# Effect Of Climatic Change On Humans In India: Impact & Remedies

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## ABSTRACT

*It is evident from scientific researches that ecological catastrophe brought about by climatic change is becoming unavoidable day by day. This climatic change has the potential to undermine human development and may even lead to a reversal of current development progress.*

*Evidences show that change in climate will affect distribution and quality of India's natural resources, which will ultimately threaten livelihoods of most poor and marginalized sector of population who closely tied to India's natural resources base and count of such sector is almost 56%.*

***Key words:-***

*This paper deals with:*

*a. Processes behind Change in climate & Highlighting human impact of climate change in India.*

*b. Remedies to combat climate change and protection of social development prospects for future generations.*

## 1. INTRODUCTION

India is confronted with the challenge of sustaining rapid economic growth amidst the increasing global threat of climate change. Evidences show that change in climate will affect distribution and quality of India's natural resources, which will ultimately threaten livelihoods of most poor and marginalized sector of population who closely tied to India's natural resources base and count of such sector is almost 56%.

Indian climatic situations are both diverse and changing. South experiences tropical climate, through to more temperate conditions to alpine regions of north where elevated areas receive sustained winter snowfall. The Himalayas provide barriers to cold winds of Asia thus helping developments of monsoon during rainy season when over 70% of India's annual precipitation falls. India has already begun to experience great seasonal variation in temperature with more warming in winters than summer. Heat waves longevity across India has extended leading to warmer temperature in night and hotter days. Global Temperatures have increased by 0.7 degrees over the past century and are projected to further increase minimum by 1.8 degrees to maximum 4 degrees at the end of this century.

It's high time that we quickly start taking measures and thinks on remedies to combat the change in climate.

## 2. PROCESSES BEHIND CHANGE IN CLIMATE & HIGHLIGHTING HUMAN IMPACT OF CLIMATE CHANGE IN INDIA.

### *2.1 Reasons Of Climatic Changes*

Some of the vital and important role players causing changes in climate are listed below:

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### 2.1.1. Greenhouse Gasses :

Greenhouse gasses are chemical compounds in the atmosphere which allow sunlight to enter the atmosphere where it warms the earth surface and is reradiated back into the atmosphere as longer wave energy and heat. Greenhouse gasses absorb these heats and trap it in the lower atmosphere so as to warm earth surface.

Due to industrial revolution there has been a rapid increase in the production of human-made greenhouse gasses particularly carbon-di-oxide, methane and nitrous oxide. Fossil fuel combustion and expanding global human population have been primary cause of these changes.

### 2.1.2. Global Warming :

The ongoing over production of Green house gasses mean that more and more heat is being trapped in the Earth's atmosphere, so we are essentially heating up! This is what is known as Global Warming.

Since Industrialization the earth's temperature has risen by 0.7 degrees- if we do not take action soon, by 2100 temperature could increase by as much as 5 degrees. This temperature increase will have a dramatic and devastating effect around the world around us, leading to more extreme weather events and further widespread extinction of many animal and plant species.

### 2.1.3. Climate Change :

The effect of rising temperature across the earth's surface will lead to changes in average temperatures, rainfall patterns and monsoon timings. Indeed the climate has already begun to change and if we do not act fast, it has the potential to undermine human development in India and across the world.

## *2.1. Climatic Change & its Effect on Humans*

### 2.2.1. Agriculture & Food Security :

Although agriculture constitutes only 21% of India's GDP, its importance in the country's economic, social and political fabric goes well beyond this indicator. Rural areas are still home to 72% of India's 1.2 billion people, most of who are poor and marginalized and rely on agriculture as their main source of income.

Smaller farms are dependent timely and sufficient rainfall during the monsoon of high crop yields. However with the changing climate, rainfall patterns have become erratic and reduced leaving farmers exposed to many rist including droughts, floods, diseases of both crops and animals and unpredictable market irregularities. It is indeed estimated that every $1^0$C increase in temperature is likely to a 5%-10% reduction in yields of some crop.

### 2.2.2. Health Issues:

As there will be rise in temperature there will be increase in frequency of heat waves ultimately increasing incidence of illness and death in India. Food and water supplies will be affected and the rate of disease will increase, predominantly affecting poor and marginalized who are often forced to live in overcrowded conditions with limited access to water and sanitation.

Below are some health implications that can be linked with climate change:

1) *Bacterial Infection*
2) *Vector-borne diseases*
3) *Respiratory diseases*
4) *Under-Nutrition*

### 2.2.3. Population Displacement :

India's population is currently in excess of 1.1 billion people and predictions state that by 2050, the population will have grown by another 500 million. This increase in



S-JPSET : ISSN : 2229-7111, Vol. 5, (Special Edition-II) 

population will undoubtedly lead to a strain on resources, especially when coupled with the impacts of climate change. The widespread affect that climate change is expected to have on agriculture and rural livelihoods will lead to greater migration from rural areas to urban.

The term 'environmental refugee' has now been coined for those populations who are displaced by environmental events/disasters which are linked directly with climate change. Whole communities are forced to migrate, often inland, from coastal areas. Indeed, according to the Inter- governmental Panel on Climate Change , sea-level rise is the greatest threat and challenge for sustainable adaptation within South Asia. The consequences in terms of flooding of low lying deltas, retreat of shorelines, salinisation, and changes in the water table, cause very serious concern for the well-being of local populations.

## 3. REMEDIES TO COMBAT CLIMATE CHANGE AND PROTECTION OF SOCIAL DEVELOPMENT PROSPECTS FOR FUTURE GENERATIONS

Historically, responsibility for climate change lies with rich, industrialized countries and it is these countries that must take the lead in cutting greenhouse gas emissions. However, it is imperative that all nations use fossil fuels in a sustainable manner and endeavor to become low carbon economies. Global warming is a truly global problem and must be addressed as such.

In India, over 40% of households are still without electricity. Research indicates that the demand for energy will increase across India over the 21$^{st}$ century, potentially to one fifth of the world's energy consumption by 2100 (Parikh et. al. 2004). Presently India uses fossil fuels in abundance to provide cheap and reliable supplies of energy, especially to the rural poor. In fact around 80% of India's electricity generation comes from fossil fuels (Liggins 2008).

We can concentrate on certain remedies or precautions to make our country a better place to live in, which are listed below:

### *3.1. Improving Energy Efficiency*

Improving energy efficiency for achieving sustainable economic and social development offers a powerful tool by reducing the need for investment in new infrastructure, by cutting fuel costs, and by increasing the competitiveness for business and welfare for consumers. Importantly though, energy efficiency leads to extensive environmental benefits through reduced emissions of greenhouse gases.

### *3.2. Renewable Energy*

Apart from energy conservation and efficiency improvements, the need to find and develop non-conventional energy sources has been recognized by the Government of India. Many of these non-conventional energy sources are both clean and renewable and need to be seriously considered for sustainable low carbon and high growth strategies.

Some of renewable energy resources are as listed below:

#### 3.2.1. Solar Energy:

In many parts of rural India, solar energy is being used widely to meet the needs of the poor. For example the Ministry of New and Renewable Energy has introduced the Remote Village Electrification Programme in over 4000 villages and hamlets. This solar technology enables children to study after dark due to solar powered lighting and it can illuminate street lights. Furthermore, solar powered cookers emit no harmful gases during cooking and so women who traditionally cook everyday in the home are not exposed to the excessive carbon emissions expelled during cooking.


 

### 3.2.2. Hydro Energy :

Hydro energy produces no direct waste and has a considerably lower output level of the greenhouse gas carbon dioxide than fossil fuel powered energy plants. Hydroelectricity currently supplies about 715,000 MW or 19% of the world's electricity, accounting for 63% of the total electricity from the renewable energy sector. Hydro Power has a prominent role to play in responding to the energy challenges. The electricity generated from small hydro power projects is cost-effective. Such projects are simple to operate, have a relatively short gestation period and are environmentally friendly. In addition, these hydro energy projects can be located in remote areas for generating power. The global estimated potential of SHP is about 180,000 MW.

### 3.2.3. Biomass/Biofuel :

In addition to providing energy security and a decreased dependence on oil imports, befouls offer several significant benefits such as reduced emission of pollutants and greenhouse gases and increased employment in the agricultural sector. In India, the National Biodiesel Mission promotes the use of *Jatropha,* which research shows to have the following advantages: it requires low water and fertilizer for cultivation, is not grazed by cattle or sheep, is pest resistant, is easy propagated, has a low gestation period, has a high seed yield and oil content and produces high protein manure.

The main problem in getting the biodiesel programme up and running in India has been the difficulty in initiating the large-scale cultivation of Jatropha as farmers do not consider Jatropha cultivation rewarding enough. The Government needs to sponsor confidence-building measures such as establishing a minimum support price for Jatropha oilseeds and assuring farmers of timely payments. It is also important to note that bio fuel production should be based non-agricultural land, or at least on land that is not substituting agriculture, so as not to jeopardize food security.

### 3.2.4. Wind Energy :

Wind power accounts for 6% of India's total installed power capacity, and it generates 1.6% of the country's power– currently India has the 5$^{th}$ largest installed wind power capacity in the world. Short gestation periods for installing wind turbines and the increasing reliability and performance of wind energy machines has made wind power a favored choice for capacity addition in India. Wind power is also cost competitive to other fuel sources as it is the least expensive of all renewable energy resources. Because wind is free, it can provide a stable long term price for power production.

## REFERENCES


1. Ananthapadmanabhan, G. et. al. 2007. Hiding behind the poor. *A Report by Greenpeace on Climate Injustice*. Greenpeace: Bangalore.
2. Christensen, J. H. et. al. 2007. Regional Climate Predictions. *Climate Change 2007: The Physical Science Basis. Contribution of Working Group 1 to the 4$^{th}$ Assessment Report of the Intergovernmental Panel on Climate Change.* Solomon, D. et. al. (eds), Cambridge University Press: Cambridge.
3. Cohen, M. J. et. al. 2008. Impact of climate change and bioenergy on nutrition. International Food Policy Research Institute.
4. Cruz, R. V. et. al. 2007. Asia. *Climate Change 2007: Impacts, Adaptation and Vulnerability. 5. Contribution of Working Group 2 to the 4$^{th}$ Assessment Report of the Intergovernmental Panel on Climate Change.* Parry, M. L. (eds), Cambridge University Press: Cambridge.
5. Gonsalves, J. B. 2006. An Assessment of the Biofuels Industry in India. *United Nations Conference on Trade and Development.*
6. Venkateswarlu, B. 2009. Climate Change and Sustainable Agriculture: Securing the Small and Marginal Farmer in India.*The Human Impact of Climate Change: Policy Notes for Parliamentarians.* CLRA: New Delhi.




S-JPSET : ISSN : 2229-7111, Vol. 5, (Special Edition-II) 