

CLIMATE CHANGE IMPACTS ON BIHAR (A COMPARATIVE AND SPECULATIVE STUDY)

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ABSTRACT

Climate change is a global scenario. At present every country of the world is facing the heat of climate change. Due to this season phenomenon have changed, monsoon spells have been irregular, and incidence of natural calamity have increased, pollution level is all time high. The world and also India have witnessed so many natural calamity and its associated impacts (of climate change) within few years. Here is the study (comparative and speculative) of the impact of climate change for the state of Bihar in next future.

(Key Words: Agriculture, Wetlands, Natural Drainage System, Forest, Wildlife, Health Risk)

Introduction

Bihar is the 7th largest state of India occupying a total geographical area of 96.30 lakh ha. It is a land locked area surrounded by Nepal in the north, west Bengal in the east, Jharkhand in the south, & UP in the west. The state is blessed with large fertile alluvial land, a very dense network of river & drainage system, a rich biodiversity land & a strong human resource potential. Bihar also has a very rich cultural back ground. The climate of Bihar is semi-humid & it is suitable for the growth of large number of plants. Bihar is 3rd largest producer of vegetable 4th largest producer of fruits & largest producer of litchi, guava, makhana .The soil of Bihar is very fertile as 2/3 rd area comes under different alluvial plain. Enceptisol is the major dominant group. Some soil is mountainous soil found in the foot hills of Himalayas. Some are laterite soil found in the southern Bihar.

The study of impacts on the natural resource in Bihar in perspective of climate change gives some conclusive evidence in formulating the future strategy. As Bihar is forwarding towards fast growth rate of 10.4% per annum & agriculture plays a prime role in achieving it, the study seems to be more significant. In view to the national interest the fertile land of Bihar is less degraded as compared to other parts of country, so in coming years the production from Bihar holds a promising field for food security of Nation. Possibly the next five year plan will see the spurt growth of productivity from Bihar.

The climate change will possibly affect the resources in more a negative way than in positive way .The possible area where climate change impact will likely to affect are:-

- 1 Agriculture
- 2 Wetlands
- 3 River basin & natural drainage system
- 4 Flood , drought & uncertainties in weather
- 5 Forest ,wildlife & biodiversity
- 6 Human livelihood & human health

1. Agriculture & climate change

In Bihar 4 agro climatic zones have been identified .These are

Zone 1 North alluvial plain

Zone 2 North east alluvial plain

Zone 3 South east alluvial plain

Zone 4 South west alluvial plain

Bihar has a total geographical area of about 93.60 lakh hectare, out of which only 56.03 lakh hectares is the net cultivated area and gross cultivated area being 79.46 lakh hectare. About 33.51 lakh hectare net area and 43.86 lakh hectare gross area receive irrigation from different sources. Principal food crops are paddy, wheat, maize and pulses. Main cash crops are sugarcane, potato, tobacco, oilseeds, onion, chilies' and jute and. A total of 76% of population depend directly or indirectly on Agriculture.

Possible effect of climate change on agriculture:-

A. Change in cropping pattern- Rice wheat cropping is mainly followed in major part of Bihar. Due to climate change wheat is gradually replaced by maize & also sowing time of crops will altered

B. Loss of productivity- Due to climate change wheat producing areas will produce less. This is also true for other temperate crops like potato, cauliflower, cabbage .As far as paddy is concerned production is mainly in kharif season. Monsoon in Bihar has been unfavorable for last many years. If the uncertainty in monsoon is correlated with the global climate change than we can access the potential loss of rice productivity.

C. Rise in insect pest- With the climate change the occurrence of pest & disease would likely to increase. This would decrease the productivity.

2. Climate change & wet land

Wet lands are very important components in any ecosystem. India has about 4.1 million hectares (Mha) of wetlands of which Bihar accounts for 0.27 Mha, mostly lying in North Bihar .The impact of climate change on wet land will make wet land to shrink. These will also deteriorate the wet land ecosystem. Not only the climate change but also many antropogenic activities are also responsible for making the wet land into the waste land. Wet lands are the most disturbed ecosystem due to anthropogenic activity, construction of buildings that chokes the natural drainage system. The direct & indirect environmental gains from the wet land will be lost in near future. The wet land provides occupation to large number of people. This is the source of livelihood of people for people associated with fisheries, agriculture, & many domestic users. They act as local aquifers, home of a large number of organisms, natural recycling system. With shrinking wet land a natural balance of the ecosystem is disturbed. There would be less production of fisheries from wet land. At the worst there would be acute water crisis in those areas..

We take the case study of Patna. Patna is the capital city of Bihar. Before 20 years it has a good numbers of wetlands where fisheries production were abundant. But lack of government regulating agency and land mafia most of the wetlands have been converted into residential plots and thus choking the natural drainage system, and disturbing the wetland ecosystem.

3. Climate change & rivers channel

Bihar is gifted with dense network of rivers. River Ganga divides the state into 2 unequal halves. North Bihar has a total area of 53300 sq km whereas south Bihar has total area of 40900 sq km.

North Bihar & south Bihar. Important rivers of north Bihar are kosi, Gandak. Baghmatai, Burhi Gandak. Important river in the south Bihar is Sone Punpun, Phulgu etc.

All these rivers discharge their water into Ganga. The recent trend shows some drastic changes in the river channels

(A) The carrying capacity of the river channel has drastically reduced because of siltation.

(B) The river channel is forced to change the natural route. Due to overflowing this causes flooding in near by areas.

On the impact of the climate change carrying capacity of the river will decrease further. The non perennial rivers may shrink further. For Perennial River discharge may be high because of the melting of the glacier at Gangotri.

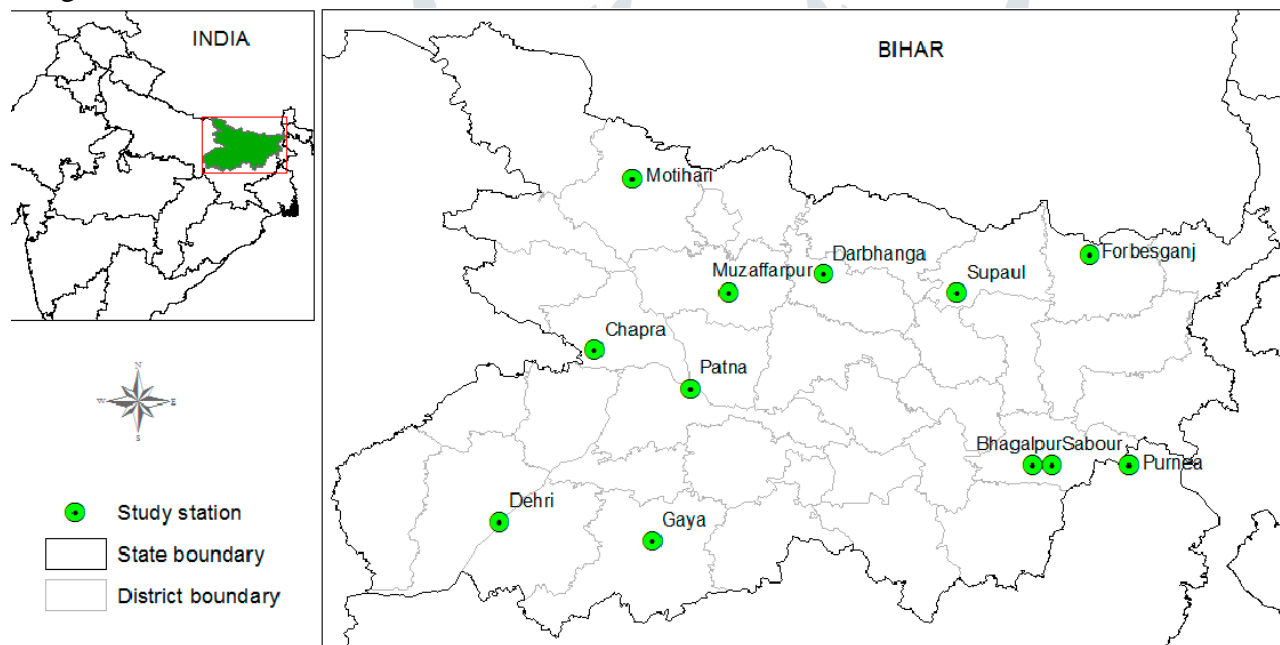


Figure Ref: Semantic Scholars.org.

4. Flood, drought & uncertainty in weather

Flood in the North Bihar & drought in many districts of Bihar are common. The cause of flood in north Bihar is due to the overflowing of kosi river that is why kosi is known as the sorrow of Bihar. Due to high siltation in kosi the river discharge takes a new route. It flows through any way it can. Similarly many rivers flow above to their capacity during peak monsoon season. This causes floods in many adjoining areas.

The situation for drought has similar fate. The monsoon has been weak for many years. There is also uncertainty in monsoon. The rain fed areas are worst affected in hope of good monsoon .Last year about more half of the district were either flood affected or drought prone. The climate change may bring more frequent flood & drought in the state. This will directly affect the state economy. The poor will be worst effected in this condition

5. Wildlife ,forest & biodiversity

Forest accounts for 7.1% of geographical area in Bihar. Some forest at the foothills of Himalaya & some forest at the chotanagpur plateau are seenFurther north Ganga basin, the Tarai and sub-Himalayan tracts accounted some of the scarce forest. The forest of Bihar mainly have moist deciduous type of forest. . They conserve much of the biodiversity of the state. There are 20 reserve area in the state. With the impact of Climate change the wildlife, forest & biodiversity would further squeeze.

So taking into global scienario the wildlife forest & biodiversity is going to change. For some in the positive way & some in the negative way .So what happens in global way the same is expected to happen in local way.

6. Human livelihood & human health

Human would also be affected both directly & indirectly .The livelihood of the people particularly engaged in agriculture & allied like animal husbandry, fisheries would be affected indirectly. Environmental unemployment will push people into the highly crowded cities and thus choking the city. Human health may also be affected because it is suspected that their may be resurgence of malaria & other tropical diseases. For example the resurgence of Chamki Bukhar in the Muzzafarpur district of Bihar killing many infants.

CONCLUSION

In spite of having a very rich fertile land & a dense network of river channel there is speculations of negative impact of climate change on natural resources. This would directly affect the state economy. This resource rich but poor state will suffer from many uncertain problems. These speculations may be correct or may be incorrect. We can not change the global scenario of climate change because this is imperative. But what possibly can be done is to develop compassionate felling about the environment. Conservation of environmental resources, adoption of mitigating action, afforestation, uses of renewable sources of energy are some of the measures that could be both at the policy making stage & adoption stage .All the mitigation plan or implementation plan can only be executed if the state have a very good human resource. Human resources are plenty in Bihar but unfortunately Bihar lacks the quality human resource .Illiteracy, poverty, social curses , low productivity are some of the constraints that hinders human resource development. In this way Bihar will become resource scarce both by natural calamity & anthropogenic activities.

The problem of global climate change will sooner or later will become local climate change problem. Sooner or later everyone would be a part of this problem in near future.

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