



## IMPACT OF CLIMATE CHANGE ON HUMAN RESOURCES WITH SPECIAL REFERENCE TO SOUTH INDIA

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### OBJECTIVES OF THE STUDY:

Present paper has been presented on the basis of the study conducted on geographical conditions which influence the economic activities of South India. Following objectives are kept on mind to present professional paper.

1. To focus on the climatic conditions of South India.
2. To discuss on the climatic conditions which influence the economic activities in South India
3. To discuss the impact of Global warming on the atmosphere in South India.
4. To focus on the natural calamities which influence the economic sector
5. To lay emphasis on the saga of agriculture which provide infrastructure to the industries located in this area.

On the basis of above objectives present study has been conducted to present a useful paper on the topic selected.

### METHODOLOGY:

Doctrinaire approach has been adopted to prepare the present paper. Various documents available in the government offices have been pursued. Records giving information about the drought hit conditions have been verified. Local people have been consulted to know their opinion on the climate change which influences the economic activities in South India. Available literature has been consulted to know more information about the weather conditions in southern peninsula. Number of workshops, conclaves and seminars are attended to have first hand information about the climate change in South India.

### HYPOTHESIS:

Generally heat wave conditions are prevailed in South India. Anthropological and historical studies have confirmed the above statements. Winter period is very less in South India. The rivers in South India depend upon monsoon that is South West monsoon and North East monsoon. This area experiences fluctuations in rainfall and drought like conditions. These fluctuations hamper the agriculture and industrial growth rate of Southern peninsula. On the basis of above tentative conclusion present study has been made.

### SIGNIFICANCE OF THE STUDY:

Present study is significant for the economic development of southern part of India. On setting of monsoon would have their impact on the economic and industrial sector of this region. The failure of the monsoon would hamper the lives of the people due to the failure of crops. The crop failures create an obstacle for the industrial growth rate. Present topic holds such importance to create awareness on the climate change which entirely changes the human life.

### CONCEPT:

The human resources are helpful for the development of economy. The human resources are backbone of the country for its speedy growth. But human resources would have a tuff time to be utilized due to the climate change and global warming. The climate change would hamper the human resources to be utilized by the government in all fronts.



The climate change may affect the agriculture and industrial economy due to the failure of monsoon in South India which are being considered a natural boon.

**THEME OF THE PAPER:**

Anthropogenic factors have become the most dominant environmental force, notably after the industrial revolution, Increased population growth together with accelerated human activities and economic wealth over the past century have greatly increased the resource use as reflected in agriculture, fisheries, forestry, industry, transport, energy and urbanization. This has resulted in multiple inter acting global environmental impacts as seen by the current values of greenhouse gases temperature.

Climate change concerns in India include the rising temperature, projected pattern of precipitation its intensity frequency and enhanced incidences and intensity of extreme events such as cyclones, flash heavy rains, droughts and frequent floods. With a rapidly expanding economy many changes are taking place in India today. Land use, cropping and water use patterns are changing, partly as response to changing investment scenarios and economic growth.

Various studies about climate changes using Global Climate Models (GCMs) and Regional Climate Models (RCMs) over India during the 21st century indicate changing patterns of Rainfall and an increase in temperature. Utility of precipitation primarily depends upon its spatial as well as temporal distribution. Uniform precipitation over a larger area is more useful than its occurrence over a smaller region. Also, precipitation occurring over a larger time period would be more effectively utilized rather than when it occurs within a short span of time.

Therefore, projected changes in precipitation patterns over the Indian subcontinent in near future would result in deterioration of water resources. First, decrease in winter precipitation would reduce the total seasonal precipitation being received during December–February, implying greater water stress during the lean monsoon period. Secondly, intense rain occurring over fewer days besides causing increased frequency of floods during the monsoon season, will also mean that much of the monsoon rain would be lost as direct run off resulting in reduced Ground water recharging potential.

Agriculture sector alone represents 35 per cent of India's Gross National Product (GNP), plays a crucial role in the country's development and shall continue to occupy an important place in the national economy. It sustains the livelihood of nearly 70% of the population. It seems obvious that any significant change in climate on a global scale will impact local agriculture, and therefore affect the world's food supply.

Changes in the temperature, solar radiation, and precipitation will have an effect on crop productivity, livestock and agriculture. Climate change will also have an economic impact on agriculture, including changes in farm profitability, prices, supply, demand, trade and regional comparative advantages. The magnitude and geographical distribution of such climate induced changes may affect our ability to expand the food production area as required to feed the burgeoning population.

Human nature depends upon the climate change since the growth of civilization. The people of Indus Valley were very much suffered by incessant floods caused by Indus river. Due to the hollowness of the earth frequent earth quake had damaged the urban life which was the main feature of Indus Valley. The North Indian main lands were heavily sub merged by the waters of rivers Ganges and Jamuna. In case of South India the table lands depend upon the Monsoon setting from the month of June. The southern peninsular rivers become alive only with the rainfall caused by monsoon. The farmers start their agricultural activities only with the onset of monsoon. Tamil Nadu is separated from the on setting of south west monsoon. Godavari, Krishna, Kaveri, Tungabhadra and other tributaries get the water



through the rainfall caused by south west monsoon. Not only the south India but entire Indian subcontinent is blessed with the water through the major rivers like Himalayan Rivers.

The governments in South India release water to irrigation lands from the projects during the rainy season and winter season. All the canals would be filled with the water till completion of harvest season. The release of water would be stopped in the month of February. The economic activity would be triggered from June to February. Paddy, Pulses, sugarcane and bajra are the main crop produced by the farmers in South India. Sugarcane, bajra and turmeric are the commercial crops which have been produced in the interior parts of South India. During the winter with the on setting of North East monsoon coffee, tea, cloves would be grown in the hill areas of South India. Most of the parts of the South India depend upon the South West monsoon.

The Indian meteorology department starts to predict the percentage of rainfall to be produced by south west monsoon in the month of April. The department examines the rainfall pattern of last ten years. On the basis of the thorough examination rain fall of current year would be forecasted. During 1980s the South India faced serious drought conditions due to the failure of monsoon successively. For five to six years from 1985 to 1992 rainfall is very low. During 1986 – 87, 87-88 the rainfall from June to September is forecasted below 86%. Due to the severe drought hit conditions the farmers failed to sow the seeds normally done during the month of June, July. Food grains and the pulses have not been grown due to the scarcity of the water. Godavari and the Krishna River are dried up due to the failure of monsoon. Demand for food grains has been increase and the price has gone up very high. The ordinary people have lost consuming power to purchase the food grains and the pulses. The farmers are supplied Fodder to feed the animals from North India. Poverty has been increased due to the drought hit conditions prevailed in south India during last two decades of 20<sup>th</sup> century. Industrial growth rate has been slowed down due to the failure of agro based economic activities. India's GDP is allowed 5% during the last decade of 20<sup>th</sup> century. The agricultural workers have migrated to other places in pursuit of work. Hungry deaths have been occurred in some parts of Telangana and coastal districts of Karnataka. So that Northern parts of India is economically developed in compare to the south India.

But South India is known for orchards, Mango grows and flower gardens. During the summer the people have to walk miles away for the water. Due to the scarcity of the water the birds, animals and plants are losing their existence. Bore wells, canals and lakes would be dried up. The south India falls in hot tropical zone. Due to the climate change the mercury may touch 50 degrees Celsius. In 2006 the maximum heat in South India has reached up to 51 degrees Celsius of Kovvuru west Godavari district of Andhra Pradesh and Kothagudem Khammam district of Telangana. The weather men have feared that mercury may touch the 56 Celsius degrees normally happened in the Bharmar district of Rajasthan. All the canals even the major rivers like Godavari and Krishna are totally dried up. The river Kaveri which flows through Karnataka and Tamil Nadu was dried up make the people of the catchment area of Kaveri to face hardships to carry on their lives. Most of the animals are died due to the scarcity of fodder. The railway wagons have supplied the water to the people of Tamil Nadu. These drought conditions have hampered the lives of the people. The economic activities have come to standstill. The industries would get the raw material from agricultural. Most of the parts of South India have been reeling under severer hot sun. As South India falls in severe hot tropical zone it experiences severe hot for six to seven months from March to August.

If the monsoon is severe it will cause severe rainfall which makes the rivers to inundate green fields. In 2009 the monsoon was very swift which caused fury of the floods by which thousands of acres were marooned. The floods in Krishna River have damaged the



flood gates of Narayanpet, Jurala, Srisailam and Nagarjuna Sagar. Similarly the Godavari floods caused heavy damage to the standing crop of both Telangana and east and west Godavari districts of Andhra region. The river Kaveri created havoc both Karnataka and Tamil Nadu in 2010 and 2011. The crops have been damaged and industries of that area have not been supplied raw material. Most of the forests are inundated and the tribal people were deprived of carrying on their lives depend upon the forest products.

The fluctuation of drought and floods pushed South India and back foot. Underground water evaporates by which all the bore wells sometimes have been dried up and the floods created havoc during the monsoon in this region. Due to the Global warming, deforestation and climate change the south India frequently faces natural calamities. The Geographers and researchers on climate change have expressed their opinion that the severe hot conditions falling for eight to nine months is responsible for the deforestation in South India. The South India experiences two months winter period that is December and January. Only 20 to 30 days the people of Karnataka, Andhra Pradesh and Telangana can enjoy chilly weather and the mercury touches up to 13 to 14 degrees Celsius during nights. But Medak, Adilabad and Nizamabad may receive severe cold by which mercury touches even 4 degrees Celsius. The tribal areas of Andhra and Telangana experience coldest nights during the mid winter. But the climate change slowly reduces the winter in South India. During the day time the mercury touches up to 35 degrees Celsius in compare to the North India where the mercury touches 24 to 25 degrees Celsius during the day time.

The coastal area from Chennai to Srikakulam of Andhra Pradesh would be badly hit by the cyclone during the months of October and November. The cyclones occurred in Bay of Bengal may create devastation with the velocity of winds up to 200 kilometers per an hour. The Hudhud cyclone occurred on 12<sup>th</sup> October 2014 ravaged the North Coastal districts of Andhra Pradesh. Visakhapatnam was worst hit area which was ravaged by the high speed winds with the velocity of 215 kilometers per an hour. Such type of cyclones badly hit the road communication, electricity and agriculture. The transport would be disrupted. The coastal districts took 5 months for recovery from the devastation created by Hudhud cyclone. The geographers have found that due to the warm weather the cyclones may occur in the Bay of Bengal. The pollution is mainly responsible for the global warming. Neelgiri hills and wild life in the forests suffered heavily due to the increasing heat in the summer. The people from all over the world reach Ooty and Kodaikanal to enjoy pleasant weather of Neelgiri hills. Recently the researchers have found that the cool climate is being diminished due to the Global warming.

The geographers have predicted that India would become desert after 4 to 500 years due to the prevailing of unbearable heat conditions. It has been predicted that the greater Himalayas would be melted causing heavy floods in the Himalayan Rivers. After the completion of melting process all the Himalayan River would be dried and desert like situation could be seen in the future. With the disappearance of mighty Himalayas the failure of the monsoons are certain in the Indian peninsula. Slowly sea around India would receive more and more river water which causes the erosion of the soil along the coastal belt. The pollution levels of the metropolitan cities like Chennai, Bangalore, and Hyderabad has been considerably reduced. Hence the industrialization should be minimized to bring down the global warming otherwise the economic development would be hampered allover India and south India in particular. Natural calamities would be occurred frequently by which the human resources cannot be utilize. The power generation employment generation, transport facilities and the service sector would be badly affected due to the natural calamities triggered by global warming.



At the present situation south Indians are facing acute water scarcity. To save the water is the utmost priority of the governments. Digging of the bore wells and draw the water through the bore wells would hamper the agricultural activity after the evaporation of underground water. The researchers and geographers have conducted researches in the hill areas of Vindhya, Satpura, Neelgiri hills and catchment areas of peninsular rivers to identify the major problems of those areas to unearth the causes for the floods or vegetation in those areas. The South India at present is facing severe drought conditions due to the frequent failure of monsoons. The meteorologists have forecast that monsoon would be normal for this year. If the rainfall is good rain water harvest should be taken to improve the ground water level. The geological survey of India has cautioned about the scarcity of water in coming years if the water has not been conserved. The geography of South India is peculiar with the existence of high mountains, long rivers, thick forests and minings. South India has long coastal life by which the weather of this area would be influenced by Indian Ocean or Bay of Bengal. Thus the geography of South India is wonderful to provide good information about the weather conditions, flora and fauna, wind conditions movements of earth plates etc.

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