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## IMPLICATIONS OF CLIMATIC CHANGE ON FARMER'S LIVING CONDITIONS-A THEORETICAL FRAMEWORK

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### ABSTRACT

Indian economy is witnessing the wrath of the situation and there are subtle changes in monsoons. Low rainfall rates, increasing atmospheric temperature, sudden Tsunamis, recurrent drought conditions are significantly changing the entire socio-economic environment. The cost benefit ratios are gradually becoming negative. It is already affecting the agriculture, which depends mostly (70 percent) on monsoons due to increase in temperature and increased variability of rainfall would considerably impact of food production. As per the IPCC report indicate that 10% to 40% loss in crop production in India. Its given the confirm trend of agriculture decline with climate change. Recent studies done at the Indian Agricultural Research Institute indicate the possibility of loss of 4-5 million tons in wheat production in future with every rise of 1oC temperature throughout the growing period especially for kharif seasons. Indian climate is dominated by the south-west monsoon, which brings most of the region's precipitation. Agricultural productivity is sensitive to two broad class of climate-induced effects i) direct effects from changes in temperature, precipitation or carbon dioxide concentration and ii) indirect effects through changes in soil moisture and the distribution and frequency of infestation by pests and diseases. Rice and wheat yields could decline considerably with climatic changes. Agriculture, climate change and the deterioration of social and economic conditions in some densely populated Indian regions have made hunger worse amongst the poor and pushed people to commit suicide. It's a very small leap of logic from observing that rain failures are usually the factor that tips farmers toward suicide, to observing that less (and less predictable) rain will increase suicide rates. And why is that? because farmers' lives are already so very precarious. Indebted, living life on the edge, it only takes a small external shock to catalyze despair. Sometimes that shock is a medical expense. Sometimes the cost of a wedding and now outrageous fortune has one more arrow in her quiver. Present paper focuses on significant changes in the weather conditions during the last four to five years which have adversely affected farming. This article also tries to focus on effects of natural and manmade disaster on Indian agriculture.

**Keywords:** Agriculture, Environmental Concern, Climate Change, Weather Conditions.

### Introduction

It is well established and documented fact that today Environmental Concern is on the top agenda of world economic issues. The awareness on possible negative impacts of climate change is increasing across the world. The environmental degradation caused by many types of pollutions is rapidly increasing the emission of green house gases, though the developed economies are causing major damage to the environment with 75 percent contribution in such emissions, the poor and developing countries are also facing the real challenge.

India is seventh largest country in the world and second largest in Asia bearing 16.1 percent of world population with 2.4 percent of world geographical area and 1.3 percent share in world per capita income in this country. Agriculture is a major sector and contributed nearly 25Percent of GDP and nearly 56 % of work force is depending on agriculture for its livelihood.

### Significance of the Study

From the last decade fast changing climatically situation is posing additional stress on ecological and socio-economic system and inherent resources that are already under tremendous pressure. Various studies conducted in the country have shown that surface air temperatures in India are increasing at the rate of 0.40 c per hundred years. Such studies using different models have predicted that there will be drastic change in seasons and winter and summer season temperatures will go up by as much as 3.20 c and 2.20 c by year 2050 and 4.50 c and 2.20 by 2080 respectively, due to increase in temperature and increased variability of rainfall would considerably impact food production. (Gadgil and Rao 2000).

Indian economy is witnessing the wrath of the situation and there are subtle changes in monsoons. Low rainfall rates, increasing atmospheric temperature, sudden Tsunamis, recurrent drought conditions are significantly changing the entire socio-economic environment. The cost benefit ratios are gradually becoming negative. It is already affecting the agriculture, which depends mostly (70 percent) on monsoons due to increase in temperature and increased variability of rainfall would considerably impact of



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Indian climate is dominated by the south-west monsoon, which brings most of the region's precipitation. Agricultural productivity is sensitive to two broad class of climate-induced effects i) direct effects from changes in temperature, precipitation or carbon dioxide concentration and ii) indirect effects through changes in soil moisture and the distribution and frequency of infestation by pests and diseases. Rice and wheat yields could decline considerably with climatic changes (IPCC,1996:2001).

### Problem Setting

Small climatic changes can cause large water resource problems for both irrigation and drinking purposes. Due to climate change / drought situation the southern states like Telangana Andhra Pradesh, Maharashtra, Karnataka and Madhya Pradesh are facing the ever-worst agrarian distress. Unusual climatic changes are turning the agriculture in to non-remunerative and less enthusiastic. Agricultural production is declining gradually and production costs are increasing. The small and marginal farmers who could not withstand the onslaught of natural and man-made disasters are committing suicide. According to the National Crime Records Bureau of India, 182,936 Indian farmers have committed suicide between 1997 -2007. It estimates 46 Indian farmers kill themselves every day - that is, roughly one suicide every 30 minutes. An estimated 16,625 farmers across India killed themselves in 2007, the last year that was reported.

Agriculture, climate change and the deterioration of social and economic conditions in some densely populated Indian regions have made hunger worse amongst the poor and pushed people to commit suicide. It's a very small leap of logic from observing that rain failures are usually the factor that tips farmers toward suicide, to observing that less (and less predictable) rain will increase suicide rates. And why is that? Because farmers' lives are already so very precarious. Indebted, living life on the edge, it only takes a small external shock to catalyse despair. Sometimes that shock is a medical expense. Sometimes the cost of a wedding. And now outrageous fortune has one more arrow in her quiver.

Present paper focuses on significant changes in the weather conditions during the last four to five years which have adversely affected farming. This article also tries to focus on effects of natural and man-made disaster on Indian agriculture.

### The basic objectives of the study are

1. To analyze and assess agrarian scenario in Indian economy in general with a special focus on Telangana State.
2. To observe and understand trends in farmers living conditions in Telangana State with a specific attention on selected district.
3. To look into natural & man made factors that have socio – economic and psychological aspects of affected households.

### Methodology

The study is based on Secondary sources and the data was collected from various books, magazine, journals, newspapers and websites.

### Agrarian situation in India

The basic features of Indian agriculture are such that more than 70 percent are small and marginal farmers with fragmented tiny land holdings. Their economic position is so weak that they frequently depend on borrowings for their productive and unproductive purposes. Poor infrastructure facilities, lack of sufficient irrigation and other factors have adding “fuel to the fire” The agrarian crisis has taken a new dimension with the penetrative implementation of liberalization policy, which has given scope for import of capital, technology and goods and services. With the introduction of hi-tech agriculture expenditure levels have increased substantially and this has warranted even small and marginal farmers to opt for huge investments.

On the other, large-scale imports under Agreement on Agriculture (AOA) have slashed market price of many agricultural commodities at producer level. The Minimum Support Price (MSP) being announced by the Government of India is also not so remunerative in view of ever-increasing input costs. Another important factor that augmenting the agrarian distress is the slow progress in irrigation development. Even today only 32 to 35 percent of the cultivated land is under assured irrigation. The remaining cultivation is on the mercy of monsoons. The culmination of all these factors further forged the agrarian crisis and it has resulted in wide spread farmers suicides across the country. Southern states like Maharashtra Telangana, Andhra Pradesh, and Karnataka have



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experienced the real brunt among the southern states the Andhra Pradesh. This has initiated the economic reforms so early than the other states have suffered the crunch of the situation.

### Problems visible in Telangana State

Telangana has become the second top state in suicides by farmers for the fourth consecutive year during 2017. The number of suicides by farmers in Telangana during 2017 was around 3026, according to Raithu Swarajya Vedhika a NGO. It may be mentioned here that in 2014 also Telangana stood at second position with 898 suicides by farmers while Andhra Pradesh was at sixth Rank registering 160 suicide cases, according to the report, Maharashtra registered in 2017 the highest number of 3,030 suicides in the farming sector followed by Karnataka was at third rank registering 1,197 cases of suicides respectively. Among these farmers most of them are cotton growers. Normally the farming community invites a shift in the cropping pattern to improve their income levels and living conditions. But for the dismay of Telangana a shift in cropping pattern in favour of cotton has been a curse to the farmers. Surprisingly the area under cotton has increase from 35 percent to the total cropped area under cotton in Andhra Pradesh in 2000 - 2011 to 53.2 percent by 2014-15.

The Telangana State comprising of 31 districts with a population of more than 5 crores has its own specific problems which have driven number of farmers into death trap. It is highly drought effected state, particularly Warangal, Mahabubnagar, Medak, Nalgonda and Adilabad districts are the worst effected areas. In spite of large catchments area of Krishna and Godavari rivers, the Telangana has its own problems with regard to canal irrigation. High dependency on ground water induced most of the farmers irrespective of their land holding and economic strength to opt for tube well irrigation. Earlier tank irrigation was the ruminant sources of irrigation, but gradual negligence on the part of state government and local governments the importance of tank irrigation has slowly pushed to the back seat. In due course the extent of tube well irrigation increased phenomenally and with that the power utilization also increased abnormally.

The recurrent drought conditions have created a situation where the ground water level has gone into deep and deep. This has increased expenditure on digging and maintenance of bore wells significantly and in most of the cases success rate of bore wells is also low. Even in cases of success the power usage has increased sharply to extract the water from 300 to 400 feet from the ground level. The power supply in the state is almost erratic since 10-12 years or so. Frequently power cuts, low voltage have resulted in disruptions in agricultural operations and increase the expenditure on maintenance of pump sets. Huge investment on irrigation and its maintenance is one of the basic factors for mounting indebtedness of farmers in Telangana districts. Power sector reforms that have been prompted by the World Bank have further aggregated the views of the farmers.

Another area of concern is spurious seeds. Entry of multinational companies into the seed market under new rules of WTO has changed the entire scenario. The traditional seed development has gone in its way. The Genetically Modified Seeds and the new patent regime have given ultimate grip for multinational companies over Indian seed market. The situation is more alarming with reference to commercial crops and that to particularly with regard to cotton. More number of farmers' suicides that have been reported in Telangana districts are of cotton growing farmers.

This malady can be attributed to the two important factors, one is high seed costs and the other is spurious seeds. Many times, the farmers have been grossly exploited by the multinational companies and their dealers with inferior seeds. The inferior cotton has taken heavy toll of cotton growers in Telangana districts and mostly in Warangal district. The companies like Boll guard, and Monsanto have played long cruel game with innocent farmers by supplying spurious seeds at exorbitant prices. In most of the cases small and marginal farmers who have to purchase the seeds on credit have to pay additional price on MRP depending on demand situation.

One more area of concern is the havoc attached with indiscriminate use of pesticides. Modern agrarian technology invariably imposes more and more application of pesticides. As newly developed seeds and particularly that of cotton seeds are sensitive to topographical conditions and nature of the soil, they need regular application of pesticides. In the post globalization period, the pesticides market also gone into the hands of multinational companies and the price of many such pesticides has increased alarmingly. Here also adulterated pesticides with inferior quality have played havoc with farming community and especially cultivators of commercial crops. In most of the farmer's suicide cases, they have consumed these pesticides to end their life. "It is irony and tragedy that the pesticides which have to save the life of the crop have taken the life of the farmers"



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Among the host of the problems being encountered by the farming community, availability of credit is the icon of the problems. The rural credit structure is still weak and inconsistent. The period of globalization has changed the priorities of the government. The agriculture sector has been relegated to back seat and service sector gained importance. The Public investment into the agriculture sector has declined sharply and the global phenomenon has induced the central and state governments to slash the subsidies and other protective measures. The input market has opened up to the market economy. Culmination of such manifestations has created an inevitable situation, where the individual farmers have to depend on private lending. Commercial Banking Sector with its mounting NPAs (Non Performance Assets) has reduced its lending to the primary sector. The money lenders, traders and commissions agents are playing a major role even today in providing rural credit. Here also the demand side of the economy is playing a vital role. Seasonal demand for borrowings naturally put up pressure on interest rate. In the peak stages of agricultural operations the interest rate even cross 36 percent. High range of investment on irrigation, seeds, pesticides and working capital have invariably increased the volume of borrowing. In spite of such borrowing and investment the farmers are not in a position to come out of the vicious circle.

Two important causative factors for such situation are natural and man made factors. The present context manifests that case of the farmers' suicides across the country is basically a man made disaster. Failure of the government in providing adequate irrigation facilities and particularly in strengthening local irrigation potential has increased private expenditure on irrigation and its maintenance. In a region like Telangana where river Godavari flows nearly 800 feet below to the surface land in mid areas, the earlier governments haven't come up with alternative workable solutions. Gradual negligence of tank irrigation in Telangana has prompted excess dependency on well irrigation which again increased the expenditure on irrigation.

Obliviously the institutional setup is also not so positive towards the agrarian economy. Marketisation of supply of credit, seeds and pesticides has opened chance for gross exploitation by the private financiers and trading community in collusion with multinational companies. Sometimes the nature is also not in favour of farming community with erratic monsoons, flash floods, drought conditions and scanty rainfall, but this is also primarily a man-made factor, where human activities are posing threat to the environment. The ultimate conclusion that arises from the above analysis is that the farmer's suicides across the country in the state of Andhra Pradesh and specifically in Telangana region are the result of number of human errors.

### Steps Required

Farmers' suicides are linked with human dignity, human values and human rights. Suicides as an act on mass scale lower the dignity of the country. A serious look into various alternative approaches to stop the tendency is the need of the hour. Various state governments including Telangana are coming up with committee and commissions to thoroughly probe the genesis of farmers' distress and to provide alternative suggestive approaches. In Telangana Agricultural Commission with active involvement of Dr. M.S. Swaminathan, Prof. Jayathi Ghosh and Vandanashiva, Justice Ramachandran Committee Rythu Sahayak Committee, have elaborately worked in this area. The present state government has come up with a package of compensation on one hand and a number of corrective measures on the other and they include both long run and short run measures. Irrigation development has been given top priority to irrigate more than 9 lakh hectares in Telangana region. Micro and easy credit policy is being implemented. Stringent actions were initiated against the companies, agents and dealers for supply of spurious seeds and fertilizers. In spite of all such measures 140 farmers suicides cases have been reported. (Dr. M.S. Swaminathan report) In order to control and stop farmers' suicides a comprehensive approach works in a better way.

This approach has to be guided by flow of micro level institutional credit, supply of safer seeds and pesticides under the supervision of government agencies at subsidized prices, well developed irrigation network according to the topographical conditions and above all assured better remunerative price to the crop. Awareness among the farming community is another essential parameter.

### Conclusion

In order to guide the farmers a better way than the present situation, alternative crop pattern has to be developed. Minimum support price system has to play a pivotal role, where the government can announce higher support price for safer crops which have widespread demand in national and international markets. In this direction, encouragement to cultivation of oilseeds, pulses and Maize can work properly and positively. It all depends on how the government takes the initiative and the farmers' respond to it. Regular farmers' education can play prominent positive role in this endeavor. The government should not move away from input subsidies in to at once. It has to introduce a gradual export subsidy channel. Crop diversification is another area of opportunity, where in horticulture, floriculture, herbal plantation and cultivation of vegetables has to be encouraged.



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