields, defecation in open cannot be acceptable in civilized society. The freebees to be reduced as there are no mechanism prevailing that it reaches really the needy. More toilets are to be built and maintain hygiene by government agencies. As the State run wine shops nothing wrong to run toilets. Poor cannot be blamed to defecate in public but it is the responsibility of the government to make their life healthy (The Hindu, 2012). In Tamil Nadu where the Central Government has awarded for "cent percent Toilets built" villages, the practice of open defecation is still continuing (The Hindu, 2012).

Concluding Remarks

As women are the main sufferers of any policy across the society, special attention must be paid on them. Policies on water supply and sanitation should have an explicit pro-poor focus, gender awareness and participatory approaches as per the norm of the Department for International Development (DFID). Neglecting women from implementing policies and plans would bring severe chaos in the state regarding water and sanitation. It is in the hands of a welfare state like Tamil Nadu to meet the present challenges, though it may be beyond to her ability and aspirations (as per the present situation), on water and sanitation must be met to view a **"Non-stink"** Tamil Nadu in 2023.

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Vision of Tamil Nadu 2023: Strategic Plan for Infrastructure Development in Tamil Nadu

Introduction

The heart of Vision 2023 is provision of world class infrastructure to all the residents' of Tamil Nadu irrespective of their economic status. The accent on infrastructure in Vision 2023 is necessitated on two counts – (a) Infrastructure development is investment intensive and in its own right generates significant employment opportunities and economic growth; (b) More importantly, infrastructure development creates huge positive externalities in the economy by providing a fillip to economic and social development across all sectors. Historically, spending on infrastructure development in Tamil Nadu has been 4% to 5% of GSDP, while the requirement (as dictated by Vision 2023) is to increase the annual spending on infrastructure to about 10% of GSDP from 2015 onwards and further to 11.5% from 2019 onwards. The infrastructure sector includes Power, Water &Sanitation, Transportation, Irrigation, Ports, Airports, Connectivity, Housing, Healthcare and Education. Infrastructure creation in multiple sectors on this scale not only calls for substantial financial outlays but also significant regulatory reforms (e.g. tariff changes, cost recovery, viability gap funding, consumer protection, institutional realignment, and independent regulation) and to the extent that revenues of these projects do not cover expenses, there has to be ongoing financial support from the state. The total investment to enable universal access to infrastructure services over the 11 year period is estimated at Rs 15 lakh crore (approximately US$ 330 billion). The state has made tremendous progress in both social and economic infrastructure. Education and healthcare levels in the state have risen considerably. The State Government has encouraged private sector participation in the process of infrastructure development. This has resulted in rapid expansion of roadways; railways and capacity enhancement of the ports In this context the present study explore Vision of Tamil Nadu 2023: Strategic Plan For Infrastructure Development In Tamil Nadu

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Water & Sanitation:

Tamil Nadu shall provide piped and pressurised 24x7 water supplies to 100% of its residents and ensure that all of them have access to safe sanitation including open defecation free and garbage free environment.

Housing:

25 lakh affordable houses need to be constructed to create hut free villages and slum free cities.

Healthcare:

Provision of quality healthcare facilities to all is the goal

Education:

Achieve universal secondary education, increase enrolment in colleges (including vocational education) to over 50%.

Roads & highways:

Tamil Nadu to get 2000 km of 6-8 lane expressways, 5000 km of 4 lane highways, and all highways being at least double-laned and with paved shoulders

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Ports:

Incremental capacity of ports in Tamil Nadu to exceed 150 million tonnes per annum including 15mn TEU of container capacity

Railways:

All urban nodes with population of over 500,000 to be connected with high speed rail corridors for both freight and passenger traffic.

Airport:

Total capacity to handle 80m passengers per annum across all airports in the state, with Chennai alone accounting for half the capacity

Telecommunication:

Every village will be connected with high speed Optical Fibre Cable (OFC) network enabling broad-band connectivity at a grass root level across the state. Urban transport: Putting in place a system of integrated multimodal urban transport including mass transit systems for faster mobility in cities

Growth Strategy

While Vision 2023 articulates all round growth and development, a good strategy also calls for specialisation in some areas. The adage of "putting one's best foot forward" is apt here, and Tamil Nadu shall strive to be world class in a few areas, which will make "Tamil Nadu" a brand of excellence, and enable it to stand apart in a crowded and increasingly noisy world. In the Services sector, Tamil Nadu is already a leader in India in a few industries such as Financial services, Information Technology, IT enabled services for back-office operations, Engineering Design, Healthcare, Publishing, Film production, and Higher education. The growth in the Services sector is largely predicated on a significant spurt in these industries besides others such as Transportation, Urban services, and Research & Development. Under Vision 2023, the Government will aggressively position Tamil Nadu as a global leader in the following industries and activities:

Back-office capital of the world:

Tamil Nadu shall aim to be a global leader in attracting large scale back-offices for knowledge intensive businesses such as banks, insurance companies, financial services companies, consultancies, engineering, accounting, architecture, law firms, design firms, scientific research, data management & analytics, telecommunication, technology and media.

Healthcare capital of South Asia:

Given that Tamil Nadu is already renowned for healthcare facilities (hospitals in Chennai, Coimbatore, Vellore and Madurai are popular with patients from all over the country and outside), Tamil Nadu will aggressively position itself as the medical tourism destination of South Asia.

Audio and Video production and post production:

Chennai is already recognised as India's leading audio and video production centre, with several post-production processing activities such as digital recording, mastering, dubbing, and animation being undertaken for several films made all over India. Given the scalability of the operations, the cost advantage that India enjoys globally, and the reputation for quality that Chennai has developed in this area, there is no reason why this service cannot be extended to Hollywood and other major film producing countries of the world.

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Tourism:

Tourism has very high potential for local employment generation and Tamil Nadu has considerable natural endowments that enable tourism as an industry to flourish. Vision 2023 gives significant thrust to the development of this sector to its potential over the next 11 years. Tamil Nadu's tourism industry is the second biggest in India and is built on several attractive propositions including beaches, hill resorts, architecture, and heritage sites.

Sectoral plan and investment targets

Sector	Investment Requirement Rs. Crore
Energy	450,000
Transport	370,000
Industrial and Commercial	160,000
Urban Infrastructure	275,000
Agriculture	40,000
Human development (Health & Education)	30,000
Sub-total	**13,25,000**
General and Social infrastructure projects	100,000
Capital improvements to existing projects	75,000
Sub-total	**175,000**
Grand Total	**15,00,000**

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Conclusions

Tamil Nadu Vision 2023 is an aspirational and ambitious statement that aims to propel Tamil Nadu to attain her potential along multiple dimensions of economic prosperity, social progress, inclusiveness, cultural plurality, and environmental sustainability. It builds on the strengths of Tamil Nadu that exist due to natural endowments, the hard work of her citizens, and the results of good governance. The focus of this document is on the physical, social and institutional infrastructure that needs to be established in Tamil Nadu if the growth rates in various sectors envisaged under Vision 2023 are to be achieved. It is important to realise that the goals set and the actions required are part of a wholesome package with inter-linkages amongst them. Taken in part or implemented piecemeal, they are not likely to succeed. The goals set are achievable but call for a stretch by all stakeholders – the state government, the urban and rural local bodies of Tamil Nadu, political leaders, civil servants, corporate entities, small and medium enterprises across the state, the academic institutions, the NGOs, and the residents of the state – to go the extra mile to attain the goals. Finally, it should be remembered that the specific goals of Tamil Nadu Vision 2023 are not rigid targets, but are essentially directional polestars for the decision makers and people of the state to measure their progress. The journey towards these goals is as important as reaching the destination.

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Foreign Direct Investment in Tamil Nadu: A Note on the Vision 2023 Statement

Introduction

Vision Tamil Nadu 2023 is a Document released by the present Chief Minister of Tamil Nadu on 22.03.2012.The Document identified ten themes namely Economic prosperity, Inclusive growth, Health for all, World class infrastructure, Healthy investment climate, Knowledge hub and innovation capital of India, Creating conducive environment for human development, Nurturing a rich heritage and preserving ecology, Protecting against vulnerability and improving the quality of institution and Governance, to focus its effort towards in overall economic growth of the state. Among them creating a healthy investment (both domestic and foreign) climate assumes significance in the present context. In this respect, a brief note has been prepared on the status of the Foreign Direct Investment (FDI) in Tamil Nadu and its future prospects.

Vision Tamil Nadu 2023

The Vision Tamil Nadu 2023 aims that, **Tamil Nadu will be one of the top three preferred destinations in Asia, the most preferred in India with a reputation for efficiency and competitiveness.** Further, it aims that the GSDP for Tamil Nadu will have the growth rate of 11% per annum over the next 11 years.

FDI transfers the technology from foreign firms to local firms and creates employment opportunities among the domestic firms. At the same time, whether Tamil Nadu has the potentials to achieve the targets fixed for FDI is the major issue to be focused with.

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Objectives of the Paper

(1) To understand the FDI inflows in Tamil Nadu and compare the FDI inflows in Tamil Nadu with other top investing States in India.

(2) To assess the possibilities of sustaining FDI flows in the state.

Data

This study is based on secondary data. The required data were collected from Fax sheet on Foreign Direct Investment in India published by Reserve Bank of India Bulletin and Reports of Union Commerce and Industry Ministry of India.

Analysis and Results

Like other states Tamil Nadu has also pursued a pro-market, pro-liberalization strategy after the 1991 reforms. It has had success in attracting FDI, especially compared to the Indian average. Part of this success has been building its investment climate. The FDI inflows in Tamil Nadu are compared with that of India's over all FDI inflows

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Table 1 FDI inflows in Tamil Nadu

S.No	Financial Year(April-March)	FDI inflows in Tamil Nadu (Rs in cores)	FDI inflows in India (Rs in cores)	Percentage
1	2005-2006	1117	24,584	4.54
2	2006-2007	1631	56,390	2.89
3	2007-2008	2775	98,642	2.81
4	2008-2009	3386	142,829	2.37
5	2009-2010	3,653	1,23,120	2.97
6	2010-2011	6,115	88,520	6.91
7	2011-2012	6,711	1,73,947	3.85

Source: Fax Sheet on Foreign Direct Investment in India (RBIBulletin)

FDI inflows in Tamil Nadu have increased from Rs. 1,117 cores in 2005-2006 to Rs. 6,711crores in 2011-2012.The percentage share of Tamil Nadu in the all India FDI has been 4.54 in 2005-2006, 2.89 in 2006-2007, 2.81 in 2007-2008, 2.37 in 2008-2009, 2.97 in 2009-2010, 6.91 in 2010-2011 and 3.85 in 2011-2012. A slow down was observed in the case of all India during 2009-2010 and 2010-2011.At the same time it has been a steady increase in the case of Tamil Nadu.

The top 8 States which attracted FDI in India are Maharashtra, Delhi, Karnataka, Tamil Nadu, Gujarat, Andhra Pradesh, Kerala and West Bengal. The data on this was available for the year 2011-12

Table 2 State wise FDI inflows in India (2011-12)

Rank	State	FDI inflows April-March(2011-2012)
1	Maharashtra	44,664
2	Delhi	37,403
3	Karnataka	7,235
4	Tamil Nadu	6,711
5	Gujarat	4,730
6	Andhra Pradesh	4,039
7	Kerala	2,274
8	West Bengal	1,817

Source: Report on Union Commerce and Industry Ministry of India

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During the last year Maharashtra occupied First Rank in attracting FDI inflows and Tamil Nadu got the Fourth Rank. Even Gujarat and Andhra Pradesh got lower ranks in attracting FDI.

FDI Trends in Tamil Nadu

Trend values for FDI inflows were calculated to forecast of FDI inflows in Tamil Nadu by 2023. The trend line was calculated through Ordinary Least Square method. The trend values for FDI inflows in Tamil Nadu were given in table 3.

Estimated Trend Values for FDI inflows in Tamil Nadu Table No.3Estimated Trend Values for FDI inflows in Tamil Nadu

Table No.3

Year	Trend values
2005-2006	773
2006-2007	1,724
2007-2008	2,675
2008-2009	3,626
2009-2010	4,577
2010-2011	5,528
2011-2012	6,479
2012-2013	7,430
2013-2014	8,381
2014-2015	9,332
2015-2016	10,283
2016-2017	11,234
2017-2018	12,185
2018-2019	13,136
2019-2020	14,087
2020-2021	15,038
2021-2022	15,989
2022-2023	16,940

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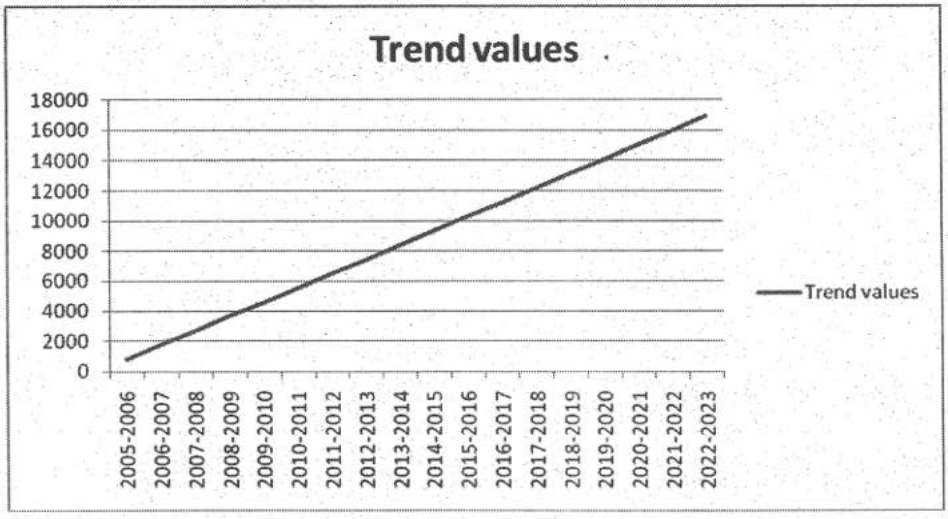
Yc =3626.857+951Xt. Where Yc = trend value in FDI and Xt = time period



The estimated trend values from 2005-2006 to 2022-2023 are found as positive. If the same trend continues FDI inflows in Tamil Nadu would be at Rs 16,940 crores in the year 2022-2023.

Conclusion

The present study finds that, Tamil Nadu occupied fourth rank in attracting FDI inflows in India during 2011-2012. When compared to Maharashtra, the State of Tamil Nadu still lacks infrastructural facilities.

Theoretically it has been argued that the pace of industrialization is influenced by a combination of critical factors including sound infrastructure and uninterrupted supply of vital inputs such as power, credit, raw materials and proactive entrepreneurs, wider access to Information Technology and competitiveness of products in terms of quality and price in both domestic and international markets. Among these power supply is a bottleneck for attracting FDI in Tamil Nadu. The State has only 15,800 MW installed capacity for industrial production. The available capacity of power supply is not encouraging and going to be a constraint to increase the industrial production in the state. Therefore Foreign companies would like to reduce their investment in Tamil Nadu. Attracting FDI is dependent on providing the right environment to run a business efficiently. While availability of the necessary infrastructure such as power supply is the key driver that attract investments. Hence, to achieve the target as envisaged in the Tamil Nadu Vision 2023, it is essential to concentrate on the power sector. It implies that a significant amount of investment has to be made on this sector by the state, private and by Public Private Partnership mode.

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Wind Energy –A Vision of 2023

Introduction

The wind sector in India has seen phenomenal growth during the past few years, catapulting India to fourth position in the world in terms of wind power installations. Wind has considerable potential as a global clean energy source, on account of being both widely available, though diffuse, and producing no pollution during power generation. The amazing growth of wind power in the past ten years is attributable to a multiplicity of enabling factors, including the evolution of a conducive policy and regulatory framework. The good thing is that the transition to renewable sources of energy has begun, and this transition is being led by wind power. Growing concern for environmental degradation has led to resurgence in the world's interest in renewable energy resources. Wind is commercially and operationally the most viable renewable energy resource.

Objective

To study the economic impact on wind energy in Tamil Nadu

Methodology

The study is based on secondary data from the various sources and journals, books, records, magazine, web sites etc. the secondary data are mainly from the published and unpublished records of department of non conventional energy, government of India, department of energy, wind power manufacturers association, Tamil Nadu electricity board, and directorate of statistics- government of Tamil Nadu.

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Wind Power Scenario

Total installed capacity of power generation in the country is 1, 99,877 MW as on 31-03-2012 out of which the contribution of NCES power to the country's installed capacity is around 24,503 MW. As on 31-03-2012, the total installed capacity of wind power in Tamil Nadu is 6,971 MW. As on 31-07-2011, the wind power represents 14706 MW in the country.

Table No. 1 The installed capacity of wind power in different States as on 31-07-2011 is furnished below

State	Potential (MW)	Installed Capacity (MW)	Percentage to the total installed capacity
Andhra Pradesh	8968	198	1.35
Gujarat	10645	2284	15.53%
Karnataka	11531	1765	12.00%
Kerala	1171	35	0.24%
Madhya Pradesh	1019	276	1.88%
Maharashtra	4584	2358	16.03%
Rajasthan	4858	1643	11.17%
Tamil Nadu *	5530	6143	41.77%
Others	705	4	0.03%
Total	**49011**	**14706**	**100%**

* The wind energy installed capacity in Tamil Nadu was 6971 MW as on 31-03-2012

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Tamil Nadu accounts for 41.77% of the wind energy over the countries installed capacity of around 14,706 MW as on 31-07-2011. The following locations are endowed with favorable wind flow:-

Table No.2

Name of the Passes/Districts	Area
Palghat	Coimbatore, Erode and Dindigul
Shencottah	Tirunelveli and Tuticorin
Aralvoimozhi	Kanyakumari, Radhapuram and Muppandal
Theni District	Theni, Cumbum and Andipatty
Sea coast Uvari,	Tuticorin, Rameswaram, Poompuhar and Ennore

Generation – Demand gap in Tamil Nadu

As on 31.03.2012, the installed capacity of TANGEDCO is 10,237 MW comprising 2,970 MW from TANGEDCO's four thermal stations, 516 MW from four gas turbine stations, 2,191 MW from hydro stations, 1180MW from private sector power projects who have power purchase agreements with TANGEDCO, 214 MW as contribution to Tamil Nadu grid by sale of electricity from captive generating plants, 2,861 MW as Tamil Nadu's share from central generating stations and 305 MW from external assistance.

Table No.3 The year wise capacity addition in Tamil Nadu over the past 10 years is furnished below:

Year	Capacity addition (MW)
Up to1998-99	728
1999-00	46
2000-01	42
2001-02	45
2002-03	133
2003-04	371
2004-05	675
2005-06	858
2006-07	577
2007-08	381
2008-09	431
2009-10	602
2010-11	997
2011-12	1083
Total as on 31-03-2012	**6971**

Source: TEDA & TANGEDCO

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The steady increase in capacity addition of wind power generation in Tamil Nadu is mainly attributed to the favorable meteorological and topographical conditions as well as the pro-active policies of the Government of Tamil Nadu.

Role of Wind Energy of Economic Development of Tamil Nadu

Power is the most critical infrastructure for triggering all round socio-economic development of a state. A reform-oriented strategy is envisaged for power development during the tenth plan under which focus is placed for the improvements of financial viability of the state electricity board and providing reliability and quality service to customers. The demand for power is increasing at a faster pace contributed both by increases in the per capita income and changing life style of the population. An outlay of Rs. 8000 crores accounting for 20percent of the state's tenth plan outlay is earmarked for power development.

Wind energy is a relatively young but rapidly expanding industry. Over the past decades, global installed capacity has increased from 2,500 megawatts (MW) in 1992to just over 40,000 MW at the end of 2003, at an annual growth rate of near 30%. If positive policy support continues to develop, EWEA has projected that wind power will achieve an installed capacity of 75,000 MW in the EU -15 by 2010. This would represent an overall contribution to electricity supply of 5.5%. By 2020, this figure expected to increase to more than 12% with wind power providing energy equal to the demand of 195 million European household consumers.

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Table No. 4. Wind Mill Cap/ Generation as on 01.07.2011

year	Installed Capacity in MW		
	During Year	Cumulative Total	Generation in M.U
UPTO 1997		676.155	1485.372
1997-1998	31.140	707.295	765.854
1998-1999	17.765	725.060	928.865
1999-2000	45.675	770.735	1156.593
2000-2001	41.895	812.630	1094.175
2001-2002	44.035	856.665	1257.110
2002-2003	133.600	990.265	1305.703
2003-2004	371.225	1361.490	1714.475
2004-2005	678:735	2040.225	2260.732
2005-2006	857.555	2897.780	3444.281
2006-2007	577.910	3475.690	5268.982
2007-2008	381.075	3856.765	6066.646
2008-2009	430.975	4287.740	6655.150
2009-2010	602.025	4889.765	8145.508
2010-2011	997.400	5887.165	8720.040
2011-12 (till June-11)	**180.070**	**6067.24**	**2083.744**

During the early 1990s, with the opening of Indian economy in general, and private sector investments in the power sector in particular, the Department of Non-Conventional Energy Sources (DNES) issued guidelines for promotion of renewable energy projects. The guidelines charted a market framework, which would make the private sector investments viable, based on the data generated from demonstration projects already operational in India. The total economic benefits available to wind energy projects in the private sector are listed in table.

Table No.5Economic of Wind Energy Investment in the early 1990s

S. No.	Item	Particulars
1.	Assumed cost of the wind turbine	Rs. 100
2.	Corporate tax (including surcharge)	57.5%
3.	Allowable depreciation	100%
4.	Benefit due to tax shelter	Rs. 48.3
5.	Sales tax benefit (50% of capital cost)	Rs. 42
6.	Effective return on day one on an investment of Rs. 100	Rs. 90.30
7.	Investment to recover	Rs. 9.70

Source: TNEB, Statistics at a Glance - 2008 Annual Report

The total investment in the energy sector is estimated at Rs. 4, 50,000 crore. New power generation capacity dedicated for Tamil Nadu, located within the state or elsewhere, will account for a bulk of the investments at Rs. 280,000 crore. Five power generation projects (under Case 2 bidding as per norms of Ministry of Power, Government of India) are estimated to add 20,000 MW of capacity; of this at least 5000 MW would come up before 2017 to make good the shortage of peak power and energy shortage that Tamil Nadu faces at present. In the long run, Tamil Nadu will have sufficient power generation capacity that is owned or secured under long term contracts that becomes the bedrock of an efficient and competitive economy.

Summery of Investment

Projects	Rs. crors
Ultra mega power projects	50,000
Case 2 bidding	60,000
Wind power	25,000
Solar power	55,000
LNG terminal	20,000
Gas Grid	20,000
Transmission and Distribution	200,000
Investment in Smart Grid	20,000
Total	**450,000**

Source: vision in Tamil Nadu Strategic Plan for Infrastructure Development in Tamil Nadu

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a) Two ports based Ultra Mega Power Projects of 4,000 MW each to be set up

b) Selective thrust for green power by maximizing investments in Wind Power to create incremental generation capacity of 5,000 MW and 5,000 MW in solar energy.

c) Significant investment required in the Transmission sector to create evacuation capacity for the higher power generation capacity with adequate buffers. Select high capacity Transmission corridors will be bid out on PPP basis to establish the necessary evacuation infrastructure.

d) Two Greenfield LNG Terminals with 5 MPTA capacities each and city gas pipeline infrastructure for about 10 towns to be established.

e) Establishment of a smart grid system that enables lower the cost of energy to consumers, spark innovation in energy management at all levels in the energy chain across the economy, and improve the reliability and security of the electricity grid. The likely investments in a smart grid system are expected to be Rs. 20,000 crore.

f) Government will implement reforms in the Power sector in a progressive manner so that the benefits of competition and innovation are delivered to consumers by way of reliable power supply at the most economic price and commercial terms. This will call for new models of electricity transmission and distribution, which have been successfully implemented in several countries.

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Conclusions

Considering the large wind potential, it is possible to imagine scenarios where wind energy can play a substantial role in India's energy mix and contribute significantly to reduction in power shortages in the short term and energy security and environmental sustainability in the long term. These promising results provide sufficient support for conducting further analysis (on topics such as wind integration, transmission planning, regional coordination, cost effective development, and land policies) and dialogue that would ensure that this large, cheap, and clean resource available in India is developed as quickly and as cost effectively as possible. The remaining sections of the project then further evaluate the specific impacts of wind energy on economic development.

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Vision Tamil Nadu 2023 – A Study With Reference To Leather Industry

Introduction

The industrial sector will be consciously linked to the agricultural and allied sector to maximize the value addition to the out put of the primary sector with in the state. As the statement of honourable Chief Minister of Tamil Nadu Selvi J. Jayalalithaa, a strategic plan for infrastructure development to catapult Tamil Nadu to a high growth plane has been developed for the first time. One of the key requirements for rapid economic growth in all sectors is quality infrastructure. It is the endeavor of my Government to ensure all benefits to all people for the first time in Tamil Nadu, on an exercise of preparing a vision document for the state as a strategic plan for infrastructure development. Substantial in income through generation of fruitful employment; improvement in the quality of life through provision of high quality infrastructure and services; focused growth of sectors where the state has a competitive advantage and above all peace, prosperity and protection of the vulnerable.In view of its immense potential for employment, growth and exports, leather industry occupies an important place in state economy. The sector is spread across the formal as well as informal sectors and produces a comprehensive range of products from raw hides to fashionable shoes. Tamil Nadu is in the forefront in leather with an annual production of more than 1.2 billion sq. ft. of finished leather. It is about 60 percent share in total finished leather production of our country and 45 per cent share in total export from India. There are about 750 tanneries in Tamil Nadu and the raw material processed per day is 500-1000 tons and annual turnover more than Rs. 10,000 crore, number of operational CETPs is 16 catering to 630 tanneries, number of ETPs is 94 and there are more than 56 RO plants in Tamil Nadu. Tamil Nadu is among he frontline industrial regions of the country. Beginning with sixties and up to nineties, the state for ed the industrial predominance along with Maharashtra and Gujarat. In general, industrial development Tamil Nadu mostly depends on leather industries thus leather industries are determined the industrial growth of the state strongly.

Objective and methodology

The main objective of the present paper is to trace the trend and growth of leather industries in Tamil Nadu in terms of number of leather industries, gross value added, number of workers, and value of output.

Methodology includes period of the study, source of data and tools used for analyzing the data.The study period of present study is 28 years from 1980-81 to 2007-08. The present study entirely depends on secondary data. The secondary data were collected from Annual Survey of industries (ASI). The ASI report is published by the central statistical organization (CSO) Department of Statistical, Government of India. The results of Annual Survey of Industrial reported in various issues of Tamil Nadu – An Economics Appraisal, Government of Tamil Nadu have been the sources of data for this study.

In order to estimate the annual growth rate of Number of Units, Gross Fixed Capital, Employment, Number of Workers, Gross Value Added and Value of Output. The following formula was used.

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$$AGR = \frac{y_t - y_{t-1}}{y_{t-1}} \times 100$$

Where

AGR=

Y_t = current year

Y_{t-1} = Previous year

t = Time Period

To analyze the growth pattern ofnumber of units, gross fixed capital, number of workers, gross value added and value of output, straight lined trend equations have been fitted for the period of 28 years from 1980-81 to 2007-08. To fit the straight – line the following model has been used $Y = a + bt$

Where

Y = Dependent variable

T = Time trend variable taking values 1,2,3,...28.

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Major of Finding

Terms of number of leather industries, gross value added, number of workers, and value of output.

Leather industries in India during 1980-81 to 2oo7-08

Year	Number of factories (in numbers)	Gross fixed capital (Rs.in lakhs)	Number of workers (Rs.in lakhs)	Gross value added(Rs.in lakhs)	Value of output (in lakhs) (agr)
1980-81	394(-)	3,684(-)	19069(-)	3223(-)	26595(-)
1981-82	392(-0.5)	3,847(4.4)	21518(12.8)	3263(1.2)	29879(12.3)
1982-83	407(3.8)	4,957(28.9)	20707(-3.8)	3920(20.1)	31348(4.9)
1983-84	445(9.3)	5,679(14.6)	21534(4.0)	6153(57.0)	33285(6.2)
1984-85	464(4.3)	5,990(5.5)	27283(26.7)	6533(6.2)	42841(28.7)
1985-86	503(8.4)	6,679(11.5)	27197(-0.3)	6310(-3.4)	47809(11.6)
1986-87	530(5.4)	7,597(13.7)	27424(0.8)	6913(9.6)	51676(8.9)
1987-88	601(13.4)	8,843(16.4)	31141(13.6)	9748(41.0)	70024(35.5)
1988-89	630(4.8)	12,017(35.9)	38285(22.9)	12751(30.8)	86451()23.5
1989-90	652(3.5)	12,790(6.4)	45205(18.1)	15393(20.7)	101156(17.0)
1990-91	804(23.3)	22,407(75.2)	46747(3.4)	23261(51.1)	134161(32.6)
1991-92	916(13.9)	23,224(3.6)	52342(12.0)	31720(36.4)	164649(22.7)
1992-93	966(5.5)	28,678(23.5)	52666(0.6)	34081(7.4)	185687(12.8)
1993-94	1,153(19.4)	34,056(18.8)	57321(8.8)	61915(81.7)	54600(-70.6)
1994-95	1,138(-1.3)	42,601(25.1)	60894(6.2)	39933(-35.5)	270704(395.8)
1995-96	1,136(-0.2)	62,234(46.1)	58405(-4.1)	47113(18)	274279(1.3)
1996-97	1,178(3.7)	53,069()-14.7	58675(0.5)	46276(-1.8)	300806(9.7)
1997-98	1,101(-6.5)	56,204(5.9)	47975(-8.2)	46889(1.3)	324656(8.0)
1998-99	1,048(-4.8)	67,923(20.9)	50522(5.3)	35858(-23.5)	313944(-3.3)
1999-00	907(-13.5)	61,687(-9.2)	45525(-9.9)	64594(80.1)	341822(8.9)
2000-01	945(4.2)	71,466(15.9)	53464(17.4)	45098(-30.2)	388608(13.7)
2001-02	961(1.7)	68,695(-3.9)	61611(15.2)	53763(19.2)	430634(10.8)
2002-03	920(-4.3)	59,283(-13.7)	50147(-8.6)	43995(-18.1)	382180(-11.3)
2003-04	904(-1.7)	62,835(6.0)	46792(-6.7)	49748(13.1)	437348(14.4)
2004-05	856(-5.3)	66,814(6.3)	54406(16.3)	51677(3.9)	484574(10.8)
2005-06	953(11.3)	64,359(-3.7)	60572(11.3)	62457(20.9)	493181(1.8)
2006-07	870(-8.7)	84,330(31.0)	61340(1.3)	84310(35.0)	615145(24.7)
2007-08	1,175(35.1)	1,48,347(76.0)	94455(54.0)	118981(4.1)	1164795(89.4)

Source: Annual Survey of Industries

- The above table 1 explains the growth of Leather Industries in Tamil Nadu during the study period 1980-81 to 2007-08. The number of leather industries has been increased from 394 in 1980-81 to 1,175 in 2007-08. The annual growth of leather industries in Tamil Nadu shows that there is a fluctuation in the growth of the leather industries during the study period 1980-81 to 2007-08. The higher annual growth rate 23.3 per cent is seen in the year 1990-91. This was due to the positive impact of liberalization (A New Industrial policy) on leather industries on Tamil Nadu.
- The above table 2 shows the growth of fixed capital of Leather Industries in Tamil Nadu during the study period 1980-81 to 2007-08. The fixed capital of leather industries in Tamil Nadu has been increased from Rs.3, 684 lakhs in 1980-81 to Rs.1,48,347 lakhs in 2007-08. The annual growth of fixed capital of leather industries in the Tamil Nadu shows that there is a fluctuation in the growth of fixed capital of leather industries during the study period 1980-81 to 2007-08. The highest annual growth rate 75.2 per cent is seen in the year 1990-91.
- The above table 4 reveals that the growth of number of workers in Leather Industries in Tamil Nadu during the study period 1980-81 to 2007-08 has been increased from 19,069 in 1980-81 to 94,455 in 2007-08. The annual growth of the number of workers in Leather Industries in Tamil Nadu during the study period 1980-81 to 2007-08has been fluctuated. The highest annual growth rate 54 per cent is seen in the year 2007-08 and lowest annual growth rate-18.6per cent in the year 2002-03.
- The above table 6 shows the growth of gross value added of leather industries in Tamil Nadu during the study period 1980-81 to 2007-08. The gross value added of leather industries in Tamil Nadu has been increased from Rs.8,977 lakhs in 1980-81 to Rs. 1,18,981 2007-08. The annual growth of gross value added of leather industries in Tamil Nadu shows that there is fluctuations in the growth of gross value added during the study period 1980-81 to 2007-08. The highest annual growth rate 80.1 per cent is seen in the year 1999-2000.
- From the above table 7 it is observed that the growth of value ofoutput of Leather Industries in Tamil Nadu during the study period 1980-81 to 2007-08 has been increased from Rs. 26,595 lakhs in 1980-81 to Rs. 11,64,795 in lakhs 2007-08. The annual growth of value of output of leather industries in the Tamil Nadu shows that there is a fluctuation in the growth of value of outputof leather industries during the period 1980-81 to 2007-08. The highest annual growth rate 395.8 per cent is seen in the year 1994-95.

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Conclusion

The results of the present paper exhibits that definitely the vision Tamil Nadu 2023 will be true if the government give much more important to leather industries by supporting these industries and increase the investment of Leather industries of Tamil Nadu.

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Vision Tamil Nadu 2023

Introduction:

Tamil Nadu is a mid-sized state in the Indian union, with a good standing on many economic and social parameters. It scores amongst the top three states on many dimensions and does will on most other including infrastructure provision. The sweep of Vision 2023 is bold, and seeks to be an aspirational statement for the people and Government of Tamil Nadu to catapult the state into the league of developed regions of the world and to the top of the league tables of Indian states.

A. The Ten Themes of Vision 2023

Theme1: Economic prosperity

Tamil Nadu will increase its per capita income (at current prices) by 6 times from Rs.73,278 (USS 1628) in 2010-11 to Rs.4,50,000 (USS 10,000) in 2023, in line with per capita income of Upper Middle Income (UMI) countries. Given the expected increase in population of 15% over the next 11 years, the increase in per capita income would amount to 6 times over this period, Several countries in Asia (in particular, Thailand, Malaysia and China) have grown at around 7% to 10% per annum for more than 20 years during the 1980s and later. The fast growing states of India, namely Maharashtra and Gujarat, have grown at double digit rates over the past 10 year. Considering the aspiration to increase real income by six times and the fact that several countries in Asia and a few states in India have consistently grown at high rates, the aspiration for Tamil Nadu is to grow its economy at over 11% per annum (in real terms) over the next 11 years and become a prosperous state.

Theme 2: Inclusive growth

Enabling widespread access to physical and social infrastructure services enhances equitable growth, and this lies at the heart of Tamil Tamil Nadu's Vision 2023 places substantial emphasis on inclusive growth by channeling considerable resources to the lowest income groups and ensuring the Tamil Nadu becomes poverty free. To those sections of society who are too old, helpless and destitute, the state will provide though its social security net, he necessary helping hand in terms of income support, food, shelter and healthcare so that there is no fundamental deprivation at any level in the state.

Theme 3: Health for all

At present, Tamil Nadu Scores reasonable well on social indicators vis-à-vis most states of India, This can be seen particularly in the case of Human Development Indicators, in which Tamil Nadu has made considerable further progress during the past decade. Vision 2023 seeks an ambitious goal for key parameters such as, crude birth and death rates, MMR, IMR and Under SMR, where, the performance of the state will be ranked as the best in the country. Essentially, Vision 2023 envisages Tamil Nadu to become not only the numero uno State in Indian in terms of social indicators, but also reach the levels attained by developed countries in human development by ensuring universal access to health facilities. The heart of Vision 2023 is provision of world class infrastructure to all the residents of Tamil Nadu irrespective of their economic status.

Theme 4: World class infrastructure

Tamil Nadu has been 4% to 5% of GSDP, while the requirement (as dictated by Vision 2023) is to increase the annual spending on infrastructure to about 10% of GSDP from 2015 onwards and further to

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11.5% from 2019 onwards. The total investment to enable universal access to infrastructure services over the 11 year period is estimated at Rs.15 lakh crore (approximately USS 330 billion). A high level description of new infrastructure required across different sectors is as follows

a) Water & Sanitation: Tamil Nadu shall provide piped and pressurized 24x7 water supply to 100% of its residents and ensure that all of them have access to safe sanitation including open defecation free and garbage free environment.

b) Housing: 25 lakh affordable house need to be constructed to create hut free villages and slum free cities.

c) Healthcare: Provision of Quality healthcare facilities to all the goal

d) Education: Achieve universal secondary education, increase enrolment in colleges (including vocational education) to over 50%

e) Roads & highways: Tamil Nadu to get 2000 km of 6-8 lane expressways, 5000km of 4 lane highways, and all highways being at leased double – lined and with paved shoulders

Theme 5 : Healthy investment climate

Improving the standing of Tamil Nadu on the investment climate sweepstakes is one of the key planks of Vision 2023. While Tamil Nadu already enjoys a good position in India from the perspective of investment flows, Vision 2023 envisages Tamil Nadu becoming one of the top three destinations for investment in Asia, and also be the most attractive state for investments in India. Attaining a top three position in Asia would tantamount to benchmarking Tamil Nadu with countries such as South Korea, Thailand and Malaysia, which are ranked 8, 17 and 18 respectively in the world by international Finance Corporation in its study on Ease of Doing Business.

Theme 6: Knowledge hub and Innovation capital of India

Innovation is key to achieving such ambitious growth rates and Vision 2023 envisions Tamil Nadu becoming the "Knowledge Capital" and "Innovation Hub" of the country. This requires the creation and nurturing of an appropriate atmosphere that aids innovation and sustenance of knowledge. Some enabling conditions are:

Theme 7: Creating conducive environment for human development

A secure, peaceful and conducive environment is an essential pre-requisite for trade and industry to flourish in the state and for its people to attain their potential by providing opportunities for skill up gradation, enhancing employability and mobility. Towards this end, Tamil Nadu will integrate seamlessly with other states of India and the rest of the world on multiple dimensions, such as, increasing the flow of workforce and goods/ exchange of ideas and culture with other regions, and facilitating the natural movement of people to and from Tamil Nadu.

Theme 8: Nurturing a rich heritage and preserving the ecology

Preserving, and wherever possible, improving the quality of the environment and nurturing the cultural heritage of the state would be an essential ingredient of Vision 2023. Environmental preservation would encompass the entire ecological footprint of human activity and would include increasing forest cover, protection of wetlands, conserving groundwater and rivers and other water bodies, protection of the coastal zones and fragile ecosystems, conservation of the zoological and botanical diversity of the state, protection of soil and other natural formations from abuse on account of human activity, efficient recycling of solid waste ensuring minimal impact on the environment, minimizing atmospheric pollution and in general maintaining the ecological balance across the entire state. Tamil Nadu has a rich cultural history and heritage that spans several areas such as literature, art, music, dance, drama, architecture, sculpture, paintings, and folk forms. All of these need to be preserved for posterity as they remind the citizens of the state of its

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greatness and contribute to the feeling of achievement. In some areas (e.g. classical music and dance forms, temples, and beaches) Tamil Nadu has world class splendors to showcase, which need to be nurtured, packaged and appropriately promoted to support the branding and economic outcomes that Tamil Nadu Vision 2023 seeks to achieve.

Theme 9: Protecting against vulnerability

Implementing measures to reduce the vulnerability of the state and its residents to unfavorable events (natural or otherwise) and their consequences, is a key objective of Vision 2023. A lot of the progress and good work can come unstuck in the event of natural disasters or there man-made disturbances such as accidents, unrest, economic downturns and the like. While improving the economic lot of society enhances the ability to bear shocks better, there are several other steps that need to be strategically and consciously taken to reduce the vulnerability of the state. Such steps include the following:

a) Protection of coastal districts from cyclonic storms and flooding

b) Preparation of disaster management plans and procedures consciously at all levels in the govern ment and regionally in the state including creation of higher capabilities, capacities and preparedness of medical facilities and security establishment across the state for handling emergencies of various kinds.

c) Improving the fiscal position of the state government in a conscious manner to build a buffer for contingent expenses, in particular, to help the poor and destitute who have low intrinsic capabilities to face calamities of any kind.

Theme 10: Improving the quality of institutions and governance

This is both an outcome desired and also a fundamental enabling factor for implementing Vision 2023. Successful implementation of Vision 2023 will not happen in the "business as usual" mode. The role of Government of Tamil Nadu has to change in a comprehensive manner for the Vision 2023 to succeed. Some of the changes that need to be brought about in the role and functions of Government.

a) Government's role in the economic sector needs to change from service delivery to facilitation and oversight of private sector activity in the sate, and provision of subvention to the needy as required.

b) Development of technical capacity and administrative capabilities to meet 21st century challenges amongst government employee and organization – this has to be a continuous activity. With a substantial thrust in the initial period of Vision 2023, to derive maximum benefit.

c) Segregation of planning, Service delivery and Regulation function within the Government set-up. While service delivery is generally amenable to competition (and therefore efficiencies can be gained by participation of the private sector), planning and regulation are best retained in the public domain. Tamil Nadu will seek to be exemplary in the quality of its planning and regulation in the state.

d) Procurement processes in Government need to be re-engineered within the existing rule frame work to ensure that private sector's expertise and capital can be brought to bear efficiently in provision of services to consumers.

e) Review roles of departments and institutions to enhance role clarity: in line with the changes in role of Government (state and local levels) and the systems, there have to be changes in roles of departments and the processes and in the way institutions work and interact with each other and other stakeholders, making them citizen centric.

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f) Fully reap the benefits of use of Information and Communication Technology in Government with an ambitious e – Governance policy. Implementation of the e-governance policy will remove intermediaries thereby taking governance closer to people.

g) Create forums for contract enforcement and speedy dispute resolution.

Conclusion:

The government envisaged the preparation of a 'Vision Document for Tamil Nadu' that would identify and remove the bottlenecks in development, prioritise critical infrastructure projects, and work to propel the state of Tamil Nadu to the forefront of development once again.

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Vision Tamilnadu-2023: An Overview and Evaluation

Introduction:

This paper attempts to present an objectives overview of all the above aspect and review the feasibility of the document. The report has four sections. First section presents the executive summery. The second section states the key outcomes of the vision. The growth strategy to achieve the vision goals are presented in the third section. Fourth section gives sectoral investment requirement to achieve the goals. The document also contains four appendices.

The Vision for Tamil Nadu for 2023 is to become India's most prosperous and progressive state with no poverty, and where its people enjoy all the basic services of a modern society and live in harmonious engagement with the environment and with the rest of the world.

Strategic initiative 1 – Increasing the share of manufacturing in the state's economy:

At present (2010-11), the composition of the GSDP of Tamil Nadu is Primary sector 12.6%, Secondary sector 25.8% and Tertiary Sector 61.6%. Agriculture & allied activities comprise the bulk of the Primary sector, while in the Secondary sector the break-up is Manufacturing sector (17%) and Non-manufacturing sector (9%). The Tertiary sector comprises a multitude of service activities. Given the strong accent in Vision 2023 to accelerate growth in overall GSDP and per capita incomes, it is imperative that all the three sectors grow at high rates as shown in the table below:

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Sector	2004-05	2010-11	2022-23	Average annual Growthrate (%)
Primary	12%	12.6%	7%	5.1%
Manufacturing	20%	16.6%	22%	13.8%
Non Manufacturing	11%	9.2%	8%	9.5%
Services	57%	61.6%	63%	11.1%
Total	100%	100%	100%	10.9%

Strategic initiative 2 - Making SMEs (Small and Medium Enterprises) Vibrant :

The objective behind giving a big thrust to the manufacturing sector is to increase the footprint of high value adding activities in the state in line with its natural and human endowments and more importantly, to enhance the level of direct and indirect employment. A highly developed manufacturing sector necessarily needs a vibrant and dynamic SME sector which forms the base for providing essential goods and services. Therefore, one of the strategic initiatives underlying Vision 2023 is to boost the creation and sustenance of several SME clusters across the state. This will have the dual benefit of a geographically diversified growth in the state and high employment generation, the latter being a characteristic of theSME sector.

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Strategic initiative 3 - Making Tamil Nadu the Knowledge Capital and Innovation hub of India:

Tamil Nadu is not amongst the lowest cost locations for manufacturing activities when compared to many other states in India; neither is the demographic profile of Tamil Nadu's workforce the most favourable in India. Therefore, it is imperative for Tamil Nadu to enhance its factor productivity significantly if it is to compete with other destinations in India and East Asia to grow its investments, output and employment in manufacturing and service sectors. This enhanced productivity can be achieved only if all organisationsin Tamil Nadu make knowledge and innovation the centrepiece of their activities.

Strategic initiative 4 – Specialisation in service offerings

While Vision 2023 articulates all round growth and development, a good strategy also calls for specialisation in some areas. The adage of "putting one's best foot forward" is apt here, and Tamil Nadu shall strive to be world class in a few areas, which will make "Tamil Nadu" a brand of excellence, and enable it to stand apart in a crowded and increasingly noisy world. In the Services sector, Tamil Nadu is already a leader in India in a few industries such as Financial services, Information Technology, IT enabled services for back-office operations, Engineering Design, Healthcare, Publishing, Film production, and Higher education. The growth in the Services sector is largely predicated on a significant spurt in these industries besides others such as Transportation, Urban services, and Research & Development.

Strategic initiative 5 - Thrust on skill development

The single most important resource for the success of Vision 2023 is the availability of trained, knowledgeable and skilled manpower in Tamil Nadu. Without a body of sufficiently skilled and balanced workforce, no economy can hope to develop to its potential. Vision 2023 envisages training and skilling 20 million persons over the next 11 years. This will include 15 million people entering the job market and 5 million who are already part of the working population. 65% of the persons targeted for skill development (these persons would have studied until secondary school) would be provided with training for basic skills for a variety of livelihoods, about 33% would be persons who have undergone formal education as part of vocational training programmes or in colleges, while the top 2% would be top echelon professionals. Vision 2023 aims to achieve universal secondary education and more than 50% enrolment in higher education (comprising of vocational and college education).

Strategic initiative 6 – Improving agricultural productivity

Agriculture and allied activities provide subsistence for around 40% of Tamil Nadu's population and contribute to about 13% of the GSDP. The share of agriculture in the state's GSDP has dropped from 40% in 1960s to 12.6% in 2010-11 in real terms. After robust growth of 8-10% during the period 2000-2005, the agriculture sector witnessed negative growth during 2007-08 and 2008-09. The agriculture sector's growth turned positive in 2009-10 and is poised to sustain growth owing to the increased thrust on improving productivity. Vision 2023 has a three pronged strategy covering:

i) Improving productivity by introducing scientific agricultural methods and building an institutional network to support the continued adoption of the same.

ii) Ensuring timely irrigation by intelligent use of available water by adopting effective recharging mechanisms, drip/sprinkler irrigation systems, timely cleaning and deepening of tanks and canals, and adopting appropriate cropping pattern based on water availability.

iii) Developing suitable post harvest infrastructure to maximise the benefits of value addition and timely marketing of produce. The state will also extend agricultural extension activities to cover the entire farming community.

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Strategic initiative 7 – Transforming ten cities into world class cities that become the nodes of growth across the state

Tamil Nadu is already the most urbanised state in the country (48% is classified as Urban), and Chennai urban agglomeration accounts for 25% of the total urban population in the state. While a number of towns have been categorised as 'Urban' based on the population figures, infrastructure services are found wanting in most of these towns. Vision 2023 envisages developing ten world class cities (essentially existing towns whose infrastructure is to be upgraded significantly including provision of access to 24x7 water supply, efficient mass transit systems while making them open-defecation free and garbage free) which will become the nuclei and engines for economic growth, thereby facilitating regional and balanced development across the state.

Strategic initiative 8 - Thrust on social welfare programmes to ensure inclusive growth

Tamil Nadu has been in the forefront of implementing social welfare measures benefitting the under-privileged and vulnerable sections of the society. The state was the first in India to introduce the mid-day meal scheme for school children, an old age pension scheme and has many other welfare measures to its credit. Vision 2023 envisages that the vulnerable and disadvantaged sections will be extended protection by the state and will be equipped to take advantage of the benefits of the economic growth.

Strategic initiative 9 – Signature Projects

Vision 2023 envisages a few large infrastructure projects, which would create huge positive externalities and open up possibilities of rapid growth for the economy. Most of these projects call for significant capital expenditure and an active role of the State government in facilitation. The signature projects that define the infrastructure creation ambition underlying Vision 2023 are given in below:

i. Develop world class Centres of Excellence in at least 10 areas that act as nuclei of innovation
ii. Set up two medical cities in southern and western Tamil Nadu
iii. Double water storage capacity across the state
iv. High speed broadband connectivity to be reached to every village
v. Two supercritical and other power projects of cumulative 20000 MW capacity
vi. Gas grid connecting ten large cities
vii. 2000 km of 6/8 lane highways
viii. High speed rail connecting Chennai - Coimbatore - Madurai – Kanyakumari
ix. Development of industrial corridors between Chennai - Hosur, Chennai – Tiruchirapalli, Coimbatore Madurai, Coimbatore - Salem and Madurai – Thoothukudi.
x. Three greenfield ports and 5 minor ports with total cargo handling capacity of 150 million tonnes per annum
xi. Greenfield airport near Chennai with an annual capacity of at least 40 million passengers.

Strategic initiative 10 – Encourage PPP in infrastructure project creation and /or service provision

The total investment requirement for infrastructure over the 11 year period is estimated at Rs 15,00,000 crore (US$ 330 billion). Given that the present annual capital expenditure of Government of Tamil Nadu is of the order of Rs 14,000 crore, which even allowing for increase in the future, cannot be expected to contribute to more than one third of the required investment of annual infrastructure creation. Therefore, a substantial portion of the financing for infrastructure has to be obtained from non-governmental sources,

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including private sector organisations, banks, and foreign direct investment. The Government will play the central role of a procurer of infrastructure services on behalf of the people of Tamil Nadu and will facilitate private investment and service delivery in infrastructure sector. Under the PPP mode, the Government will play the role of a change agent and will originate infrastructure projects in line with Vision 2023, and will also focus on the important functions of regulation and overall governance. Implementation of Vision 2023 will call for significant institutional reform to accelerate infrastructure development in PPP mode.

Conclusion

This paper brings out certain positive aspects of the vision Tamilnadu 2023. the vision glitters in the following respects.

a) Setting monitarable targets to achieve during next 11years.

b) Four fold growth in percapita income of the state,inclusive growth,HDI on par with top ranking nations.

c) Access to housing, water, healthcare and education.

d) Making Tamilnadu investor friendly.

e) Making Tamilnadu the knowledge capital of India, ensuring peace, preserving the ecology.

f) Protecting the state from the hot ships of natural calamities, economic crisis and manmade havocs.

A thin layer of suspicion about the feasibility of the vision outcomes are listed below:

a) The document suffers from statistical l anomaly.

In the total investment table the investment requirement against transport is entered as Rs.3,70,000 crores and against industrial and commercial sectors it is entered as Rs.1,60,000 crores while in the page number 65 the table pertaining to total estimated investment in infrastructure gives investment requirement for transport as Rs. 380000 crores and for industrial and commercial sector Rs. 150000 crores. A vision document approved and released by a government might have avoided such a statistical anomaly.

b) There is another anomaly but this is with respect to constitutional provisions.

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Numero Uno State 2023: trends in health status and Infrastructure sustain in Tamilnadu

Introduction

Health is an important aspect of human resource development. Good health care facilities and services are essential for creating health, citizen and society that can effectively contribute to social and economic development, with increased urbanization, industrialization, changing environment and ecosystem, deterioration of health resistance and the changing nature of health problems has become a great concern for world today. Therefore, three of the eight millennium development goals emphasize on health. They are to reduce child mortality, improve maternal health, combat HIV / AIDS, malaria and other diseases. The capability theory of living standard (Sen 1987) holds that "Income, commodities, and wealth" do not ensure a decent living standard to their owners. It is the aggregate of certain capabilities like (i) capability to live long, (ii) capability to avoid illiteracy, (iii) capability to be free from hunger and freedom provides a decent standard of living. Health is one of the important aspects that help to develop capabilities and sustainability to work long and to contribute economic growth. Over the years, government, communities, philanthropists, and religious organizations have all been active in building health facilities, so as to respond to their social obligation in the health sector. The concept of primary health care led to a rapid expansion of outpatient service facilities in the form of Primary Health Centres (PHC), dispensaries and sub centres, World wide the number of hospital beds has increased from 5 million in 1950 to 17 million by 1980, which has more than doubled the per capita supply (World Bank, 1993). In India since 1950s to 2000, the number of hospitals and dispensaries increased from 9,200 to 43,000 and the number of beds in public and private hospitals from 117,000 to 870,000. The expenditure on health comprises 5.2 percent of Gross Domestic Product (GDP) with public health investment at 0.9 percent (Economic Survey – 2007-2008). As a result, the availability of health facilities has improved significantly. According to technological advances, improvement in the access to and utilization of health services in the country are given due consideration in our health polices. Infact India has built up a vast health infrastructure and manpower. However, the extent of access to and utilization of health care services varied substantially between states, regions, and society. Therefore poor infrastructure will be a major obstacle in achieving the millennium development goals. Tamil Nadu has excelled in bringing about a faster reduction in Death Rate, Birth Rate and IMR. The Crude Birth Rate per thousand people had declined substantially from 31.4 in 1971 to 16.2 in 2006 indicating a declining trend in fertility. The Crude Death Rate also declined significantly from 14.4 in 1971 to 7.5 in 2006. The life expectancy at birth had steadily increased to reach the level of 60.8 for both males and females in 1991. It is projected to go upto 66 for both males and females in the year 2006. The achievements of Tamilnadu are being extolled as remarkable and considered as a model that could be achieved by other states. The experience of Tamilnadu in its demographic achievements is very much different than that of Kerala. While the remarkable success of Kerala has been attributed to historical factors contributing to high literacy and women's empowerment. Tamilnadu witnessed significant advancement without accompany progress in literacy and gender equality. (Rajiv Misra et al. 2003). To what extent asymmetry exists in Vital Rate among districts during 2004 is shown below.

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Table - 1
Health Indicators For All Districts in Tamilnadu (2004)

S. No.	Districts	Birth Rate (per '000 population)	Death Rate (per '000 population)	IMR (per '000 live births)
1.	Chennai	15.3*	3.6**	15.7
2.	Coimbatore	17.1	5.8	20.8
3.	Cuddalore	18.4	6.7	31.6
4.	Dharmapuri	19.6**	6.8	39.5*
5.	Dindigul	17.3	7.7*	38.9
6.	Erode	15.3*	7.0	28.5
7.	Kancheepuram	17.7	5.4	22.3
8.	Kanniyakumari	15.8	5.6	15.6**
9.	Karur	16.0	8.2	33.8
10.	Madurai	18.4	7.1	31.5
11.	Nagapattinam	17.3	6.9	30.2
12.	Namakkal	15.4	7.1	23.9
13.	Perambalur	19.5	8.5	34.2
14.	Pudukkottai	19.1	6.3	29.4
15.	Ramanathapuram	18.7	6.1	32.2
16.	Salem	17.3	7.2	36.8
17.	Sivagangai	18.1	6.7	23.8
18.	Thanjavur	17.9	7.4	27.6
19.	The Nilgiris	15.2	5.2	26.1
20.	Theni	17.4	7.4	35.5
21.	Tiruvarur	17.3	6.5	24.5
22.	Thoothukudi	17.4	7.4	35.5
23.	Tichirapalli	17.2	7.5	32.6
24.	Tirunelveli	17.6	7.3	34.3
25.	Thiruvallur	17.9	6.2	23.3
26.	Thiruvannamalai	18.6	7.3	29.3
27.	Vellore	17.9	7.3	36.6
28.	Villupuram	19.5	7.4	32.4
29.	Virudhunagar	18.2	7.2	32.0
Tamilnadu				
	Mean	17.8	6.9	30.1
	Maximum*	19.6	7.7	39.5
	Minimum**	15.3	3.6	15.6

Source: *Tamil Nadu: An Economic Appraisal, 2005-06.*

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Health Infrastructure in Tamil Nadu

The health infrastructure does not mean only the physical structures, but also the health service net work. According to the Ninth Five Year Plan of Tamil Nadu, "Health Care for All" was the main objective of the Plan. It focused on the improvement in the general health status of the population, better access to health care services, improved MCH care, effective control and prevention of communicable and non-communicable. Towards achieving the health goals of the State, health care facilities were provided by creating health infrastructure in urban and rural areas during the past few decades. .The medical and rural health services are rendered through42 teaching hospitals, 29district headquarters hospitals 155 taluk hospitals, 80 non-taluk hospitals, 187 ESI hospitals, 1417 primary health centres, 8682 sub-centres and 12 government dispensaries and mobile units. All the Primary Health Centres (PHC) have been equipped with basic facilities for surgeries and deliveries. Most of the Block PHCs have emergency services, facilities for sterlisation and detection of cataract cases The specialised services under medical and rural health include 240 X- ray plants, 108 dental clinics, 51 ophthalmic clinics, 27 ENT clinics, 37 STD clinics, 16 psychiatric clinics, 37 ortho clinics, 61 pediatric clinics, 13 diabetic clinics and 12 cardiology clinics. The services are rendered by 3,622 doctors, 5,354 nurses, 10,315 paramedical staff with 19,925 beds. The Directorate of Indian Medicine and Homoeopathy deals with teaching as well as health care in various systems of Indian medicines, namely, Siddha, Ayurveda, Unani, Homoeopathy, Yoga and Naturopathy. There are 38 Homeopathy and 287 Indian Medicine teaching hospitals functioning under this system, with 735 doctors, 147 nurses, 531 Para medical staff and 965 beds. The public health and preventive medicine is concerned with the prevention of diseases like Malaria, Tuberculosis, Filaria and Japanese Encephalitis, AIDS, Blindness, Leprosy, Small Pox, Cholera, Typhoid and infective Hepatitis. The Directorate of Public Health and Preventive Medicine is also concerned with the implementation of programmes for immunisation, school health, maternal and child health care, food adulteration and health education. Though the above information reveals the magnitude of the health infrastructure available in the state, The health infrastructure in Tamil Nadu is examined from various dimensions and presented in Table2.

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Table -2

Health Infrastructure in Tamil Nadu

Sl. NO	Category	Number of Hospitals	Number of Beds	Number of Hospitals	Number of Beds	Number of Hospitals	Number of Beds
		1990-1991		1998-99		2006-2007	
1.	District Head Quarters Hospitals	15	4641	22	6609	28	8321
2.	Taluk Hosptials	117	6156	121	7550	155	9999
3.	Primary Health Centre	1392	2298	1386	5208	1417	7191
4.	ESI Hospitals	4	1553	7	1749	9	2363
5.	ESI Dispensaries	116	--	134	--	190	--
6.	Government Dispensaries	197	233	14	--	11	8
7.	Non-taluk Hospitals	108	9095	72	2014	80	2256
	Total	1949	23976	1756	23130	1890	30138

Source: Performance Budget, Health Department, Government of Tamil Nadu for various years.Compiled by: Department of Evaluation and Applied Research (DEAR), Chennai, 2007.

On the whole, it could be summarised that Tamil Nadu has bestowed with large health infrastructure facilities. However, its requirement is not sufficient and there is scope for further strengthening of this facility so that desirable level of growth in health status could be achieved.

Conclusion

This paper aimed at examining the health status in Tamil Nadu and to highlight the major issues on it. The health scenario of Tamil Nadu was examined, based on certain selected health indicators and the extent of health infrastructure available in the state and its utilisation were also discussed The study observed that there is a reduction in the vital statistics such as birth rate, death rate and infant mortality rate and an increase in the life expectancy at birth in Tamil Nadu during the last three decades. These trends indicated the developments in the health status of the people and the steady progress in the health indicators. The study argued that though the demographic indicators and vital statistics indicate very high of Tamil Nadu in terms of health performance, there are several areas in which improvements are possible. Particularly, Infant Mortality and Maternal Mortality Rates could be brought down further. There is scope for improvements in the support indicators of birth rates, IMR and MMR. And, the incidence of major diseases such as blindness leprosy, TB, Malaria and HIV positive could be controlled and reduced further. Towards achieving the health goals, health infrastructure under modern medicine and various systems of Indian medicines were created in both urban and rural areas of the state. It was argued that its requirement is not sufficient and there is scope for further strengthening health infrastructure facilities so as to achieve the desirable level of growth in health status. Tamil Nadu seems to have performed better compared to All India average in demographic and several health indicators. However, Tamil Nadu is capable of much higher levels of achievements with its knowledge base, administrative and institutional strength and its growth potentials.

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The Energy Scenario in Tamil Nadu: Some New Evidences

Introduction:

Infrastructure is very vital for any economy's growth. The need for infrastructure and the massive investment in the same is felt more by the developing countries than the developed. The BRIC nations, comprising of Brazil, Russia, India and China, are concentrating on the creation of more infrastructure. Power generation is one such area which comes under the category of economic infrastructure. Whereas some nations are focusing on shifting their focus to lesser fossil fuel or nuclear driven generation, several others across the world have not been able to bridge their demand supply gaps and are driven to set up the basic infrastructure. Electricity can be generated using conventional (also called non renewable) or non-conventional (renewable) sources. Fossil fuel (coal, gas etc) based generation cannot be renewed whereas renewable energy like Solar energy, Wind energy, Tidal energy, Bio –Gas and Bio- mass are classified as renewable as they do not diminish with use. Conventional energy can be generated from Thermal, Hydro and Nuclear sources. India has large reserves of Coal reserves and generating more energy using coal, but the disadvantage in the generation of energy using coal and other fossil fuel is that it is not eco friendly and contributes to more pollution and more degradation in the environment. The friendliest source of energy is renewable energy, but the biggest challenge is dependability, unlike thermal energy no other source is as dependable as thermal energy. For that matter hydro energy is also affected by either too much or rain or too much of sun. In both the case the loss is energy not produced. Since Electricity is emerging as a vital sector in Indian Economy and in few years, likely to see a rapid growth in power generating capacity of the country. India in general and Tamil Nadu in particular is affected by lack of power generating capacity. Innovations and Investments and Infrastructure are the three 'I's that is looked as the crucial factor of the growth of any country. Energy sector is one crucial sector where the government needs to invest for the benefit of future generations as well. To sustain the growth achieved one need too increase the investment made in the crucial sectors of the economy. One such crucial sector is Electricity. The authors in this paper want to examine the various sources of energy and the factors that determine the load factors.

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A. Objectives of the Study:

1. To analyze the supply and demand of electricity states in Tamil Nadu, during 2005-2006 to 2011-2012.
2. To assess the status of energy in terms of energy availability and requirement in Tamil Nadu.
3. To suggest appropriate measures and polices to overcome the current deficit of energy scenario in Tamil Nadu.

B. Methodology:

The present study is primarily based on secondary data. Information relating to the availability of energy, total installed capacity of different types of energy, peak demand for energy, the consumption of energy and certain other details of energy were collected from the following sources.

1. Central Electricity Authority, New Delhi,
2. TANGEDCO,
3. Planning commission report, New Delhi,
4. Energy Department, Government of Tamil Nadu, vide policy note 2012-2013 and

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5. Various Annual reports of Government of India and Tamil Nadu respectively.

The study period by and large covers the status of energy scenario of India in General and Tamil Nadu in particular. This study is exclusively based on times series data and panel data covering the periods 2005-06 to 2011-2012, for Tamil Nadu and 2012 for India respectively. Therefore it is very appropriate on the part of the authors to use certain statistical tools such as percentage and ratios analysis' and estimating the growth rates for certain reference periods on the status of energy in Tamil Nadu.

Results and Discussions:

Table 1

Category	Consumption (in $_{Mw}$)	* Percentage of consumption
Industries including Traction	26,622.00	41.40
Agriculture	12,625.00	20.40
Domestic	16,312.00	26.30
Commercial	4,586.00	7.40
Public lighting and water works	1,592.00	2.60
Sale of license & sale to other states	429.00	0.70
Miscellaneous	731.00	1.20
Total	61,897.00	100.00

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*: Computed information

Table four, reveals the energy consumption pattern of Tamil Nadu for the year 2010-2011. The authors have computed percentage from the given consumption data. It is obvious from the given data that Industries occupies the first position in consumption of energy. It amounts to 26,222 $_{Mw}$, which forms 41.40 percentage. It is a fact that for any developing economy the industrial demand will be more in comparison with other sectors' demand for energy. Tamil Nadu occupies the first position in having the number of factories and total number of persons engaged in industrial process. This makes the Industrial Sector the largest consumer of Electricity. Domestic consumption occupies the second position with 16,312 $_{Mw}$ which shares 20.40 percentages. Since electricity is a commodity which has derived demand, this trend is considered to be healthy, for the consumers ability to buy more electrical and electronic gadgets has increased. Agriculture occupies the third position with 12,625 $_{Mw}$, which forms 20.40 percentages, Tamil Nadu is one among the few states that has commendable record in rural electrification, and this fact could be one reason for Agriculture and Rural demand to capture the third place.

Table 2

Supply side Analysis

Particulars	Installed capacity (Mw)	# As percentage to the total installed capacity
TANGEDCO Hydro stations 40 power houses	2,191	21 %
TANGEDCO Thermal stations	2,970	29%
TANGEDCO Gas stations	516	5%
IPP	1,180	11%
Share from Central Government generating stn	2,861	28%
External assistance	305	3%
Captive Power Plants	214	2%
New Plants (Thermal and Hydro)	127	1%
Grand total	10,364	100%

Source: Tamil Nadu Government Policy Note 2012-2013.

computed from Installed capacity data.

The authors in their analysis have come out with an interesting finding, about the breakup of generating capacity of the State. The total Installed Capacity for the year 2012-2013 stood at 10,364 $_{Mw}$, of which 2,970 $_{Mw}$ is from TANGEDCO'S Thermal Power houses, this forms a 29 percentage to the total Installed Capacity. Share from Central Government Generating stations forms the second place with the Installed Capacity of 2,861 $_{Mw}$ which is 28 percentages to the total Installed capacity. Put to gather the Thermal Power houses alone occupies 57 percentage of the Total Installed Capacity. TANGEDCO's 40 hydro power houses contributes 2,191 $_{Mw}$ which forms 21 percentage of the total Installed Capacity, though its contribution to power generation is considerable, hydro stations cannot be depended upon , for consistent supply of power throughout the year, since there are no perennial rivers in the state. Private sector's Thermal Power house contributes to 1,180 $_{Mw}$, which is 11 percentage to the total Installed Capacity.

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Table 3

Energy scenario in Tamil Nadu: 2005-2012.

Year	Supply – Installed Capacity ($_{Mw}$)	Demand—Peak demand (Mu)
2005-2006	10,031	8,209
2006-2007	10,098	8,803
2007-2008	10,122	8,969
2008-2009	10,214	9,459
2009-2010	10,214	10,046
2010-2011	10,237	11,500
2011-2012	10,365	12,000
*CAGR	0.55%	6.53%

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Source: Tamil Nadu – Energy Department Policy Note 2012-2013.

*Computed by the authors from the data given.

Tables 3 analyze the supply and demand of energy in Tamil Nadu during the peak periods (2005-2012). It clearly attests the fact that up to 2009-2010 the state of Tamil Nadu did not face with much energy crisis as it is facing today. Obviously on account of the fact that during the earlier periods the peak demand for electricity has increased from 10,046 $_{Mw}$ in 2009-2010 to 11,500 $_{Mw}$ in 2010-2011, which clearly shows that the demand for electricity has increased significantly in Tamil Nadu. But at the same time the supply of electricity has not increased in proportion with that of demand for obvious reasons. Similarly in 20011-2012 the gap between the demand and supply of electricity has widened considerably owing to the fact that the electricity consumption of public, industry, government departments and service sectors has increased significantly which indirectly put lot of pressure on the state government. In order to find out the Compound Annual Growth Rate (CAGR) for supply and demand of electricity in Tamil Nadu during the reference period (2005-06 to 2011-12), the authors have calculated CAGR primarily to gauge the pattern of growth witnessed during the said periods. Accordingly CAGR value stood at 0.55 percent (Supply of electricity) and 6.53 percent (peak demand for electricity). In view of the high industrialization, urbanization and healthy domestic consumption, proactive and multipronged approach to supply side management of power is crucial to the economy of Tamil Nadu. This proves the fact that the demand for electricity has outclassed the supply of electricity in Tamil Nadu during the study period (2005-06 to 2011-12). Table 6 mirrors the reason for the present energy crisis. To cope up with the present demand supply gap Tamil Nadu government is investing in more thermal plants. Thermal energy as against wind and hydro is more dependable and can provide a consistent supply of power. However this has a high dependency on coal reserve, which does not exist in Tamil Nadu. As a result the state has to depend on Coal India Limited's facilities in West Bengal or Orissa for supplies. Thermal power stations contribute more towards energy generation; the data given in the above table establishes the above said point, so Tamil Nadu governments' new capacity addition is more towards thermal stations than any other form of conventional energy. The data clearly exhibits the fact that the focus now has been given to thermal energy to bridge the demand vs. supply gap. Thermal capacity accounts for more than 70 percentage of the total capacity addition for the year 2012-2013. The State in its Policy note for 2012-2013, looks to manage

the situation better, by enhancing its capacity. An extract from the policy is as under: " To bridge the gap between demand and supply and to make the State power surplus again, a detailed strategy has been made. Action has been taken:-

- o a massive capacity addition program has been initiated by taking up new projects.
- o To expedite the ongoing power projects and the projects which are sanctioned and yet to be started.

By these measures it is proposed to add 15507 $_{MW}$ to the State grid through State sector, Joint Venture and Central Sector. All efforts are being taken to commission the State/Joint Venture projects viz. Mettur Thermal project Stage III, North Chennai Thermal Power Project stage II and TNEB-NTPC JV project at Vallur at the earliest to tide over the present power shortages and to gradually reduce the R&C measures in vogue. It is expected to add 4887 $_{Mw}$ to the State grid through State sector, central sector and Joint venture sector before the end of 2013".It becomes imperative on the part of the authors to assess the performance and efficiency of coal-based thermal power plants in India in general and Tamil Nadu in particular.

Table 4

Performance of Thermal Power Plants in Tamil Nadu with reference to PLF in Tamil Nadu.

Power Station	Generation in $_{Mw}$(2011-12) **	Plant Load Factor in percentage	Targeted production in $_{Mw}$ (2012-13) **
Tuticorin	7,891.90	85.6%	7,565.00
Mettur	6,844.80	92.8%	6,550.00
North Chennai	4,693.20	84.8%	4,920.00

Source: Websites of Central Electricity Authority, New Delhi, and TANGEDCO

**: Figures of generation and targeted production are in million units.

The above table clearly explains that all the three units have generated more than the targeted capacity, but the plant load factor remains a factor to be worried about, even as the three major thermal power station in Tamil Nadu continued to perform better than the national average during April 2011-March 2012, the state as whole recorded the highest energy deficit of 8,980 million units in five years. In 2009-2010, against the national average of 77.5 percent, the Plant Load Factor figures of North Chennai, Mettur and Tuticorin were 87.6 percent, 86.7 percent and 77. 9 percent respectively. The next year, the three stations' PLF figures were 81.7 percent, 82.4 percent and 77.29 percent as against the national average of 75.07 percent. The Ennore thermal power station was an exception to the state-wide pattern of higher PLF, because it had been plagued by chronic problems, its PLF was 22.6 percent during 2011-12. The State government, a few months ago decided to dismantle it and go in for a fresh plant. (Data given in the above paragraph is taken from TNEB annual report) Having explained about the PLF factors the authors have presented the factors that determine the Plant Load Factor. (1) Availability of coal supply for power generation. (2) Age and size of power plant. (3) Equipment deficiency and failure (4) Fluctuations in quality of coal in India. (5) Heat rate (a measurement used in the energy industry to calculate how efficiently a generator uses heat energy.)

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Steps taken by State Government

Coal supply is the prime concern for all power plants operating in our country, going by CEA's data (Oct 2011) 33 Power plants with total generation capacity of 39,054 $_{MW}$ across the country are reeling under the acute fuel shortage and have coal stock for less than four days. (1) Tamil Nadu's four Thermal Plants have stock of less than four days. Most of the coal for TN comes from the mines in Talcher & Ib Valley of Mahanadi Coalfields Ltd and Raniganj & Mugma of ECL. TANGEDCO have entered into a fuel a FSA (Fuel Supply Agreement) with Eastern Coalfields Limited and Mahanadi Coalfields Limited for the rest of the requirement it has decided to import. TANGEDCO has been allocated a coal block namely, GarePelma Sector II for captive mining in 2006, with tentative reserve capacity of 768 Million tonnes jointly with Maharashtra State Mining Corporation. The quantity of coal is agreed to be shared between the two states in the ratio of 77:33. (2) The Tamil Nadu Government has thought of utilizing the ports at Chennai, Ennore and Tuticorin. This will help the transportation of coal to the Tamil Nadu Power plants. (3) It has taken steps to attract investment in power generation in the state (4) it is planning ways to ensure increased power production in the Tamil Nadu thermal plants (5) it is making arrangements for bringing more coal from other states.

Concluding Observations

The ongoing discussions placed above clearly assume the importance of energy generation in Tamil Nadu. The paper analyzed the supply and demand of electricity, energy availability and requirements of top five states in India. The study is primarily based on secondary data. The demand for energy in Tamil Nadu has been very high in recent times owing to increase in population and industrialization. The domestic consumption in Tamil Nadu occupies a predominant position (21 percentage of total electricity consumption). Electricity in Tamil Nadu like in several other states in the country are subsidized for domestic consumption, whereas it is sold at market prices for industrial units. Tamil Nadu is among the leading states that has a commendable record in rural electrification (99 percent). The data furnished in this paper clearly demonstrates the fact that focus has been given to thermal energy and wind energy. The CAGR for demand and supply for the years 2005-06 to 2011-12 is 0.53 percent and 0.55 percent respectively. Therefore the state of Tamil Nadu presently faces a big energy crisis or deficit. The only way out of this crisis is to increase the energy production by inviting all stakeholders to participate and generate more energy, for which the state has to provide good investment climate in future. Moreover the state initiative through concession and subsidies to investors is the need of the hour and to make the state of Tamil Nadu a energy surplus state, where energy is available for all and on demand.

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Indian Logistics Industry and Vision Tamil Nadu 2023- A Comparative Study

Introduction

The Indian logistics industry is likely to continue its growth momentum in 2011 as in the previous year and the sector is forecast to witness a consolidation wave in the coming months in view of the reviving fortunes of the sector with booming end-user industries. In 2010, the Indian logistics segment accounted revenues of about $ 82.10 billion, witnessing a growth of about 9.2 percent over the previous year, driven by strong growth of key manufacturing industry sectors.

For the era 2010-2020, the Indian logistics market is likely to witness consistent annual growth of around 8-9 per cent and reach to the revenue level of about $190-200 billion by 2020. This target will be achieved with the help of steady growth of the economy and major industries like engineering, pharmaceuticals, automotive, food processing and others.

Vision Tamil Nadu 2023

The Tamil Nadu government has set itself the target of becoming one of the top three investment destinations in Asia by 2023. Vision 2023, conceptualized by state Chief Minister J Jayalalithaa, asserts the state will be among India's most economically prosperous and progressive states, with no poverty.

To achieve this vision, it is estimated a total investment of Rs 15 lakh crore will be required, of which the majority is expected to flow in from non-governmental sources, such as private sector organisations, banks and foreign direct investors.

The vision is based on 10 themes. These include economic prosperity, inclusive growth, health for all, infrastructure, creating a healthy investment climate, making the state a knowledge hub and innovation capital, creating a conducive environment for human development, nurturing a rich heritage and preserving the ecology, protecting against vulnerability, and improving the quality of institutions and governance.

"Strategy for development is about building on the strengths of the state and exploiting opportunities, while simultaneously protecting the vulnerabilities that could arise due to intrinsic weaknesses and threats in the environment," the document said.

The primary sector contributes around 12.6 per cent to the current (2010-11) composition of Tamil Nadu's GSDP, the secondary sector 25.8 per cent and the tertiary sector 61.6 per cent. Agriculture and allied activities comprise the bulk of the primary sector. The secondary sector includes manufacturing (17 per cent) and non-manufacturing (9 per cent).

Manufacturing, which reported 20 per cent growth in 2004-05 and 16.6 per cent in 2010-11, is expected to grow by 22 per cent, while the non-manufacturing sector will witness eight per cent growth, compared to 11 per cent in 2004-05 and 9.2 per cent in 2010-11.

The services sector is expected to report 63 per cent growth in 2022-23, compared to 61.6 per cent in 2010-11 and 57 per cent in 2004-05.

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To achieve the vision, it is estimated that the total investment required will be Rs 15 lakh crore, the major chunks of which will go to the power sector (Rs 4.50 lakh crore); transport (Rs 3.70 lakh crore); industrial and commercial (Rs 1.60 lakh crore); urban infrastructure (Rs 2.75 lakh crore); agriculture (Rs 40,000 crore); and human development, including health and education (Rs 30,000 crore). The rest includes general and social infrastructure projects, and capital improvements to existing projects, which will require Rs 1.75 lakh crore.

Transportation

	Facilities	Amount (Rs Crore)
Total investment		370,000
Highway improvement	2000 km of 6/8 lane highway, 5,000 km of four lane highway and two-laning of all other highways with paved shoulder	133,000
Port development	Three Greenfield ports and 5 minor ports with cumulative capacity to handle 150 million tonnes of cargo	15,000
Rail projects	High speed rail between Chennai - Coimbatore - Madurai - Kanyakumari Dedicated freight corridor between Chennai and Thoothukudi	132,000
City Transport	Metro/Mono rail/BRT	65,000
Airports	Greenfield airport near Chennai Upgrading other airports	25,000

Source: Vision Tamil Nadu 2023, Government of Tamilnadu.

Conclusion

Indian logistics Industry plays a vital role for the development of the country. It gives more avenues to foreign investors. It also gives various employment opportunities for our younger generation. Similarly the State Government of Tamil Nadu also concentrates more on this logistics Industry in its Vision 2023. From this the people may get benefit at the same time the state also will be benefitted.

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An overview of growth strategy and its feasibility of Tamilnadu vision 2023'

The vision for Tamilnadu for 2023 is to become India's most prosperous and progressive state with no poverty and where its people enjoy all the basic services of a modern society and live in harmonious engagement with the environment and with the rest of the world. There are three outcomes of vision 2023.They are a) To reach per capita income US $10000 by 2023 b) To match HDI of tamilnadu with HDI of developed countries by 2023 c) To provide high quality infrastructure among the state and best in the world. Apart from the above three objectives, tamilnadu would try to achieve major ten themes which includes above three outcomes also. This research paper going to analyse feasibility of growth strategy adopted in tamilnadu vision 2023.

Objectives:

a) To analysis trend of all three outcomes of vision 2023 over the past periods.

b) To analysis feasibility of strategies to achieve above listed three outcomes.

Methodology:

Data for this research paper taken from tamilnadustat, Indian planning commission and tamilnadu vision 2023 report. This research purely based on secondary data analysis .Time period taken for this analysis from 2001 to 2023.Simple descriptive statistics, diagrams have been used to analyse feasibilityof growth strategy adopted in tamilnadu vision 2023.

Data Analysis:

This section going to analysis trend of GSDP and HDI .The figure one shows trend of GSDP over the period of time. Growth rate of GSDP reached its maximum point during 2006-2007 at 15.21.It reached its low level growth rate during 2001-2002 at -1.56 per cent. The table 1 shows that the average growth rate was high at 13.54 per cent during 2005-2009.It is clear from table that the projected growth rate is 10.37 per cent. According to my point of view the tamilnadu vision 2023 can have more target than now, now its target is 11 per cent average growth rate. Since tamilnadu achieved on an average 10.37, so it has good base to grow an average more than 11 per cent.

Analysis of strategy:

There are nine strategy adopted by tamilnadu vision 2023.This section going to analysis feasibility of growth strategic one by one. **Increasing the share of manufacturing in the state's Economy**. Under this strategy government of tamilnadu planned to increase growth rate of manufacturing from 16.6 percent to 22 percent with average annual growth rate of 13.8 percent. Based on my view it is possible to achieve the stated manufacturing percentage since 5.4 percent only need to achieve. However the predicted contribution of primary sector to GSDP decreased to 7 percent in 2022-2023 compare to present 12.6 percent.It would be correct projection because most of the agriculture land converted into flat which will not contribute agriculture production. However this is not good for the tamilnadu economy, in future it would lead to high inflation which will affect purchasing power of the people which has link with poverty and percapita income. Due to increase in inflation will not take more effect of percapita income risein individual life. Finally it leads to failure of creating poverty Free State.**Making SMEs vibrant** Making SMEs vibrant (energetic) can be a good strategy to decrease inequality among the region through creating

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employment opportunities .Though it is agood strategy now days tamilnadu government consistently involved in power cut activities due to insufficient power. Due to the above problem most of the SMEs are shutting down. The cost of creating business confidence among the business people will be high in future. It will not help to achieve above strategy, so this is correct time to give confidence to business people through providing power to them.

Making tamilnadu the knowledge capital and innovation hub of India

under this strategy tamilnadu government planned to develope20million skilled person across the state over the next 11 years. Establishing world class institution and create social climate for the people move from one state to another state. **Specialization in service** Tamilnadu is leader in some of the industries in India now also. Namely financial services, IT, IT enabled services for back-office operations, engineering design, healthcare publishing, film production and higher education. Under vision 2023 tamilnadu becomes global leader in the following industries. a) Become global leader in attracting large scale back offices in knowledge intensive business b) become medical tourism destination of south Asia C) Extend audio and video series to Hollywood and other major film producing counties of the world. D) To make tamilnadu tourism industry is the second biggest in India. **Thrust on skill development**any economy in the world need skilled work force then only it can useful to grow a country or a state for its potential. Tamilnadu vision 2023 planned to make 20 million trained and skilled people in this 15 million people entering into the jobmarket, 5 million already entered into the services. It is one of the important strategy because skill development is very essential in the competitive world not justpaper education. So I welcome this strategy, however it is not clearly mentioned that what types of skill and not mention how they are going to implement in school and college.

Improving agriculture Productivity

The share of agriculture in the state's GSDP dropped from 40 percent in 1960s to 12.6 percent in 2010-2011.A vision 2023 covering below three strategies.a)Improving productivity through scientific methods,b)Ensure time irrigation and water management,c)Maximize benefits of value addition through suitable harvest infrastructure.The above three strategies are looked well in paper only. To implement those strategies we need clear cut plan and programs which is missing in vision 2023.**Transforming 10 cities into world class cities that becomes the nodes of growth across the state**Tamilnadu is the most urbanized state in the country (48 percent is classified as urban).Chennai only accounts for 25 percent of total urban population in the state. Creating ten world class cities, upgrading them access to 24x7 water supplies,efficient mass transit systems.

Thrust on social welfare programs to ensure inclusive growth

Tamilnadu vision 2023 state that "vulnerable and disadvantaged sections will be extended protection by the state and will be equipped to take advantage of the benefits for economic growth". Though good plan, it is not clearly mentioned name of the social welfare programs to be implemented to achieve inclusive growth. The vision 2023 should explain properly through what way the government going to achieve inclusive growth. **Signature project** The signature project state about investment in the state to get well infrastructure. The following table shows signature project.

Findings, suggestion and conclusion:

Tamilnadu vision 2023 can set more target than now. The current target is 11 per cent average growth rate. Since tamilnadu already achieved on an average 10.37. It is stated that tamilandu reach HDI equal to developed countries what I have observed through data double time development not at all possible .It is possible to reach around 0.7 by 2023.The projected agricultural growth rate will be low.it would lead to high inflation which will affect purchasing power of the people which has link with poverty and percapita income. Finally it leads to failure of creating poverty Free State. The cost of creating business confidence among the business people will be high in future since presently government failed to provide enough

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power.Regardingthrust on skill development this strategy; however it is not clearly mentioned that what types of skill and how they are going to implement in school and college.The vision 2023 should explain properly through what way the government going to achieve inclusive growth.

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Emergining Scenario of Higher Education in Tamilnadu

Higher education in India and the educationally advanced state of Tamil Nadu needs to be viewed in this fast changing global context. Indeed, the Government of Tamil Nadu devotes special attention to strengthen the higher education system in the state and to respond to the emerging demands of the new century (Go TN, 2006a). The Government of Tamil Nadu is committed to a range of objectives, including economic growth, distributional goals, social inclusion, etc. Higher education is directly relevant to all these, besides the pursuit of knowledge for its own sake. For higher education, these imply that in order to support growth, the sector needs to be large enough, of high quality, and responsive to a rapidly changing environment. In addition, to support distributional objectives, the needs of the weaker sections of the society including women, rural population, socially and economically backward communities are to be taken care of (Go TN, 2006a).

The Vision of the Higher Education Sector is:-

- To make Institutions of Higher Education emerge as centres of innovation, excellence and development.
- To provide world class quality education especially to students from rural and backward areas and marginalized families and to develop, recognize and enhance talent and skills in youth.
- To equip and enable youth to meet the emerging challenges and demands of the century with due emphasis on inclusion in higher education.

Tamil Nadu is moving ahead with potential, taking giant strides towards development. The human development index of India is 0.619, while the corresponding figure for Tamil Nadu is 0.736, placing it among the top states in the country. The GER (Gross Enrolment Ratio) at the national level is about 13% and in Tamil Nadu it is around 18% which is more than the national average. The human development index of India is 0.619, while the corresponding figure for Tamil Nadu is 0.736, placing it among the top states in the country. The GER (Gross Enrolment Ratio) at the national level is about 13% and in Tamil Nadu it is around 18% which is more than the national average.

Objectives:

Several researchers –Geetha Rani (2010), Kolhantkar M.R (2012) have tried to analyze education development in Tamilnadu but there had been little attempt on analyzing the vision of Tamilnadu with specific reference to higher education in Tamilnadu. The current research study on **"Emerging Scenario of Higher Education in TamilNadu"** was formulated with the following objectives:

- To analyze the trends in the number of higher educational institution in TamilNadu and to forecast for 2023.
- To analyze the trends in gross enrolment in higher education in Tamil Nadu and
- To forecast gross enrolment in higher education for 2023 for Tamilnadu.

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Methodology:

The required data for the study relating to number of higher educational institutions, number of students enrolled, etc., were compiled from the following sources.

1. Selected education statistics,
2. Statistics of higher education and technical education 2007-08
3. Higher education in India, country summary.

The study was restricted to 2005 to 2011 and based on this projection were done.

Hypothesis formulated:

- In 2023 the gross empowerment ratio in higher education will be higher than that of 2011.
- There will not be gender disparity index in enrolment in higher education in TamilNadu.

Tools used:

1. Arithmetic method of forecasting:

The current study tried to forecast number of higher educational institutions and gross enrolment in higher education by using the following formula:

$P_t = P_o (1+r)^t$,

Where, P_t = Projected value

P_o = Current value

r = Annual growth rate

t = Number of years

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Findings:

A. Trend in the number higher educational institutions in TamilNadu and vision for 2023 with respective to number of higher educational institutions.

Tamil Nadu, the second industrialized state after Maharashtra, has registered a higher growth rate both at university level and also at college level than at the national level.

Table-I

Growth of Higher Educational Institutions in Tamil Nadu

Year	Universities	Colleges	Higher Educational Institutions
1980-81	8	382	390
1985-86	8	395	403
1990-91	16	608	624
1995-96	20	716	736
2000-01	23	986	1009
2001-02	26	989	1015
2002-03	28	1558	1586
2003-04	28	1530	1558
2004-05	42	1642	1684
2005-06	36	1436	1645
2006-07	38	1530	1759
Growth Rate	5.47	7.24	7.64

Source: Selected Educational Statistics, various issues

In Table-I the growth of higher educational institutions in TamilNadu in 1980-81 the university and institution is 8 and it increased in 2006-07 to 38, while the colleges is 382 to 1530 and higher educational institution is increased from 390 to 1759.

Management Structure and Institutional Type:

The structure of higher education in India and in many states including Tamil Nadu consists of universities, research institutions, deemed to be universities which are at the highest level of higher educational institutions. At the next level, it is the colleges by disciplines such as general arts and science, professional including engineering, management, medical, agriculture and law colleges. These structures and distribution of higher education in Tamil Nadu is presented row wise for the year 2006-07 in Table 5. There are 35 university level institutions comprising general higher education universities, technical universities, agricultural, law and medical universities during 2006-07.

Table-II

Structure of Higher Educational Institutions by Type of Management in Tamil Nadu in 2006-07

Institutions	Govt. (in %)	Pvt. Aided	Self-financing. (in %)	Total (in numbers)	% of Institution type in total Institutions
	(2)	(3)	(4)	(5)	(6)
University including DU.	57.1	11.4	31.4	35	2.48
Arts and Science colleges	12.2	27.1	60.6	490	34.78
Engineering Colleges	4.0	1.2	94.8	248	17.60
Polytechnics	10.3	18.2	71.5	214	15.19
Medical colleges	60.0	0.0	40.0	25	1.77
Ayurveda colleges	0.0	40.0	60.0	5	0.35
Dental colleges	5.9	0.0	94.1	17	1.21
Homoeopathy	10.0	0.0	90.0	10	0.71
Law colleges	72.7	0.0	27.3	11	0.78
Management*	8.2	1.4	90.4	146	10.36
Agriculture Colleges	72.7	27.3	0.0	11	0.78
Colleges of Education	4.4	8.8	86.9	160	11.36
Colleges of Physical education	0.0	37.5	62.5	8	0.57
Others**	6.9	41.4	51.7	29	20.6
All	11.8	15.3	73.0	1409	100.00

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Note: PA – private aided; DU – Deemed Universities; * Management institutes are part of the existing institutions except 44 additional individual business schools (includes hotel mgt)

** Others include

Source: www.ugc.nic.in; based on Government of Tamil Nadu (2007a); Statistical Handbook of Tamil Nadu, 2006.

A large number (490) of general higher education colleges namely arts and science colleges exist which are affiliated to universities that are under the overall purview of the University Grants Commission (UGC). These general colleges occupy the highest share of 35 percent of all higher educational institutions2. The professional colleges include engineering, medical, pharmacy, agriculture, law, management (constitute another 35 percent) and a few others like colleges of education, etc. The professional colleges fall under the purview of various bodies - engineering, pharmacy and management colleges and computer application programmes are to get the approval of AICTE, medical colleges the Medical Council of India

and Law colleges - the Bar Council of India. There is an overlap of various regulatory bodies in higher and professional education.

Arts and Science Colleges:

Against the general belief that de facto private sector expansion takes place in the professional education (Kapur and Mehta, 2004), the share of private arts and science colleges is about two third of (61 percent) of the total arts and science colleges in Tamil Nadu. Opening of self-financing general arts and science colleges started in the state in 1994-95 (Go TN, 2003). The annual growth rate of private unaided or the self financing colleges is rapid at the rate of 20 percent during the period from 1990-91 to 2004- 05. Share of government and private aided colleges during 1990-91 was 86 percent which drastically came down to 43 percent during 2004-05. The self-financing colleges started to occupy more than 50 percent share since 2000-01.

Table-III

Growth of Arts and Science Colleges in General Higher Education by Type of Management in Tamil Nadu (in %)

Year	Institutions			
	Govt	PA	PUA	Total *
1990-91	25	61	13	215
1995-96	21	47	32	280
2000-01	14	31	55	426
2001-02	14	30	56	440
2002-03	14	30	56	440
2003-04	14	30	56	441
2004-05	13	30	57	444
Growth Rate**	1.0	0.1	20.4	7.1

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Note: * total in numbers; ^ prior to 1990-91 there is no separate information available between private aided and unaided colleges;

** Growth rate is estimated by fitting a semi log linear trend regression.

Source: Statistical Hand book of Tamil Nadu, Chennai

Even though the number and proportion of self financing or the private unaided colleges have been outgrowing government and private-aided institutions. The extent of cost recovery further varies within these colleges and across courses. For instance, arts and science colleges are not self-financing except for job oriented courses, like BBM, MBA, Bio-technology, and the like.

Conclusion:

- Ø By 2023 there will be remarkable increase in the number of higher education institution in TamilNadu.
- Ø There will be significant increase in the enrolment of boys and girls in higher education.

Recommendations:

- Enrolment of students especially girls in the Higher Education sector on a large scale can be achieved, by establishing more number of colleges and Universities during the XII five year plan.
- Provisions have to be ensured for achieving gender equity in higher education and rural – urban imbalance will also be corrected.
- To grant autonomy to Higher Educational Institutions to choose their courses and syllabi to meet the global Human Resource demand.
- To upscale Universities in order that they become Centres of Excellence through research and development.

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FDI in retail and Vision Tamilnadu 2023 in Agricultural productivity

The opposition parties and some section of the people especially the small vendors were opposing the Foreign Direct Investment in retail sector but the days have come when the union government allowed 51% of FDI in retail despite opposes. The supporters of FDI in retail argue that this would be a blessing to the agricultural sector and the agriculturist would get fair price to their produce. At this juncture Tamilnadu Government headed by Hon'ble Chief Minister has come out with a vision statement namely Vision Tamilnadu 2023 in which the emphasis is given to the strategic agro productivity. The statement says that *"to achieve the best in class productivity in key agricultural produce and to be a global supplier with robust infrastructure"*. Five percent annual steady growth is targeted by avoiding the present wastage of 30% by rotting. At present Tamilnadu contributes 3% of the total grain production, 7% of the vegetable production, 12% of the fruit production and 24% of the flower production. This share would be enhanced by adopting strategies and they are discussed clearly in the vision statement. It is well-defined that Tamilnadu receives an average rain fall of 930mm against the Indian average of 1300mm. The effective water management is assured in the proposal. There are seven agricultural zones in Tamilnadu through which the state produces rice, maize, cholam, bajra, red gram, green gram, black gram, chilies, ginger, turmeric, spices, tapioca, onion, cabbage, potato, banana, guava, mango, groundnut and coconut. Apart from these Tamilnadu produces cotton and sugarcane. In similar way the state has exposed the advantages favouring the state to flourish in the field of agriculture. Inviting FDI to achieve this vision is specified in chapter 3.1, point 4 of fiscal strategy.

This paper aims at explain the possibilities of FDI in retail sector to achieve the proposal made by the state. Hence the state is an all rounder in the field of different produces it can utilize the opportunity in an advantageous manner but with certain cautiousness. FDI is allowed in India for back end operation in which it is mandatory for the foreign investor to invest in cold storage, warehousing, quality control, grading and standardization. This would create employment opportunity to middle level managers. Further it would develop e-business in agro products. Also it has to be noted that the foreign player has to source 60% of the goods only from internal sources. Certain drawbacks like hoarding and predatory pricing should be checked by the state by amending laws. And thus, the state of Tamilnadu can utilize the opportunity of FDI to achieve its vision. This paper showcases a SWOT analysis on this issue.

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Strengths

1 almost a vast area of 48.92 lakh hectare under cultivation,

2 a huge manpower of 40% of Tamilnadu population engaged in agriculture,

3 about 58% of the land is irrigated,

4 average rain fall of 930mm per annum against the national average of 1200mm,

5 receiving both south west and north east monsoons,

6 contribution to national production in food grains,vegetables,fruits and flowers in a significant manner,

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7 producer of 75 lakh tones of food grains in a year (2009-10),

8 producer of 108 lakh tones of fruits and vegetables,

9 around 4000 veg-fruits processing units with an average employed capital of 1.7 crore,

10 worth of processed food export was Rs 4782 cr 2009-10,

Weaknesses;

1 almost 30% of rotting,

2 power shortage for agricultural irrigation,

3 existence of only 136 cold storages with a total capacity of 2.3 lakh tones,

4 availability of only 4000 processing units,

5 declining interest in agriculture due to low income,

6 un assured water supply from dams,

7 unorganized supply chain,

8 small size of land holding (0.83 hect per head),

Oppurtunities;

1 allowing FDI in building cold storages,

2 assuring uninterrupted power supply to pump sets,

3 allowing FDI in food processing,

4 enacting law to protect farmer interests,

5 allowing 100% tax relief to agro industries,

6 adopting cooperative farming and contract farming,

7 assured water supply from reservoirs,

8 establishing export promotion councils for agro product exports,

Threats;

1 possibility of hoarding,

2 predated pricing,

3 foreign players to emerge as big intermediaries, (a big fish in a small pond),

4 Do not forget the history that East India Company came for trading and finally captured the country.

The Chinese experience in FDI in retail has resulted in enhancement of agri business and that model can be adopted by the state. The situation today is not like in 1600 years where India was ruled by many. Hence we are capable of tackling any situation and Tamilnadu can grab the opportunity to achieve its vision 2023.

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Sectoral Investment plans – Improving Agricultural Productivity – Vision Tamilnadu 2023

This paper explains the investment requirements in the various sub sectors of in the infrastructure sector. These are high-level estimates based on the requirements identified in each sub sector. The identification of requirements is based on the projects identified by the respective departments and an assessment of the inputs required to meet the targets of Vision 2023. These estimates will be refined and made more granular in the detailed reports following Vision 2023.

The target for agriculture sector in Tamil Nadu is to achieve 5% average annual growth rate. To achieve this target, the objective for the Agriculture sector under Vision 2023 is, To achieve the best in class productivity in key agricultural produce and to be a global supplier with robust infrastructure. Under Vision 2023, the key initiatives in the Agriculture sector to be taken are: a) Promote market driven agricultural produce, b) Accelerating Innovation and Extension Mechanism, (c) Functional consolidation of land holdings, (d) Emphasis on mechanisation (e) Improving Productivity, (f) Assurance of timely irrigation (g) Creating a robust supply chain and (h) Skill development in agriculture.

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Strategic initiative - Improving Agricultural Productivity

Tamil Nadu is richly endowed with fertile lands and agro climatic zones suitable for a varied agricultural produce. During 2009-10, Tamil Nadu produced 75 lakh tonnes of food grains and 108 lakh tonnes of vegetables and fruits. Tamil Nadu contributes approximately 3% of India's food grain produce, 7% of vegetable produce, 12% of fruit produce and 24% of flower production. Tamil Nadu's agricultural produce includes Rice, Maize, Cholam, Jowar, Bajra and Ragi as the principal cereals, Redgram, Green gram, and Black gram as the major pulses, Chillies, Ginger, and Turmeric as the principal spices, Tapioca, Onion, Cabbage, and Potato as the major vegetables, Banana, Guava, Cashew nut and Mango, as the major fruits, Groundnut, Gingelly and Coconut in oil seeds. Apart from these Tamil Nadu is a leading producer of Cotton and Sugarcane in the country. Agriculture and allied activities provide the subsistence for around 40% of Tamil Nadu's population and contributes to 12% of the GSDP. The share of agriculture in GSDP has dropped from 40% in 1960s to 12% in 2010-11 (RE). After a robust growth of 8-10% in the first half of the past decade, the agriculture sector witnessed negative growth in the years 2007-08 and 2008-09.

The agriculture sector growth started positive in 2009-10 and is poised to grow upwards owing to the increased thrust on improving productivity. Tamil Nadu has seven agro climatic zones and the average rainfall in the state is 930mm per annum against the national average of 1200mm per annum. The net cultivated area in Tamil Nadu is 48.92 lakh ha of which only 58% is irrigated, while the rest is rain-fed. Well irrigation forms 56% of all irrigation, while canal and tank irrigation form 26% and 18% respectively. Thus there is a high strain on availability of adequate water for irrigation in the state. The agricultural yield of the principal food grains (Rice, Maize) in Tamil Nadu is less than that of the best in India, and the yield of Vegetables, Cotton and Pulses in Tamil Nadu is less than the national average yield. The average agricultural land holding of Tamil Nadu is 0.83 ha against the 1.25 ha average of India and this is a passive contributory factor to the lower yields in Tamil Nadu.

Tamil Nadu produces 108 lakh tonnes of vegetables and fruits but has only 136 cold storage locations with a capacity of 2.3 lakh tonnes which is shared amongst marine, milk and agro produce. Though

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multiple cold storage projects are being undertaken across the state, the combined capacity enhancement is small compared to the required capacity.

Tamil Nadu has around 4,000 vegetable and fruit processing industries with an average employed capital Rs. 1.7 crore. The state exported agro processed food worth Rs 4,782 Crore during 2007-0823. Nearly 30% of crops produced in India are wasted (due to rotting) in the post harvest supply chain of storage, logistics and handling. Reducing this wastage calls for a seamless integration of agricultural production, supply chain, processing and marketing of the produce. The target for agriculture sector in Tamil Nadu is to achieve 5% average annual growth rate. To achieve this target, the objective for the Agriculture sector under Vision 2023 is, "To achieve the best in class productivity in key agricultural produce and to be a global supplier with robust infrastructure". Under Vision 2023, the key initiatives in the Agriculture sector to be taken are:

a) Promote market driven agricultural produce

The evolving demographic and socio-economic changes in India (and elsewhere in the world) are resulting in a change in consumption pattern of processed, partially processed and unprocessed food. Hence to achieve better economic output from the primary sector, a market driven production and processing is imperative. Agriculture in developed countries has achieved greater success owing to its tight integration with the market. Forward and backward integration of industry has resulted in better understanding of the global needs of the agricultural sector resulting in efficient production and distribution of agricultural produce. Systems and institutions would be formulated to promote cooperative farming, contract farming, and industry linked farming to adapt to the evolving market needs.

b) Accelerating Innovation and Extension Mechanism

Increased productivity and production calls for an innovation system which involves equal participation of producers, research institutions, financiers, marketing structures, supportive policies, and effective research extension mechanisms. A robust innovation mechanism is required to anticipate the emerging changes and to assist the industry to evolve better technologies and marketing reach to achieve higher economic output.

Research and development capabilities in different areas such as agro engineering, nano technology, bioengineering, and crop extension needs to be developed at an accelerated rate. This would involve infusion of technology, infrastructure, finance, and human capital and a strong institutional framework to support the knowledge capital developed in the state.

An effective innovation system is sustainable only when it is socially inclusive and economically sustainable; hence an efficient extension mechanism is required to extend the product and process developments into the field. Tamil Nadu is a leading state in agricultural extension and training of farmers in modern technologies. This has to be augmented and has to reach 100% of farmers through convergence of information and communication technologies.

c) Functional consolidation of land holdings

The average size of operational land holding of Tamil Nadu has reduced from 1.45 ha in 1970-71 to 0.83 ha in 2005-06. During the same period marginal and small operational land holdings have increased from 17.1% to 33.5% and 20.5% to 25.22%; while the large operational land holdings have reduced from 13% to 5.73% of the total land holding and the average size of a large operational land hold is only 20.58 ha24. Punjab has seen major increase in agricultural productivity during the same period and the average increase in size of land holding from 2.94 ha to 4.03 ha is seen as a major contributing factor. The reduction in land holding size in Tamil Nadu directly affects the productivity as the farmer would not be able to afford the investments required for technological improvement. Functional consolidation of holdings through co-

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operative farming, contract farming and other mechanisms such as farmer groups and joint liability groups need to be aggressively initiated in Tamil Nadu to increase the penetration of modern agricultural technologies and improve output.

d) Emphasis on mechanisation

Mechanisation for most parts of agriculture is still limited to usage of tractors and motor pumps. With availability of better paying service sector jobs and construction jobs, increased migration from agriculture to other sectors is observed in Tamil Nadu during the last decade. To increase the productivity of the land and to cope with shrinking agricultural employment, mechanisation is not only essential but also imperative. The traditional constraints for promotion of mechanisation include non standardised agricultural practice, small and marginal land holding, low investment capacity of farmers, lack of know-how and non availability of service and maintenance facilities. Policy and structural mechanisms shall be developed to address these issues and support increased mechanisation in all phases of agriculture.

e) Improving Productivity

Tamil Nadu lags in the productivity of rice, maize, sugarcane, cotton, and grams compared to the best in the country. The productivity of vegetables in India is 11.2 tonnes/ha compared to 15.9 of Brazil and 22.1 of Indonesia and 24.3 of USA, similarly the productivity of India in fruits is 16.2 tonnes/ha compared to 31.3 of USA, 26.1 of Italy and 34.8 of Spain. The current productivity of the crops needs to be augmented manifold to match evolving international standards by universal adoption of scientific agricultural methods such as better soil health management, emphasis on high quality and high yield seeds, precision farming, fertigation, and improved deployment of agricultural machines.

f) Assurance of timely irrigation

It is essential to provide timely irrigation for effective utilization of agricultural land, and hence irrigation availability for all cultivable land is a key objective under Vision 2023, to be achieved within the next 10 years. This requires investment in increasing access to canal/piped water supply across the state. The focus will be on increasing the area under irrigation and achieving 100% coverage through micro irrigation, water conservation and strengthening water structures. Tamil Nadu has limited access to perennial water resources for irrigation; hence it requires extensive investment in intelligent usage of available water through effective groundwater recharging solutions, capacity augmentation of tanks and wells through timely dredging and cleaning and adoption of micro irrigation systems.

g) Creating a robust supply chain

Augmentation of agricultural productivity needs a concurrent development of post harvest support mechanism including normal and cold storage facilities, packaging facilities, agro processing industries, crop sterilisation and sanitation facilities, and an effective marketing reach to global markets. Crop specific storage and irradiation facilities will be established across the state for safe and efficient storage. Food processing industries for major produces such as mango, tapioca, spices, flowers, banana and others will be established across the state to increase the value generated out of agricultural produce and to generate skilled employment in the state.

h) Skill development in agriculture

Increasing mechanisation, adoption of scientific techniques in agriculture, and the need to adopt extension mechanisms demands extensive capacity development of the agricultural workforce. There will be a progressive reduction in number of unskilled agricultural workers and the demand for trained and skilled workforce will increase with the implementation of above strategies; hence it is imperative that the farmers are educated in modern methods of agriculture and mechanisation. Structured programmes and interventions will be undertaken by the government and industry to sustain the growth of the sector.

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Strategic Initiation of Improving Agricultural Productivity (Vision Tamil Nadu 2023)

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Tamil Nadu has seven agro climatic zones and the average rainfall in the state is 930mm per annum against the national average of 1200mm per annum. The net cultivated area in Tamil Nadu is 48.92 lakh ha of which only 58% is irrigated, while the rest is rain-fed. Well irrigation forms 56% of all irrigation, while canal and tank irrigation form 26% and 18% respectively. Thus there is a high strain on availability of adequate water for irrigation in the state. The agricultural yield of the principal food grains (Rice, Maize) in Tamil Nadu is less than that of the best in India, and the yield of Vegetables, Cotton and Pulses in Tamil Nadu is less than the national average yield. The average agricultural land holding of Tamil Nadu is 0.83 ha against the 1.25 ha average of India and this is a passive contributory factor to the lower yields in Tamil Nadu.

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output. Research and development capabilities in different areas such as agro engineering, nano technology, bioengineering, and crop extension needs to be developed at an accelerated rate. This would involve infusion of technology, infrastructure, finance, and human capital and a strong institutional framework to support the knowledge capital developed in the state. An effective innovation system is sustainable only when it is socially inclusive and economically sustainable; hence an efficient extension mechanism is required to extend the product and process developments into the field. Tamil Nadu is a leading state in agricultural extension and training of farmers in modern technologies. This has to be augmented and has to reach 100% of farmers through convergence of information and communication technologies.

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The reduction in land holding size in Tamil Nadu directly affects the productivity as the farmer would not be able to afford the investments required for technological improvement. Functional consolidation of holdings through cooperative farming, contract farming and other mechanisms such as farmer groups and joint liability groups need to be aggressively initiated in Tamil Nadu to increase the penetration of modern agricultural technologies and improve output.

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Grass – Root Women Entrepreneurship Through Micro Credit and SHG (Vision Tamilnadu – 2023)

In Tamil Nadu (India), the role of women is often restricted to caring for children and housekeeping. The VST has formed 73 women's groups in 59 villages, with a total membership of 2167. These constitute the backbone of our work to develop village communities and empower women socially, economically and politcally. The aim has been to unite women villagers to campaign for better rights and an increased role in decision making. Strategies are discussed to improve the education, health care and economic status of the people. In every village, two meetings are conducted each month. The Sangams consist of an elected president and other office bearers who organise the meetings. Local issues are discussed and steps are taken to resolve them. To reduce the impact of unscrupulous money lenders, the VST has introduced and promoted a small savings scheme. Each Sangam member saves Rs.30 per month. In return, they have access to loans at very low interest rates. To date, the savings total Rs.540,626.

A Micro enterprise suits the life style of Indian women; but caught up in the dual responsibility role, her entry into the business needs recognises the quantum of time. However, in recent times, Women, engaged themselves in micro enterprises both in rural and urban areas. Women found themselves with less risky business like trade and service units rather than manufacturing. So, self-employed women and those employed in the informal or agricultural sectors often work in small interprises, which provide them with little access to the credit and information needed to manage and market the products effectively.

Micro enterprises have great potential for generating employment especially in rural areas. NABARD and SIDBI have launched schemes for promotion of self-help groups and NGOs as a channel for flow of funds to micro enterprises. NABARD is likely to cover about 15,000 self-help groups in 1998-99, as against a target of 10,000. It is planned that NABARD and SIDBI would redouble their efforts in this direction and ensure the coverage of atleast 50,000 self-help groups.

NGOs for the past 15 years or so, have devoted themselves entirely to the ideas of conscientising, educating and organizing the rural poor and have helped them to obtain better deal from the delivery system. There are several NGOs, which really brought improvement in the living conditions of women. One such case is SAVAI which is working in four districts of Tamil Nadu, Thiruchirappalli, Karur, Nagapattinam and Erode. This is of course concerned with the SHGs formed by NGOs in rural Thiruchirappalli and which has committed to promote rural women though self-employment

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Objectives

The Objectives are :

1. To find out the socio-economic conditions of SHG Women in rural micro enterprises.
2. To examine the nature of economic activity and their performance in rural Thiruchirappalli.
3. To understand the problems and prospects of such micro enterprises of rural women and to examine how they contributed to women empowerment.
4. To analyse the contribution of SEVAI, the sample NGO, through micro credit to the sample micro enterprises.

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A sample of 70 women from 7 sample villages where in the sample NGO is working was selected at random for the purpose of this study.

Table :1 The mean performance of the sample entrepreneurs.

Types	Invest-ments	Owned Capital at Present	Borrowed Capital at Present	Initial Income	Current Income	Growth Income
Petty business	3340	1209	2130	31826	55394	74 %
Processing	3394	900	2494	23333	41666	78 %
Production	2250	-	2250	24720	31320	27 %
Services	3475	1125	2350	25980	48180	85 %
Total Average	3288	1071	2217	29391	50879	73 %

The mean performance of the sample entrepreneur in terms of income, investment and borrowing indicates that in terms of investments, the service units are larger in size than others and in terms of growth in income levels also, it is the service units which have shown relatively better performance over the period. This may be due to the range of micro activities undertaken by the sample women of service units and immediate turnover to their activities, which have brought higher incomes. Also the service units were able to repay the loan in time and able to avail second loan due to their better performance, whereas the production units have not only failed to repay their loans due to their poor performance and hence lost their chance of availing the second loan. This circular effect has contributed for overall poor performance of production units. It is true that the production units may require huge investment and should bear more risk than other groups. These groups felt that the micro credit given by the SHG may be inadequate to go ahead and progress. All these sample entrepreneurs get loan only from sample NGO, "SEVAI". Such micro credits may be inadequate for production units. Without sufficient financial background, it is very difficult to start a business. Women in this study are not an exception. However, it is found in this study that some of them have brought in their own investment and majority of them have borrowed, as the percentage of borrowed capital has been found to be 67.4% higher than owned capital of 32.58% for almost all the business. This shows the dependency nature of SHG rural women who own micro enterprises cannot be expanded even if they are enthusiastic enough to expand. So, emerging government scheme of micro finance may be linked with these enterprises, so the better prospects will be ensured in future.

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To sum up, the rural women entrepreneurs in Tiruchirappalli District have considerably introduced lower technology business such as petty shops, milk merchant, vegetable vending, pickle making, tailoring, tiffin centres, masala powder sales, vadam sales and so on. These rural micro entrepreneurs still face the problem of responsibility of processing food, carrying water, collecting fuel, growing subsistence crops and providing child care, but they are able to manage by contributing their responsibility and duties without differing anything. The problems faced include mostly shortage of capital, marketing problems, non availability of quality raw materials and costly nature etc., It is interesting to note that some of them do not face any problems since they have developed self confidence to undertake any kind of work.

In the light of the above findings, the following are suggested.

1. As the conventional methods of training tend to be produced or perpetuate the prevailing structures, a carefully drawn up training system has to address the strategic needs of rural women for survival and growth.
2. Equal sharing of development benefits by men and women should give way within the families.

3. The training system should link up with some kind of credit delivery mechanism whether formal or informal.
4. The group approach is the need of the hours to drink deprived women together for purpose of income generation or awareness.
5. The rural women should be helped to get into non-traditional activities through the provision of credit facilities and entrepreneurial skill development programmes.

But the government policies and programmes do not create specific programmes for development of rural women. Therefore, the association of women, the NGOs and the women cells and development agencies must effectively and efficiently work and commit themselves to promote and encourage rural women entrepreneurs not only in traditional products in famine areas but also in non-traditional in non-famine areas. Above all, an additional boost must be given to rural women entrepreneurs.

Conclusion

To be very brief, women of SHG can be said to have empowered in the following ways :

1. They have become owners of a micro business from agricultural labourers.
2. The income of the group members has doubled.
3. Now they are confident that they can do better in future and expand the business to the higher scales.
4. Their socialization process has brought tremendous improvement in their attitude and behaviour which are warranted for empowerment.
5. Above all, they have become independent to take decision on their own about their business and also considered in decision making affairs of the household.

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Energy Sector – With Special Reference To Tamilnadu Electricity Board (Vision Tamilnadu 2023)

Energy Sector- The Road ahead

The document "Vision Tamil Nadu 2023" released by the Honourable Chief Minister of Tamil Nadu on 22.03.2012 envisages a massive investment of Rs.4,50,000 Crores in the Energy Sector for the State. The major share of the investments amounting to Rs.2,80,000 Crores will be utilized to augment the Power Generation Capacity in the State. Generation Projects of capacity 20,000 MW are expected to be added to the State Grid. Significant investment to the tune of Rs.2,00,000 Crores has also to be made in the development of Transmission and Distribution sector to create evacuation capacity with adequate buffers. The detailed sectoral plan and project profile will be evolved and finalized in consultation with all the Stake holders.

The Government of Tamil Nadu will give thrust for implementing reforms in the Power Sector in a progressive manner so that the benefits of competition and innovation are delivered to the Consumers by way of reliable power supply at the most economic prices. A detailed energy Road map of Tamil Nadu will be accordingly prepared to make Tamil Nadu a Power surplus State. TANGEDCO & TANTRANSCO (subsidiaries of erstwhile TNEB) will strive to make the Vision of Government of Tamil Nadu into a reality by providing quality and reliable power to the consumers at competitive rates.

Salient Features

Tamil Nadu has one of the better power utilities in the Country. The State has a very healthy per capita consumption of 1040 units as against the national average of 814 units and technical performance and efficiency levels which are much above the national average. It has low Transmission and Distribution losses due to its efficient network for Transmission and distribution of power as against the national average.

Important Parameters:

- All the villages are electrified in the State and 100% household are electrified as against national average of 44% of Rural Electrification.
- Tamil Nadu stands No.1 in the Country and No.5 in the world with more than 6696 MW of installed Wind mills, which forms around 41% of National installed capacity of wind energy.
- TANGEDCO has a record of 100% assessment of metered energy and a collection efficiency of 99%.

The Thermal Stations of TANGEDCO (except Ennore Thermal Power Stations which is 40 years old) are operating at an average PLF of more than 85% consistently and bagged medals & awards from Government of India.

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Generation:

- Gross energy consumption for the year 2011-12 was 77,218 MU.
- Total energy generated from State owned stations for the year 2011-12 was 27,941 MU.
- Energy purchased from Central Generating Stations, Wind, Open Market, Exchange etc., for the year 2011-12 was 49,277 MU.

Distribution:

The number of Consumers over period of 10 years from 2002-03 to 2011-12 has increased substantially and the total No of Consumers as on 31.03.2012 is 231.37 lakhs.

- Per Capita Consumption in Tamil Nadu (2010 -11) is 1040 units.
- Highest demand met so far in the grid was 10859 MW on 19.07.2011.
- Energy requirement/consumption is in the range of 240 to 260 MU per day.

Transmission:

In line with the growth in consumers and demand for electricity, the distribution network has been suitably strengthened.

EHT & HT Substations as on 31.03.2012 :-

400 KV SS	:	14
230 KV SS	:	77
110 KV SS	:	720
66 KV SS	:	31
33 KV SS	:	519
Total	:	1361
EHT Lines	:	24497.017Ckt. Km
HT Lines	:	1.56 lakhs Ckt. Km
LT Lines	:	5.67 lakhs Km
Distribution Transformers	:	2.12 lakhs

Generation Sector

The installed generating capacity had grown manifold from 156 MW in 1950-51 at the beginning of the First plan to 7924MW in 2002-03 at the beginning of Tenth plan with a compound annual growth rate of 8% and it has reached 10237 MW by the year 2010-11. Over a period of years from 2005-06 to 2010-11, a generation capacity of 206 MW has been added to the grid. During the year 2011-12 a capacity of 127.5 MW has been added to the State Grid.

Period	Installed Capacity in MW	Peak Demand in MW
2005-06	10031	8209
2006-07	10098	8803
2007-08	10122	8969
2008-09	10214	9459
2009-10	10214	10046
2010-11	10237	11500
2011-12	10364.5	12000

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The Demand has grown substantially from 8803 MW in 2006-07 to 12000 in 2011-12.

The total installed generation capacity of Tamil Nadu is 10237 MW. Since May 2011, 127.5 MW has been added in the Conventional Sector and 696 MW in Non–Conventional Sector thus making the total installed capacity stand at 17936.56 MW. The details are as follows:

Hydel, Coal, Oil Based Conventional Sources:

(i) TANGEDCO's own generating stations (Hydel, Thermal, Gas)	:	5677 MW
(ii) Private Sector Power Plants (IPP)	:	1180 MW
(iii) Share from Central Sector Generating Stations	:	2861 MW
(iv) External assistance	:	305 MW
(v) Others (Captive Power Plants)	:	214 MW
Total	:	10237 MW
Added during the year (Thermal & Hydro)	:	127.5 MW
Grand Total	:	10364.5 MW

Non-Conventional Energy sources:-

(i)	Wind	:	6696.61 MW
(ii)	Solar	:	10.00 MW
(iii)	Bio-Mass Co-generation	:	610.00 MW
(iv)	Bio-Mass Power	:	161.15 MW
(v)	Small Hydro	:	90.05 MW
(vi)	Waste to Energy	:	4.25 MW
	Total	:	7572.06 MW

(696 MW added since May'11)

Total Installed Capacity: 17936.56 MW

Hydro Stations:

There are 40 Hydro Stations with installed capacity of 2191 MW. The maximum inflows realised are during South-West monsoon (June to October). The stations are Irrigation and Non irrigation tied. Hydro storage is not perennial. Hydro Stations are mainly operated for maintaining frequency of the grid and for emergency and contingency management.

Hydro Stations: Installed Capacity		
Kundah Circle	12 Power Houses	833.65 MW
Kadamparai Circle	9 Power Houses	595.45 MW
Erode Circle	10 Power Houses	423.50 MW
Tirunelveli Circle	9 power Houses	338.30 MW
Total -	**40 Power Houses**	**2190.90 MW**

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Thermal Stations:

The installed capacity is 2970 MW. The present average generation is around 2670 MW. The Thermal power plants are usually taken for annual overhaul during the months of July to December every year. TANGEDCO's thermal power stations have always been efficient with high PLF when compared to the PLF of the thermal stations available across the Country. And the average plant load factor of the thermal Stations for the year 2011-12 is 87.78% (excluding ETPS, since GoTN has approved for the replacement of the Station which has served its life). The average PLF is way above the CEA norms of 80%.

Thermal Stations: Installed Capacity	
Tuticorin TPS (5x210 MW)	1050.00 MW
Mettur TPS (4x210 MW)	840.00 MW
North Chennai TPS (3x210 MW)	630.00 MW
Ennore TPS (2x60 MW and 3x110MW)	450.00 MW
Total	**2970.00 MW**

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Gas Stations:

The installed capacity of Gas Stations is 516 MW. Due to high cost, Basin Bridge Power Station is only used during peak hours/ emergencies.

Gas Stations: Installed Capacity	
Thirumakotai GTPS	107.88 MW
Kuttalam GTPS	101.00 MW
Valuthur GTPS Phase I	95.00 MW
Valuthur GTPS Phase II	92.20 MW
Basin Bridge (4x30 MW)	120.00 MW
Total	**516.08 MW**

The total investment in the energy sector is estimated at Rs. 4,50,000 crore. New power generation capacity dedicated for Tamil Nadu, located within the state or elsewhere, will account for a bulk of the investments at Rs. 280,000 crore. Five power generation projects (under Case 2 bidding as per norms of Ministry of Power, Government of India) are estimated to add 20,000 MW of capacity; of this at least 5000 MW would come up before 2017 to make good the shortage of peak power and energy shortage that Tamil Nadu faces at present. In the long run, Tamil Nadu will have sufficient power generation capacity that is owned or secured under long term contracts that becomes the bedrock of an efficient and competitive economy. Some facets of the strategy for Energy are:

- Two port based Ultra Mega Power Projects of 4,000 MW each to be set up
- Selective thrust for green power by maximising investments in Wind Power to create incremental generation capacity of 5,000 MW and 5,000 MW in solar energy.

- Significant investment required in the Transmission sector to create evacuation capacity for the higher power generation capacity with adequate buffers. Select high capacity Transmission corri dors will be bid out on PPP basis to establish the necessary evacuation infrastructure
- Two Greenfield LNG Terminals with 5 MPTA capacity each and city gas pipeline infrastructure for about 10 towns to be established
- Establishment of a smart grid system that enables lower the cost of energy to consumers, spark innovation in energy management at all levels in the energy chain across the economy, and improve the reliability and security of the electricity grid. The likely investments in a smart grid system is expected to be Rs. 20,000 crore
- Government will implement reforms in the Power sector in a progressive manner so that the ben efits of competition and innovation are delivered to consumers by way of reliable power supply at the most economic price and commercial terms. This will call for new models of electricity transmis sion and distribution, which have been successfully implemented in several countries

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Themes of Vision 2023 – An Overview

This paper identifies five themes for the state as follows : 1) Economic prosperity Tamil Nadu will be amongst India's most economically prosperous states by 2023 2) Inclusive growth Tamil Nadu will exhibit a highly inclusive growth pattern - it will largely be a poverty free state with opportunities for gainful and productive employment for all those who seek it, and will provide care for the disadvantaged, vulnerable and the destitute in the state. 3) Health for all Tamil Nadu will be India's leading state on social development and will have the highest Human Development Index (HDI) amongst all Indian states. 4) World class infrastructure Tamil Nadu will provide the best infrastructure services in India in terms of universal access to Housing, Water & Sanitation, Energy, Transportation, Irrigation, Connectivity, Healthcare, and Education. 5) Healthy investment climate Tamil Nadu will be one of the top three preferred investment destinations in Asia and the most preferred in India with a reputation for efficiency and competitiveness.

Economic prosperity

Tamil Nadu will increase its per capita income (at current prices) by 6 times from Rs. 73,278 (US$ 1628)4 in 2010-11 to Rs. 4,50,000 (US$ 10,000) in 2023, in line with per capita income of Upper Middle Income (UMI) countries. Over the next 11 years, Tamil Nadu, given its factor endowments and the combination of strengths and opportunities, will aim to grow its GSDP at 11% or more per annum - about 20% more than the expected growth rate of India's GDP over the same period. Given the expected increase in population of 15% over the next 11 years, the increase in per capita income would amount to 6 times over this period. Several countries in Asia (in particular, Thailand, Malaysia and China) have grown at around 7% to 10% per annum for more than 20 years during the 1980s and later. The fast growing states of India, namely Maharashtra and Gujarat, have grown at double digit rates over the past 10 years. Considering the aspiration to increase real incomes by six times and the fact that several countries in Asia and a few states in India have consistently grown at high rates, the aspiration for Tamil Nadu is to grow its economy at over 11% per annum (in real terms) over the next 11 years and become a prosperous state.

Inclusive growth

Along with a high rate of economic growth, Vision 2023 also seeks to simultaneously reduce inequality of incomes across the state. Any growth that only caters to the aspirations of the upper crust and leaves behind some sections of society is not only morally wrong but practically unsustainable. Enabling widespread access to physical and social infrastructure services enhances equitable growth, and this lies at the heart of Tamil Nadu's growth strategy. Tamil Nadu Vision 2023 places substantial emphasis on inclusive growth by channelling considerable resources to the lowest income groups and ensuring that Tamil Nadu becomes poverty free. Being poverty free means no person in the state is deprived of any basic needs such as food, clothing and shelter and any resident of Tamil Nadu, who seeks employment, will be able to find gainful and productive employment commensurate to his/her

capabilities. To those sections of society who are too old, helpless and destitute, the state will provide though its social security net, the necessary helping hand in terms of income support, food, shelter and healthcare so that there is no fundamental deprivation at any level in the state.

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Health for all

At present, Tamil Nadu scores reasonably well on social indicators vis-a-vis most states of India. This can be seen particularly in the case of Human Development Indicators, in which Tamil Nadu has made considerable further progress during the past decade. Vision 2023 seeks an ambitious goal for key parameters such as, crude birth and death rates, MMR, IMR and Under 5MR, where, the performance of the state will be ranked as the best in the country. Essentially, Vision 2023 envisages Tamil Nadu to become not only the numero uno State in India in terms of social indicators, but also reach the levels attained by developed countries in human development by ensuring universal access to health facilities.

World class infrastructure

The heart of Vision 2023 is provision of world class infrastructure to all the residents of Tamil Nadu irrespective of their economic status. The accent on infrastructure in Vision 2023 is necessitated on two counts – (a) Infrastructure development is investment intensive and in its own right generates significant employment opportunities and economic growth; (b) More importantly, infrastructure development creates huge positive externalities in the economy by providing a fillip to economic and social development across all sectors. Historically, spending on infrastructure development in Tamil Nadu has been 4% to 5% of GSDP, while the requirement (as dictated by Vision 2023) is to increase the annual spending on infrastructure to about 10% of GSDP from 2015 onwards and further to 11.5% from 2019 onwards. The infrastructure sector includes Power, Water & Sanitation, Transportation, Irrigation, Ports, Airports, Connectivity, Housing, Healthcare and Education. Infrastructure creation in multiple sectors on this scale not only calls for substantial financial outlays but also significant regulatory reforms (e.g. tariff changes, cost recovery, viability gap funding, consumer protection, institutional realignment, and independent regulation) and to the extent that revenues of these projects do not cover expenses, there has to be ongoing financial support from the state. The total investment to enable universal access to infrastructure services over the 11 year period is estimated at Rs 15 lakh crore (approximately US$ 330 billion). A high level description of new infrastructure required across different sectors is as follows:

Healthy investment climate

Given the quantum of investments required for the infrastructure sector in Tamil Nadu and considering the need for providing efficient services, more than two-thirds of the financing has to come from non state governmental sources, particularly the private sector. Therefore, improving the standing of Tamil Nadu on the investment climate sweepstakes is one of the key planks of Vision 2023. While Tamil Nadu already enjoys a good position in India from the perspective of investment flows, Vision 2023 envisages Tamil Nadu becoming one of the top three destinations for investment in Asia, and also be the most attractive state for investments in India. The key to being internationally competitive is highly efficient and responsive governance. Vision 2023 seeks to propel Tamil Nadu to the topmost position in terms of attractiveness as a destination for investment based on such fundamental strengths and not by short term measures like extending aggressive tax concessions which are unsustainable and sap the fiscal strength of the state. Attaining a top three position in Asia would tantamount to benchmarking Tamil Nadu with countries such as South Korea, Thailand and Malaysia, which are ranked 8, 17 and 18 respectively in the world by International Finance Corporation in its study on Ease of Doing Business.

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The Socio-economic Conditions of Fishermen in Adirampattinam at Thanjavur District (Vision Tamilnadu 2023)

Economic prosperity Tamil Nadu will be amongst India's most economically prosperous states by 2023. This is possible only when we concentrate on rural areas like. Adirampattinam block in Pattukkottai Taluk, Thanjavur District. This paper explains The Socio-Economic Conditions of fishermen in Adirampattinam at Thanjavur District.

Adirampattinam is a semi urban area which Covers an area of 39,275 hectares. It is situated between Bay of Bengal at the East, Mallipattinam in the West, Manora in Saravendra Rajanpattinam in the South and Thanjavur in the North. In Adirampattinam, there are 12 panchayat unions. It is situated 50 kilometers away from Thanjavur. Main occupation of the people of this area is fishing, major portion of land are used to develop fisheries. It is famous for fishing. The main occupation of the population in the study village is fishing.

There are 315 craft owners in Adirampattinam. The craft owners comprise of two categories viz., mechanized boat owners and country boat owners. Out of 315 craft owners there are 265 mechanized boat owners and 50 country boat owners. In Adirampattinam there are 250 middlemen. The middlemen comprise two categories namely wholesaler and retailer out of 250 middlemen there are 50 wholesalers and 200 retailers. The socio-economic condition of fishermen families in the study area is analyzed in the project. 50 fishermen are chosen at random for this study. These socio-economic conditions of their families are analyzed and focused in this dissertation.

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Adirampattinam covers an area of 39,275 hectares. It is situated between Bay of Bengal at the East, Mallipattinam in the West, Manora in Saravendra Rajanpattinam in the South and Thanjavur in the North. In Adirampattinam, there are 12 panchayat unions. It is situated 50 kilometers away from Thanjavur. Main occupation of the people of this area is fishing, major portion of land are used to develop fisheries. It is famous for fishing. The main occupation of the population in the study village is fishing.

There are 315 craft owners in Adirampattinam. The craft owners comprise of two categories viz., mechanized boat owners and country boat owners. Out of 315 craft owners there are 265 mechanized boat owners and 50 country boat owners. In Adirampattinam there are 250 middlemen. The middlemen comprise two categories namely wholesale and retailer out of 250 middlemen there are 50 wholesalers and 200 retailers. The socio-economic condition of fishermen families in the study area is analyzed in the project. 50 fishermen are chosen at random for this study. These socio-economic conditions of their families are analyzed and focused in this dissertation.

Objectives of the Study

1. To study whether the mechanized boat owners are high in numbers.
2. To examine the educational background of the fishermen households in the study village.
3. To study the income and expenditure of the fishermen families in Adirampattinam.

Hypothesis of the Study

1. Number of mechanized boat owners is higher than the traditional boat owners.
2. Educational background of the fishermen is poor in the study area.
3. When the Income increases the expenditure also increases in the study area.

Methodology

The project was undertaken to study the economic conditions of fishermen families in Adirampattinam. The data used for executing the project, are both primary and secondary.

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Secondary data were collected from the Central Marine Fisheries Research Institute, Fisheries Department at Mallipattinam, Adirampattinam and Pattukkottai.

There are 300 fishermen families living in the study area. Out of this 50 fishermen families are chosen for the study. The primary data are collected from the heads of the sample families with necessary questionnaire. The collected data are scientifically processed and tabulated. They are placed in respective place and accordingly the inferences are drawn in the analytical part of the study. Simple percentages are arrived after understanding certain aspects concerned with economic condition of the sample families.

Annual Income of the Sample Households

Table 1 shows that whether the sample by the researcher is annual income of the sample households given.

Table 1

Annual Income of The Sample Households

Income	Mechanized Boat Owners	Traditional Boat Owners	Labourers	Total	%
20000 - 30000	-	-	18	18	36
30000 - 40000	-	5	1	6	12
40000 – 50000	1	4	2	7	14
50000 – 60000	3	-	-	3	6
60000 – 70000	5	-	-	5	10
70000 – 80000	6	-	-	6	12
80000 – 90000	1	-	-	1	2
90000 – 100000	4	-	-	4	8
TOTAL	**20**	**9**	**21**	**50**	**100**

Source : Primary Data

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The above table analyses the income level of the fishermen family according to different categories of occupation has brought out some interesting features. The income brackets are totally eight numbers. No one who live below income level of 20000 – 30000 rupees of the labour get 100 rupees in an average per day. The table 4.8 indicates their income ranges are between Rs.20000 – 30000 and 90000 – 100000. There are 18% of traditional boat owners and 42% of labourers' house income level in between Rs.20000 – 30000 per annum. This group is the majority of the sample houses hold this income depending upon the quality and marine owners and mechanized labourers have Rs.50000 – 60000 per annum. 10% of the mechanized boat owners have Rs. 60000 – 70000 per annum. 12% of the mechanized boat owners have Rs. 70000 – 80000 per year. Only 2% of mechanized boat owners have Rs.80000 – 90000 per annum and 8% of the mechanized boat owners have Rs.90000 – 100000 per year.

The above table indicates that 36% of sample households having Rs.20000 – 30000 per annum majority of the households are getting income at this range.

Annual Expenditure of the Sample Households

Table 2 hows that the sample taken by the researcher regarding the annual expenditure of the sample households.

Table 2

Annual Expenditure of the Sample Households

Income	Mechanized Boat Owners	Traditional Boat Owners	Labourers	Total	%
20000 - 30000	-	-	18	18	36
30000 - 40000	-	5	1	6	12
40000 – 50000	1	4	2	7	14
50000 – 60000	3	-	-	3	6
60000 – 70000	5	-	-	5	10
70000 – 80000	6	-	-	6	12
80000 – 90000	1	-	-	1	2
90000 – 100000	4	-	-	4	8
TOTAL	**20**	**9**	**21**	**50**	**100**

Source : Primary Data

The table shows the annual expenditure of the fishermen have spent 20000 – 30000 per year. It is more them labour fishermen 36% of the Traditional Boat owners and 2% of the labour fishermen total 12% of the fishermen have spend 30000 to 40000 per year of the mechanized boat owners spend 80000 – 90000 per year only 8% of the mechanized boat owners spend 90000 – 100000 rupees per year.

Among the collected sample mechanized boat owners are high in number so this study reveals that the income increases.

If we take the economy as a whole the total volume of income and expenditure can be visualized as a continuous flow. That is expenditure becomes income and income becomes that basis for expenditure. Assuming that the total volume of income created in one period becomes the expenditure in the next period.

The social features of the sample fishermen analyzed here are the age, size of family, types of family and Education.

Suggestion

1. Socio-economic condition of fishermen community has to be improved to a large extent. The social outlook of the majority of the fisherman has not changed perceptibly. They are still under the old beliefs and ideals, which are inimical to their growth, therefore every effort, should be made to instill progressive ideas in the mind of fishermen especially older fishermen who had of the households. Exhibitions, films, distribution of books through library and other materials carrying progressive ideas may supplied to the fisher households.
2. Another neglected aspects in fisheries sector economy is their education. Illiteracy rates are very high in this village. This coupled with the arresting education at the primary level seems to the stum bling block of the further development. This village people have only the middle school and have not

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got even library facilities. So that the government must take step to upgrade the middle school to higher school and library convenience to the fisher folk and their generation. The government must the fishermen.

3. Housing condition of the most of he fishermen households is really sympathy. Most of them live in thatched houses, which do not stand at the time of storm. Wind and cyclone, which created considerable damage to the fishermen households. Though the scheme of colonization of fishermen is operated in the village, housing plan given does not seem to be adequate to construct hoses. Therefore it is suggested that they should implement a comprehensive scheme providing adequate financial assistance to construct the pucca houses for fishermen should be incorporated in the IX five-year plan of the government.
4. The six of the family also seems to be large which too affect the standard of living fishermen. There fore, efforts should be made to spread the message of family planning to these families. Adequate incentives should be provided to the fishermen household to accept the family planning method.
5. The economic status of fishermen are not very high because they own smaller assets. They got very low income. Also they consume less. To improve their economic status, the following measures may be inhibited.

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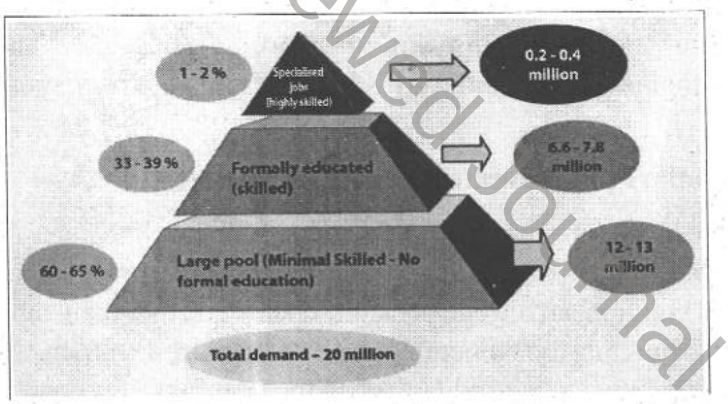
Growth Strategy (Vision Tamilnadu 2023)

This paper explains six growth strategies of vision Tamilnadu 2023 as follows :1.Thrust on skill development, 2. Improving agricultural productivity, 3. Transforming ten cities into world class cities that become the nodes of growth across the state, 4. Thrust on social welfare programmes to ensure inclusive growth, 5. Signature Projects, 6. Encourage PPP in infrastructure project creation and /or service provision.

1. Thrust on skill development

The single most important resource for the success of Vision 2023 is the availability of trained, knowledgeable and skilled manpower in Tamil Nadu. Without a body of sufficiently skilled and balanced workforce, no economy can hope to develop to its potential. Vision 2023 envisages training and skilling 20 million persons over the next 11 years. This will include 15 million people entering the job market and 5 million who are already part of the working population. 65% of the persons targeted for skill development (these persons would have studied until secondary school) would be provided with training for basic skills for a variety of livelihoods, about 33% would be persons who have undergone formal education as part of vocational training programmes or in colleges, while the top 2% would be top echelon professionals. Vision 2023 aims to achieve universal secondary education and more than 50% enrolment in higher education (comprising of vocational and college education). The skills pyramid for Tamil Nadu (indicating the requirement of jobs over the next 11 years in the categories of highly skilled, formally skilled and semi-skilled) is shown in the diagram below:



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The objective of Tamil Nadu's skill development vision is to confer basic skills to the persons at the bottom of the pyramid, numbering approximately 10 million as on date and increasing by about 0.8 million each year for the next 11 years. In addition to this, about 5 million people who are already in the workforce would be subject to re-skilling (upgrading of skills). These "minimal" skills would be aimed at making the concerned persons suitable for the large number of entry level jobs in various sectors and industries that will open up as the economy grows at high rates. The job openings in the middle layer of the pyramid are meant for persons with formal education, including vocational and/or college education, while in the highest layer, the openings are targeted towards specialists and experts.

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2. Improving agricultural productivity

Agriculture and allied activities provide subsistence for around 40% of Tamil Nadu's population and contribute to about 13% of the GSDP. The share of agriculture in the state's GSDP has dropped from 40% in 1960s to 12.6% in 2010-11 in real terms. After robust growth of 8-10% during the period 2000-2005, the agriculture sector witnessed negative growth during 2007-08 and 2008-09. The agriculture sector's growth turned positive in 2009-

10 and is poised to sustain growth owing to the increased thrust on improving productivity. Vision 2023 has a three pronged strategy covering:

i. Improving productivity by introducing scientific agricultural methods and building an institutional network to support the continued adoption of the same.

ii. Ensuring timely irrigation by intelligent use of available water by adopting effective recharging mechanisms, drip/sprinkler irrigation systems, timely cleaning and deepening of tanks and canals, and adopting appropriate cropping pattern based on water availability.

iii. Developing suitable post harvest infrastructure to maximise the benefits of value addition and timely marketing of produce. The state will also extend agricultural extension activities to cover the entire farming community.

3. Transforming ten cities into world class cities that become the nodes of growth across the state

Tamil Nadu is already the most urbanised state in the country (48% is classified as Urban), and Chennai urban agglomeration accounts for 25% of the total urban population in the state. While a number of towns have been categorised as 'Urban' based on the population figures, infrastructure services are found wanting in most of these towns. Vision 2023 envisages developing ten world class cities (essentially existing towns whose infrastructure is to be upgraded significantly including provision of access to 24x7 water supply, efficient mass transit systems while making them open-defecation free and garbage free) which will become the nuclei and engines for economic growth, thereby facilitating regional and balanced development across the state.

4. Thrust on social welfare programmes to ensure inclusive growth

Tamil Nadu has been in the forefront of implementing social welfare measures benefitting the underprivileged and vulnerable sections of the society. The state was the first in India to introduce the mid-day meal scheme for school children, an old age pension scheme and has many other welfare measures to its credit. Vision 2023 envisages that the vulnerable and disadvantaged sections will be extended protection by the state and will be equipped to take advantage of the benefits of the economic growth.

5. Signature Projects

Vision 2023 envisages a few large infrastructure projects, which would create huge positive externalities and open up possibilities of rapid growth for the economy. Most of these projects call for significant capital expenditure and an active role of the State government in facilitation. The signature projects that define the infrastructure creation ambition underlying Vision 2023 are given in Box 2:

6. Encourage PPP in infrastructure project creation and /or service provision

The total investment requirement for infrastructure over the 11 year period is estimated at Rs 15,00,000 crore (~US$ 330 billion). Given that the present annual capital expenditure of Government of Tamil Nadu is of the order of Rs 14,000 crore, which even allowing for increase in the future, cannot be expected to contribute to more than one third of the required investment of annual infrastructure creation. Therefore, a substantial portion of the financing for infrastructure has to be obtained from non-governmental sources, including private sector organisations, banks, and foreign direct investment. The Government will play the

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central role of a procurer of infrastructure services on behalf of the people of Tamil Nadu and will facilitate private investment and service delivery in infrastructure sector. Under the PPP mode, the Government will play the role of a change agent and will originate infrastructure projects in line with Vision 2023, and will also focus on the important functions of regulation and overall governance. Implementation of Vision 2023 will call for significant institutional reform to accelerate infrastructure development in PPP mode.

Signature Projects

- Develop world class Centres of Excellence in at least 10 areas that act as nuclei of innovation
- Set up two medical cities in southern and western Tamil Nadu
- Double water storage capacity across the state
- High speed broadband connectivity to be reached to every village
- Two supercritical and other power projects of cumulative 20000 MW capacity
- Gas grid connecting ten large cities
- 2000 km of 6/8 lane highways
- High speed rail connecting Chennai - Coimbatore - Madurai – Kanyakumari
- Development of industrial corridors between Chennai - Hosur, Chennai – Tiruchirapalli, Coimbatore – Madurai, Coimbatore - Salem and Madurai – Thoothukudi.
- Three greenfield ports and 5 minor ports with total cargo handling capacity of 150 million tonnes per annum
- Greenfield airport near Chennai with an annual capacity of at least 40 million passengers

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Growth Strategy (Vision Tamilnadu 2023)

This paper explains four growth strategies of vision Tamilnadu 2023 as follows :

1. Increasing the share of manufacturing in the state's economy, 2. Making SMEs vibrant, 3. Making Tamil Nadu the Knowledge Capital and Innovation hub of India, 4. Specialisation in service offerings.

The ten themes of Tamil Nadu Vision 2023 as described in the previous section are the aspirational outcomes and enablers that are sought over the next 11 years. To achieve them, the Government of Tamil Nadu will adopt multiple strategies that energise various slivers of the economy and create a virtuous circle of enhanced competitiveness, efficiency and vibrancy in all sectors and galvanise the citizens and other stakeholders to march towards the targets in unison. Strategy for development is about building on the strengths of the state to exploit opportunities while simultaneously protecting the vulnerabilities that could arise due to intrinsic weaknesses and threats in the environment. Accordingly, Vision 2023 identifies ten thrust areas which form the basis of acceleration in the economy and achievement of the long term goals. The ten thrust areas are described below:

1. Increasing the share of manufacturing in the state's economy:

Change in composition of the state GDP to reflect factor endowments: At present (2010-11), the composition of the GSDP of Tamil Nadu is Primary sector 12.6%, Secondary sector 25.8% and Tertiary Sector 61.6%. Agriculture & allied activities comprise the bulk of the Primary sector, while in the Secondary sector the break-up is Manufacturing sector (17%) and Non-manufacturing sector (9%6). The Tertiary sector comprises a multitude of service activities. Given the strong accent in Vision 2023 to accelerate growth in overall GSDP and per capita incomes, it is imperative that all the three sectors grow at high rates as shown in the table below:

Sector	2004-05	2010 – 11	2022 – 2023	Average annual growth rate (%)
Primary	12 %	12.6 %	7 %	5.1 %
Manufacturing	20 %	16.6 %	22 %	13.8 %
Non. Manufacturing	11 %	9.2 %	8 %	9.5 %
Services	57 %	61.6 %	63 %	11.1 %
Total	100 %	100 %	100 %	10.9 %

2. Making SMEs vibrant

The objective behind giving a big thrust to the manufacturing sector is to increase the footprint of high value adding activities in the state in line with its natural and human endowments and more importantly, to enhance the level of direct and indirect employment. A highly developed manufacturing sector necessarily needs a vibrant and dynamic SME sector which forms the base for providing essential goods and services. Therefore, one of the strategic initiatives underlying Vision 2023 is to boost the creation and sustenance of several SME clusters across the state. This will have the dual benefit of a geographically diversified growth in the state and high employment generation, the latter being a characteristic of the SME sector. Even as of today, Tamil Nadu is one of the leading bases for small businesses in India, with a leadership position in several industries such as leather and leather goods, engineering goods, automotive components, castings, pumps and readymade garments.

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3. Making Tamil Nadu the Knowledge Capital and Innovation hub of India

Tamil Nadu is not amongst the lowest cost locations for manufacturing activities when compared to many other states in India; neither is the demographic profile of Tamil Nadu's work force the most favourable in India. Therefore, it is imperative for Tamil Nadu to enhance its factor productivity significantly if it is to compete with other destinations in India and East Asia to grow its investments, output and employment in manufacturing and service sectors. This enhanced productivity can be achieved only if all organisations in Tamil Nadu make knowledge and innovation the centrepiece of their activities. This thrust on innovation has to happen across the board of economic activity in the state including services, manufacturing, agriculture, administration, and financing. This needs coordinated and deliberate action along the following lines:

- Ushering in a revolution in Skill Development aimed at skilling 20 million persons across the state over the next 11 years.
- Establishing best in class institutions as Centres of Excellence in various fields that will attract the best talent from across the globe.
- Fostering a social climate and institutional structure that will encourage free movement of people to and from other states of India and other parts of the world.

4. Specialisation in service offerings

While Vision 2023 articulates all round growth and development, a good strategy also calls for specialisation in some areas. The adage of "putting one's best foot forward" is apt here, and Tamil Nadu shall strive to be world class in a few areas, which will make "Tamil Nadu" a brand of excellence, and enable it to stand apart in a crowded and increasingly noisy world. In the Services sector, Tamil Nadu is already a leader in India in a few industries such as Financial services, Information Technology, IT enabled services for back-office operations, Engineering Design, Healthcare, Publishing, Film production, and Higher education. The growth in the Services sector is largely predicated on a significant spurt in these industries besides others such as Transportation, Urban services, and Research & Development. Under Vision 2023, the Government will aggressively position Tamil Nadu as a global leader in the following industries and activities:

- Back-office capital of the world: Tamil Nadu shall aim to be a global leader in attracting large scale back-offices for knowledgeintensive businesses such as banks, insurance companies, financial services companies, consultancies, engineering, accounting, architecture, law firms, design firms, scientific research, data management & analytics, telecommunication, technology and media.
- Healthcare capital of South Asia: Given that Tamil Nadu is already renowned for healthcare facilities (hospitals in Chennai, Coimbatore, Vellore and Madurai are popular with patients from all over the country and outside), Tamil Nadu will aggressively position itself as the medical tourism destination of South Asia.
- Audio and Video production and post production: Chennai is already recognised as India's leading audio and video production centre, with several post-production processing activities such as digital recording, mastering, dubbing, and animation being undertaken for several films made all over India. Given the scalability of the operations, the cost advantage that India enjoys globally, and the reputation for quality that Chennai has developed in this area, there is no reason why this service cannot be extended to Hollywood and other major film producing countries of the world.
- Tourism: Tourism has very high potential for local employment generation and Tamil Nadu has considerable natural endowments that enable tourism as an industry to flourish. Vision 2023 gives significant thrust to the development of this sector to its potential over the next 11 years. Tamil Nadu's tourism industry is the second biggest in India and is built on several attractive propo sitions including beaches, hill resorts, architecture, and heritage sites.

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Government of Tamil Nadu Environment and Forest Department Draft State Environment Policy

Introduction

The vision for Tamil Nadu for 2023 is to become India's most prosperous and progressive state with no poverty, and where its people enjoy all the basic services of a modern society and live in harmonious engagement with the environment and with the rest of the world. Tamil Nadu Vision 2023 document .

Tamil Nadu Vision 2023 outlined by Hon'ble Chief Minister recently has identified preservation of Ecology and Heritage as one of the key themes of Vision 2023 and states that " Preserving and wherever possible, improving the quality of the environment and nurturing the cultural heritage of the state would be an essential ingredient of vision 2023. Preservation would encompass the entire ecological footprint of human activity and would include increasing forest cover, protection of wetlands, conserving groundwater and rivers and other water bodies, protection of the coastal zones and fragile ecosystems, conservation of the zoological and botanical diversity of the state, protection of soil and other natural formation from abuse on account of human activity, efficient recycling of solid waste ensuring minimal impact on the environment minising atmospheric pollution and in general maintaining the ecological balance across the entire state. Toward realizing these objective of vision 2023 with respect to environmental sustainability, go Tamil Nadu intends to formulate a comprehensive Environment Policy/

Vision of Tamil Nadu

National Environment policy objectives

Environmental degradation is a major causal factor in enhancing and perpetuating poverty

Growing evidence of poor environmental quality adversely affecting human health.

Institutional failures, referring to unclear or insufficiently enforced rights of access to and use of environmental resources result in environmental degradation because third parties primarily experience impacts of such degradation without cost to the persons responsible for the damage.

Policy failures can emerge from various sources including the use of fiscal instruments such as explicit and implicit subsidies for the use of various resources which provide incentives for excessive use of natural resources.

Another major set of challenges arises from emerging global environmental concerns such a s climate change stratospheric ozone depletion and biodiversity loss.

Conservation of critical environmental resources.

Intra-generational of Environmental concerns in Economic and social development

Efficiency in environmental resources use

Environmental governance

Enhancement of resources for Environmental Conservation

National Environmental Policy Principles

Human beings are at the centre of sustainable development concerns

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The right to development

Environmental protection is an integral part of the development process

The precautionary approach

Economic efficiency

Polluter pays cost minimization , equity

Legal liability

Fault based liability, strict liability

Public Trust Doctrine

Integration

Decentralization

Environmental Standard setting

Prevention Action

Environmental offsetting

Strengthening of institutional capacities:-

The Tamil Nadu pollution control board (TNPCB) and the department of environment of Tamil Nadu of the government of Tamil Nadu are entrusted with the task of monitoring pollution and taking efforts for abatement of pollution in the state The Tamil Nadu pollution control board enforces the provisions of water (prevention and control of pollution) Act 1974.1978 and 1988 and the Air (prevention and control of pollution) act 1981 as amended in 1987 and the relevant provisions rules of environment (protection act,1986 for tackling pollution of water air and land on count of causes such as industrial effluents, industrial gases chemical pesticides human negligence etc. Among its activities are

1. Monitoring of treatment and disposal of effluent from the industries dying units tanneries and local bodies
2. Survey of water resources in the state to assess their quality. The department of Environment created in the year 1996 has the triple functions of centrally sponsored schemes in such areas for pollution abatement. The various agencies department would also be addressing themselves to environmental concerns in the discharge of activities environmental consciousness and for tackling environmental issues in a holistic manner on all fronts in the state.

The policy would look at specific strategies the capacity of those organization and the need for redefining their roles. Revamping and restructuring of the Tamil Nadu pollution control board the directorate of environment and related institutions to make them more participative and transparent in their decision making to be more transparent and efficient in their process and decision making and to be more vigilant and pro-active in their regulatory functions using the latest technologies and other facilities.

Information Education and communication

There is a huge body of knowledge developed with in and outside the state on all issues impinging on environment. The policy would look at collecting this information making them available in a transparent and open manner with open access to all who need it and evolving communication strategies to take the message to each and every citizen of the state.

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Thrust Areas- Key issues and Major Interventions

1. Air quality local pollution hot spots and status of current actions
2. Water quality domestic and industrial pollution flow into water bodies and status of various interventions.
3. Pollution abatement in rivers lakes and waste bodies
4. Water management municipal solid waste and status of adherence to MSW 2000rules, bio-medical, waste plastic waste, hazardous waste, electronic waste
5. Coastal Zone Management – Impact on coastal regulation zone of various economic activities progress on integrated coastal zone management.

Cross Cutting Issues:-

- Climate change and need to address vulnerability build resilience
- Linkage with health
- Capacity to facilitate independent reporting and monitoring of environment information
- Awareness creation and incentivisation for green investment

Policy Framework New and Emerging Interventions:-

a) Environmental Tax Reforms – Facilitating gradual shift towards management of environment and natural resources sing market based instruments

b) Green Economic and Green Growth – Facilitating move towards green economy and inclusive growth and development of statistical systems that estimate environmentally adjusted growth.

c) Public private partnership in the environmental sector

d) Enhancing awareness of legal issues regarding environment and working with environmental activists and judiciary.

Conclusion

This policy will strive to promote co-ordinate and regulate the activities towards providing healthier environment to the people of the state through better Air , Water, Soil quality management while at the same time balancing the need of the state towards industrial development.

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Economic Perspective of Tamil Nadu Towards Vision 2023

Government of Tamil Nadu with the support of Asian Development Bank has undertaken the preparation of the 'Tamil Nadu Vision' document addressing the following areas:

« Formulating a vision and growth strategy for the state of Tamil Nadu, with sector specific sub strategies.

« Identifying critical projects in important sectors including power, roads, port development, agriculture, irrigation, housing, health, higher education, urban development, public transport, industry and tourism.

Identifying thrust areas for growth and the bottlenecks in such areas.

« Formulating institutional mechanisms for removing administrative delays in implementation of projects.

Government of Tamil Nadu and ADB appointed experts from ICRA Management Consulting Services Limited (IMaCS) to undertake a study to prepare the "Tamil Nadu Vision document" on the basis of extensive research, data collection and discussions with stakeholders including all state government departments and industry. The Study is being conducted in three phases as follows:

- Phase I - Vision formulation
- Phase II - Detailed sector reports and project profiles
- Phase III - Implementation road map

This document covers Phase I of the exercise and outlines the contours of Vision Tamil Nadu 2023 and a summary of the proposed infrastructure initiatives for Tamil Nadu. The Tamil Nadu government has set itself the target of becoming one of the top three investment destinations in Asia by 2023. Vision 2023, conceptualised by state Chief Minister J Jayalalithaa, asserts the state will be among India's most economically prosperous and progressive states, with no poverty.

To achieve this vision, it is estimated a total investment of Rs 15 lakh crore will be required, of which the majority is expected to flow in from non-governmental sources, such as private sector organisations, banks and foreign direct investors. We are confident that Tamil Nadu will be able to increase its per capita income at today's prices by six times to reach Rs 450,000 or $10,000 in 2023, in line with the per capita income of upper middle income countries,".

Over the next 11 years, the state will aim to increase its Gross State Domestic Product (GSDP) at a growth rate of 11 per cent or more per annum, about a fifth faster than the expected growth rate of India's GDP over the same period.

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Prof. C. Dhandapani, Associate Professor and Head, Department of Economics,
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Ten Themes of Vision 2023

Vision 2023 Tamil Nadu identifies ten themes for the state as follows:

- Tamil Nadu will be amongst India's most economically prosperous states by 2023, achieving a six-fold growth in per capita income (in real terms) over the next 11 years to be on par with the Upper Middle Income 3 countries globally.
- Tamil Nadu will exhibit a highly inclusive growth pattern – it will largely be a poverty free state with opportunities for gainful and productive employment for all those who seek it, and will provide care for the disadvantaged, vulnerable and the destitute in the state.
- Tamil Nadu will be India's leading state in social development and will have the highest Human Development Index (HDI) amongst all Indian states.
- Tamil Nadu will provide the best infrastructure services in India in terms of universal access to Housing, Water & Sanitation, Energy, Transportation, Irrigation, Connectivity, Healthcare, and Education.
- Tamil Nadu will be one of the top three preferred investment destinations in Asia and the most pre ferred in India with a reputation for efficiency and competitiveness.
- Tamil Nadu will be known as the innovation hub and knowledge capital of India, on the strength of world class institutions in various fields and the best human talent.
- Tamil Nadu will ensure Peace, Security and Prosperity for all citizens and business, enabling free movement and exchange of ideas, people and trade with other Indian states and rest of the world.
- Tamil Nadu will preserve and care for its ecology and heritage.
- Tamil Nadu will actively address the causes of vulnerability of the state and its people due to uncertainties arising from natural causes, economic downturns, and other man-made reasons and mitigate the adverse effects.
- Tamil Nadu will nurture a culture of responsive and transparent Governance that ensures progresss, security, and equal opportunity to all stakeholders.

'Vision 2023' has achievable component in Tamil Nadu

Explaining that the project had three components - Overall Vision Document, Compilation of Project Profile and Road Map - the Chief Minister said her government would set up an Infrastructure Development Board to study extensively, prioritise and implement the schemes in the second component.

The projects would be implemented either as exclusive government schemes or in annuity method or in Private Public Partnership (PPP) with investment from private sector. Some projects would be executed fully by the private sector.

Tamil Nadu Chief Minister said that Rs.8,500 crore for the first phase of the Mono Rail Project and Rs.1,000 crore for Outer Ring Road-II would be fully funded by private investment. "That is why no fund was allotted for these schemes in the Budget." Ms. Jayalalithaa said that the investment for the 11-year project would be Rs.15 lakh crore. Beginning with Rs.25,393 crore in 2011-12, the investment for Vision 2023 in 2022 would touch Rs.2,37,690 crore.

As per the project report, around 60 per cent of the financial resource would come from the government. "The money will come not only from capital expenditure account but also capital of the private sector under the annuity method. Though there will be heavy investment under PPP, the expenditure by the government will be less."

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The government had allocated Rs.28,000 crore for project works, including Rs.20,856 crore for capital work alone. "Most of the funds will be utilised for laying roads, providing electricity, urban development schemes, and infrastructure for agriculture development, health schemes and education. And majority of the schemes have been included in Vision 2023.

"Assuming that the investment to be Rs.2 lakh crore in the Five-Year Plan beginning the current year, the investment will be doubled in the 11 Five Year Plan and Rs. 6 lakh crore will be spent for capital works. This will clearly explain that it is not difficult to mobilise funds for Vision 2023." Ms. Jayalalithaa said as the economy of the State grew further, the government could mobilise more funds and increase investment.

Tamil Nadu Releases Vision 2023 Aiming To Be Number One State in India

With the intented purpose of becoming the number one state in India, Tamil Nadu Chief Minister J Jayalalithaa had released the Vision **Tamil Nadu 2023 on March 22, 2012**. Writing foreword on the vision document, the Chief Minister said that a strategic plan for infrastructure development to catapult Tamil Nadu to a high growth pedestal has been developed for the first time.

One of the key requirements for rapid economic growth in all sectors is quality infrastcuture, she felt. It is the endeavour of her government to ensure all benefits to all people. In a modern globalised world, aspirations are unbridled and ambitions are high. Therefore, it is incumbent on a democratically elected government to provide the road map to channel these aspirations and ambition to their ultimate realisation. People in the State have a legitimate expectation that their quality of life should be as good as what is found in any developed economy. Tamil Nadu Government is bound to work towards actuating this expectation. "We have embarked, for the first time in Tamil Nadu, on an exercise of preparing a Vision document for the state as a strategic plan for infrastructure development. The goals and themes of the vhision are determined as clearly perceivable outcomes, which will impact the lives of the common citizens in the most direct manner possible - substantial increases in incomes through generation of fruitful employment, improvement in the quality of life through provision of high quality infrastructure and services, focused growth of sectors, where the State has a competitive advantage and above all, peace, prosperity and protection of the vulnerable, the Chief Minister said. "A distant vision neither inspires not challenges. We need to stretch targets which will challenge us and are achieved within a timeframe that is not too remote. Hence, as we stand at the commencement of the 2012-13 fiscal year, I have chosen a clear and challenging timeframe of ten fiscal years within which we set out of achieve ambitious goals", she said. Achieving the desired outcomes needs disciplined implementation of well laid down plans and I seek the cooperation of all the people and stakeholder in the state and urge them to wholeheartedly accept this vision and strive towards achieving it.

"The focus of the Vision 2023 document is on the physical, social and institutional infrastructure that needs to be established in Tamil Nadu, if the growth rates in various sectors envisaged under Vision 2023 are to be realised."

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Growth of Manufacturing Industries in Tamil Nadu by 2023

Introduction

Industries are playing in an important role to determine the economic development of a country. In the modern world industrial development is an impressive one. Now-a-days, countries cannot attain economic development without industrial development therefore industrialisation is an unavoidable one. All economic activities associated with providing of goods and services that satisfy to the human wants come under an industry. An industry stands for the contribution, according to a certain well-determined proportion of the available raw materials and other related factors of production to intermediate and final. The belief of the underdeveloped world was expressed by Nehru when he said "real progress must ultimately depend on industrialisation has indeed become the magic world of the mid twentieth century". Industrialisation has been viewed as an important means to solve unemployment problem. Productivity in the industrial sector is generally high due to the comparatively better organisation and technology. Industrial development may lead to a change in the composition and direction of foreign trade. Occupational mobility of labour, regional mobility of population, improvements in communication and educational levels and many other developments associated with industrialisation with industrialisation might cause certain social changes. The industrial growth production is measured by the index of industrial production. The manufacturing industries that become the major item in the industry group at the state level and central levels. Tamil Nadu has been one of india's most progressive states and is amongst the top of three on severl economic and social sectors. Over the past of few years, The state had lost its edge in terms of economic growth and final position. In the governer·s address in June 2011, the newly elected government idendified the need for formulating a succinct stratergy for rejuvenation of economic snd social growth of the stste and to reclaim the top position. Such strategic blue print for development should aim to acgieve a consistent economic growth rate of over 10 percent per annum in a highly inclusive manner. For the first time of Tamil Nadu on an excise of preparing a vision document for the state as a strtergicv plan for infrastructure development. Tamil Nadu vision 2023 identifies ten thrust area which form the basis of accellation in the economy and achievement of the long-term goals. One of the ten thrust area is to increase in share of manufacturing sector in the states economy. The growth of manufacturing will be a force of in achieving the targets under Tamil Nadu visiom 2023. In this context the present paper investigate the growth of manufacturing industries in Tamil Nadu 2023.

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Objective and Methodology of the Study

The main objective of the Study is to trace the trend and growth of manufacturing industries in Tamil Nadu during the study period (1980-81 to 2007-08) and forecast for 2023 in terms of number of units, gross fixed capital and employment and percentage contribution to GSDP in Tamil Nadu.

Methodologyincludes period of study, source of data and tools used for analyzing the data. The study period of the present study is 28 years from 1980 – 81 to 2007-08.

The present study entirely depends only on secondary data. The secondary data collected from Annual survey of industries (ASI) which is published by the central statistical organization (CSO) Department of statistical, Government of India, various issues of Tamil Nadu – An economic Appraisal, Government of Tamil Nadu.

In order to estimate the annual growth rate of number of industries, number of workers, gross fixed capital,valand percentage contribution to GSDP, the following formula was used

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$$AGR = \frac{y_t - y_{t-1}}{y_{t-1}} \times 100$$

Where

Y_t = Current year

Y_{t-1} =previous year

t =Time period

To analyze the trend and growth pattern of number of factories, number of workers, gross fixed capital, value of output and percentage contribution to GSDP, straight lined trend equations have been fitted for the period of 28 years from 1980-81 to 2007-08. To fit the straight – line the following model has been used

$$Y = a + bt$$

Where

Y = Dependent variable

t = Time trend variable taking values 1,2,3,...28.

'a' is the intercept term and 'b' is the regression co-efficient showing the annual growth or decline number of factories, number of workers, gross fixed capital, value of output and percentage contribution to GSDP of Tamil Nadu during the study period.

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Major Findings of the Study

Table.1 Growth of Manufacturing Industries in Tamil Nadu during (1980-81 to 2007-2008)

Year	Number of factories (in numbers)	Gross fixed capital(Rs.in lakhs)	Number of workers	Value of output (Rs.in lakhs)
1980-81	10292 (---)	204128 (---)	638949 (---)	663469 (---)
1981-82	10932 (6.2)	254280 (24.6)	659477 (3.2)	798074 (20.3)
1982-83	11303 (3.4)	278710 (9.6)	659993(0.1)	900853 (12.9)
1983-84	11918 (5.4)	336816 (20.8)	652365 (-1.2)	923597 (2.5)
1984-85	13076 (9.7)	394335 (17.1)	699178 (7.2)	1112151 (20.4)
1985-86	12429 (-4.9)	515457 (30.7)	688129 (-1.6)	1297331 (16.7)
1986-87	12616 (1.5)	567768 (10.1)	687426 (-0.1)	1423752 (9.7)
1987-88	13193 (4.6)	652335 (14.9)	711240 (3.5)	1634940 (14.8)
1988-89	13099 (-0.7)	852301 (30.7)	718615 (1.0)	1955236 (19.6)
1989-90	13800 (5.4)	941362 (10.4)	749429 (4.3)	2406662 (23.1)
1990-91	14617 (5.9)	1138526 (20.9)	766377 (2.3)	2765359 (14.9)
1991-92	15502 (6.1)	1285032 (12.9)	790108 (3.1)	3159295 (14.2)
1992-93	17702 (14.2)	1554468 (21.0)	843501 (6.8)	3798625 (20.2)
1993-94	18522 (4.6)	1964276 (26.4)	886606 (5.1)	4563447 (20.1)
1994-95	18755 (1.3)	2775870 (41.3)	920572 (3.8)	6031876 (32.2)
1995-96	19895 (6.1)	3039583 (9.5)	992220 (7.8)	7042912 (16.8)
1996-97	19038 (-4.3)	3398218 (11.8)	991629 (-0.1)	7922536 (12.5)
1997-98	19746 (3.7)	3482159 (2.5)	1015420 (2.4)	8261186 (4.3)
1998-99	20434 (3.5)	3529450 (1.4)	914105 (-10.0)	7668427 (-7.2)
1999-00	20249 (-0.9)	3750517 (6.3)	888350 (-2.8)	9459777 (23.4)
2000-01	20601 (1.7)	3743029 (-0.2)	925389 (4.2)	10353984 (9.5)
2001-02	18912 (-8.2)	3589616 (-4.2)	896732 (-3.1)	9436057 (-8.9)
2002-03	19550 (3.4)	4347893 (21.1)	920127 (2.6)	10807543 (14.5)
2003-04	20246 (3.6)	4642122 (6.8)	947590 (3.0)	12993703 (20.2)
2004-05	21053 (4.0)	5101608 (9.9)	1046788 (10.5)	15950703 (22.8)
2005-06	21265 (1.0)	6034229 (18.3)	1114421 (6.5)	18998170 (19.1)
2006-07	23691 (11.4)	7506812 (24.4)	1347122 (20.9)	25700144 (35.3)
2007-08	21042 (-11.2)	7933659 (5.7)	1283478 (-4.7)	26543807 (3.3)

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Source: Annual Survey of Iindustry

Figures in parantheses are AGR-Average Growth Rate

The above Table.1 shows the growth of manufacturing industries in Tamil Nadu during the study period 1980-81 to 2007-08.

- It is cleared that the number of manufacturing industries has been increased from 10,292 in 1980-81 to 21,042 in 2007-08. The annual growth of manufacturing industries in Tamil Nadu shows that there is a fluctuation in the growth of the manufacturing industries during the study period 1980-81

to 2007-08. The highest annual growth rate is seen in the year 1992-93. This was due to the positive impact of liberalization (A New Industrial policy) on manufacturing industries in Tamil Nadu.

- It is observed that the fixed capital of manufacturing industries in Tamil Nadu has been increased from Rs.2, 04,128 lakhs in 1980-81 to Rs.79, 33,659 lakhs in 2007-08. The annual growth of fixed capital of manufacturing industries in the Tamil Nadu shows that there is a fluctuation in the growth of the manufacturing industries during the study period 1980-81 to 2007-08. The highest annual growth rate was seen in the year 1994-95. This was due to the positive impact of liberalization (A New Industrial Policy) on manufacturing industries in Tamil Nadu.
- The number of workers in manufacturing industries has been increased from 6, 38,949 in 1980-81 to 12, 83,478 in 2007-08. The annual growth of the number of workers in manufacturing indus tries in Tamil Nadu during the study period 1980-81 to 2007-08. The annual growth rate 20.9 was seen in the year 2006-07 and lowest in the year 1998-99.sp
- The value of output manufacturing industries Tamil Nadu has been increased from Rs 663469 Lakhs in 1980-81 to Rs 26543807 Lakhs in 2007-08. The annual growth of value of output of industries in the Tamil Nadu shows that there is a fluctuations in the growth of manufacturing industries during the period 1980-81 to 2007-08. The highest annual growth rate was seen in the year 2006-07.
- The growth of contribution of manufacturing industries to GSDP of Tamil Nadu has been increased from Rs.1086564 Lakhs to Rs 35081863 Lakhs in 2007-08. The annual growth of GSDP of manufacturing industries in Tamil Nadu shows that there is fluctuation in the growth of manufacturing during study period 1980-81 to 2007-08. The highest annual growth rate was seen in the year 2005-06.

Manufacturing Industries in Tamil Nadu by 2023

The following table sources the forecasted values of manufacturing industries in Tamil Nadu by 2023.

Table .2Forecasted values of manufacturing industries in Tamil Nadu by 2023.

No	Variables	Forecast Values 2023
1	Number of Manufacturing Industries	29,990
2	Number of Workers	99,77,486
3	Gross Value Added	Rs14,50,875 lakhs
4	Value of Output	Rs2,97,49,582 lakhs
5	GSDP	Rs3,83,75,862 lakhs

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The forecated values reveals that, the number of manufacturing industries in Tamil Nadu by 2023 will be increased to 29,990, the number of workers will be increased to 99,77,486, gross value added will be Rs 14,50,875 Lakhs, the value of output will be STs 2,97,49,582 Lakhs, and the contribution of manufacturing industries to total gross state domestic products will be Rs. 3,83,75,862.

Suggestions

- To increase the manufacturing industrial growth rate through the suitable industrial policy.
- To reduce entrepreneurs by reducing tax and providing infrastructure facilities.
- To avoid environmental pollution by using modern production methods.
- To regulate the allocation of important mineral resources.
- To provide quality of infrastructure facilities adequate level.
- Export promotion center properly executed by the government.
- To increase the supply of power.
- To increase the employment by using labour intensive technology.

Conclusion

The manufacturing industries contribute a sizeable percentage of total income of the state of Tamil Nadu. To induce manufacturing industrial growth the proper execution, efficient administration and optimum use of scarce resources are essential thereby we could attain sustainable growth of a state.

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