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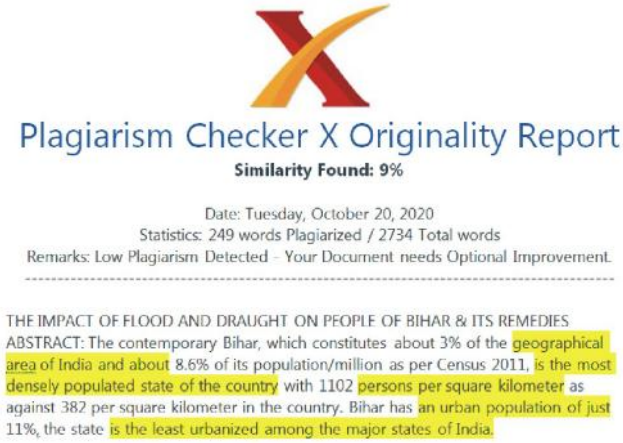

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THE IMPACT OF FLOOD AND DRAUGHT ON PEOPLE OF BIHAR & ITS REMEDIES
ABSTRACT: The contemporary Bihar, which constitutes about 3% of the geographical area of India and about 8.6% of its population/million as per Census 2011, is the most densely populated state of the country with 1102 persons per square kilometer as against 382 per square kilometer in the country. Bihar has an urban population of just 11%, the state is the least urbanized among the major states of India.

Abstract

The contemporary Bihar, which constitutes about 3% of the geographical area of India and about 8.6% of its population/million as per Census 2011, is the most densely populated state of the country with 1102 persons per square kilometer as against 382 per square kilometer in the country. Bihar has an urban population of just 11%, the state is the least urbanized among the major states of India. Flood is a common phenomenon for BIHAR but sometimes it becomes a severe problem when capital city Patna is also affected by this flood. Mostly north Bihar is affected by flood and south Bihar is affected by drought. Approx 90 % of people are affected by either flood or drought each year.

Keywords

Flood, Drought, Rivers of Bihar, Economic growth, Poverty.

Introduction

The flood and Drought are the common natural disaster phenomena of Bihar. Naturally, Bihar is divided by the river Ganga, One part is called North Bihar and another one is called sought Bihar. On one hand, North Bihar is severely

affected by Flood whereas on the other hand sought Bihar is severely affected by drought. As per one estimation, the Bihar is affected by a flood of about 6.880 million hectares of land out of about 9.416 million hectares, which is about 73.06%. It not only affects the infrastructure but also the socio-economic life in the state. So, there is required to minimize negative consequences and ill effects of flooding through flood management. In Bihar, most of the time, the decision-makers go for structural measures like construction of embankments or dam, flood retention walls, flood levees or lock chamber and breakwater, etc.

Objectives of the Research

- To understand flood & drought problems in Bihar.
- How floods and drought affect the life of people.
- What can be remedies to these problems?

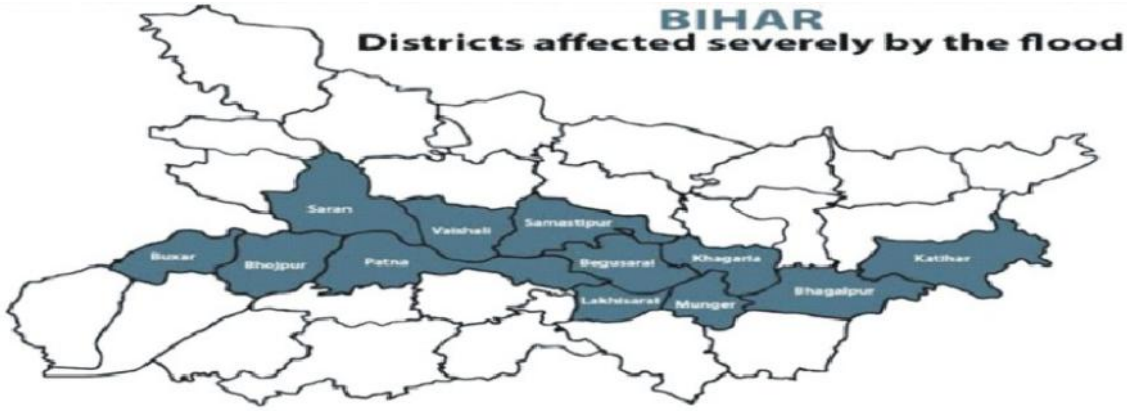
Methodology

Data necessary for this paper is gathered from a secondary source like Books, published and unpublished Journal, Newspaper, Periodical, official website of the Bihar government as well as central government, Articles, websites, Thesis of scholars, etc that help me to build this articles. I have tried to come new results and new solutions strategies from this article as well as review past strategies in a new dimension. So even though the methodology is based on secondary data but the outcomes of this article are trying to achieve new things and this become one step ahead to solve the problem of flood and drought.

Bihar floods and its impact

In Bihar, floods have a common phenomenon especially in north Bihar that happened every year which caused not only huge losses of properties, livelihood system, and infrastructural damage of homes, roads, and many other things but also the life of the people. Bihar is one of the lands locked state in India that bounded by Nepal in the northern area, in the southern area it is bounded by Jharkhand, in the eastern side the west Bengal is situated and Uttar Pradesh is placed in the western part of the Bihar. There is no direct connection with the sea; no seaport is available in Bihar that helps in International trade. But there are many rivers in Bihar that help in irrigation but when these rivers become over flooded it is the cause of the flood. The river Ganga is the main drainage system of Bihar that flows eastward direction stretched of 432 km area across the state and it divides the state into two unequal halves. There are two major rivers Kosi and Gandak in north Bihar that are attached to the river Ganga. Besides many other small rivers like Bagmati, Bhutahi Balan, the Burhi Gandak, the Ghaghara, the kamal, and the Mahananda also join with river Ganga in north Bihar. These entire rivers over flooded in the rainy season that causes floods in the northern area. All of these rivers originated from the Himalayas in Nepal whereas the catchment area of Koshi includes Tibet. As a result, the rivers of North Bihar mostly share basins outside the country in Nepal and Tibet. The water passes from the part of catchment lying in Tibet also passes through Nepal. To fulfill the necessity of fuel for domestic purposes and recovery of area for occupational needs, there is increasing deforestation in Nepal that further causes degradation in vegetative cover in the catchment areas. Because of this practice, the soil has been more and more getting eroded from these areas. Therefore the rivers carry significant sediment load from the upper part of catchments. These sediments in adding together to the inadequate carrying capability of the rivers obstruct natural drainage leading to overflow and floods.

Some southern side rivers like Karmnasha, Son, Punpun, Phalgu, kuil, Ajay, etc. also fall in Ganga that increases the water level in the river.



However, Bihar has been endowed with alluvial soil which has the potential to soak the rainy and river water in the ground. The rivers like Ganga, Bagmati, Kosi, Gandak, Bhoodhi Gandak, Ghagara, Son, Punpun, Phalgu, and many more rivers create an opportunity to spread the canal system in all parts of Bihar through which irrigation could be possible in drought area also i.e. south Bihar and we can also develop waterways system, it means transportation through rivers by ships and boat.

Flood in Urban areas

Due to not proper management of government in 2019, most of the urban city even the capital city Patna also affected by the flood. To cure flood areas especially urban city areas like Patna, Darbhanga, Bhagalpur, etc. Government has to focus or review the canal system of town that was made by the British Government, 200 hundred years ago. The canal should be extra wider and dipper than the present. Single-use plastic should be a ban that most people use and through it in the canal and it becomes the cause of choking. Nagar Nigam or Municipal Corporation should be developed a digital checklist system or checklist App so that officer could be monitored it on his mobile phone from anywhere & anytime. The design of the checklist App. is given below:Apps should be connected to each ward, in each ward identified some places where garbage are collected or throw by the citizen, We can install there CCTV camera near that electric pole, and directly connect with that App with the internet so that anytime could be monitored by corporation officials and it could be also useful to control the crime & cleanness of that areas if it would be also monitored by Police. A heavy penalty should be imposed on those people who spread the garbage.

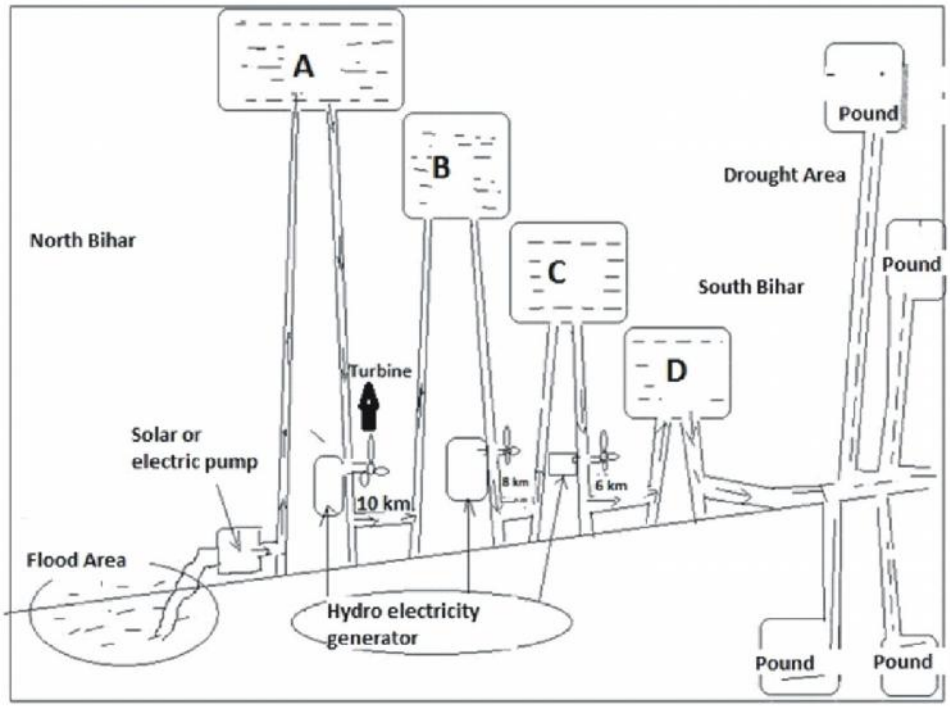
Pick garbage from door to door is a good step to clean the city, as well as it, prevent chocking of drainage of the city.

Floods are a serious problem in north Bihar. In the rainy season, the whole of north Bihar is affected by floods mostly through rivers that come from Nepal i.e Kosi, Gandak, Bhoodhi Gandak, etc. We should develop a technique or communication with Nepal Government so that whenever Nepal opens its dams, already all people of that area should be informed previously about it so that fewer and fewer people to be affected and loss could be minimized.

Weather forecast center should be also developed with more advanced technology and as far as in the condition of heavy rainfall, they could be informed the citizen by different means of communications like SMS, What's App, news, social media, etc so that preventive steps could be taken and loss could be minimized.

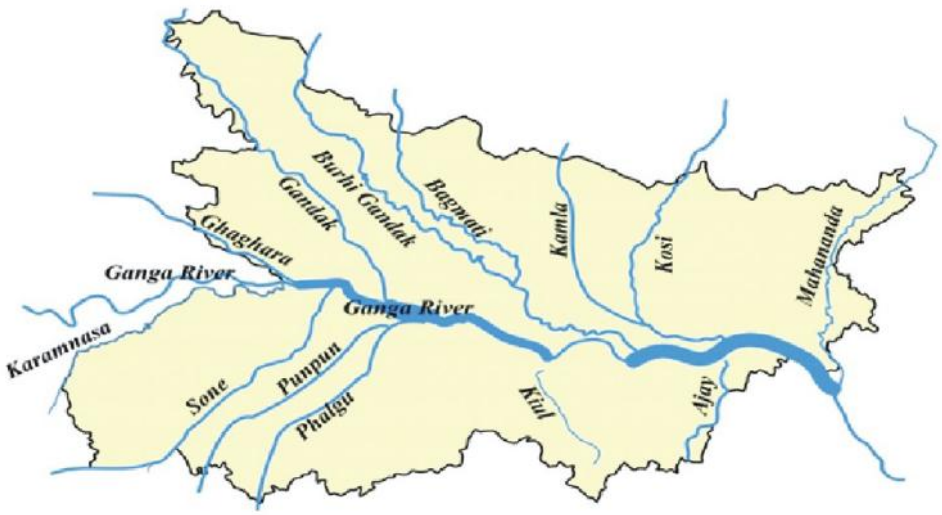
In the rainy season whenever a flood has come we take it as an opportunity to reserves these flood water and drain out these excess water in drought areas i.e. south Bihar so that drought area could be also irrigated this is one of the ways through which we can utilize natural resources. To drain

out excess water from flood areas to drought areas, I have given theory in my thesis "A study of economic growth and poverty in Bihar since 2001". I have given the name Awadhi's-drain-out theory. Let us understand this, see the given figure below:



On the above figure, water carries away through the solar or electric pump from the river (pound) or flood-affected areas to tank A then, tank A to B, B to C, and C to D. During A to B, B to C, C to D the most of distant cover through Pipe around 10-12 km between each tank. We can set each tank height is lower than the height from the previous tank so that water could be easily pass out without a machine or pump set for a long-distance and water can be drained out in drought area. In drought area water can be stored in numerous pounds as a water reservoir. One thing we can also do that after every tank when waterfalls from the tank we can also install a Turbine through which electricity can be generated through the Hydro Power system or Hydroelectricity generator.

So, on this entire system, we can control on flood and drought. And take benefit of irrigation and power generation.



Major Rivers in Bihar

River Ganga is the lifeline of the people due to the 'Farraka bairaj dam' the depth of the river has been reduced because of slit deposition therefore the water carrying capacity of the river has been reduced. In the rainy season, the excess water of the river becomes the cause of flood in the near area of the river. So there should be work on the depth of the river and the cleanness of the river.

Now we can summarize the other factors that are responsible for Floods in Bihar

- Due to large-scale deforestation in the upper catchment areas where rivers originate mostly in Nepal Everest mountain region reduces the infiltration of rainwater. As a result, it increases the tendency of the magnitude of floods in Bihar.
- Various Constructions of roads, buildings, and courtyards also reduces access to rainwater.
- Because of the increasing urbanization, the process of cementation is increasing day-by-day.
- In urban areas due to the poor condition of the drainage system, water becomes jams.
- Continuous and heavy rainfall for a long period is also the cause of the flood.
- The sudden bursting of clouds is also the cause of the flood.
- Soil Erosion near river banks that are the cause to spread flood area.
- Shifting of river channels is also one of the reasons for the flood.
- Deposition of silt, sand, and clay in the main river due to that water carrying capacity reduces after that excess water spread in the plain.
- In urban areas, the main reason for the flood is to choke the canal drainage (naala) by plastic bags as well as Canals are not cleaned periodically by government institutions like Nagar Nigam or Municipal Corporation.

Some other suggestions to control floods in Bihar

- To reduce the intensity of flood, a forestation is required in the upper catchment areas that bind the soil with tree roots.
- We can make new reservoirs, wells, and ponds that store the floodwater which also leads to increase the level of groundwater.
- We can increase the water carrying capacity by clearing the sediments deposited in the river beds.
- We can develop new channels with rivers to allow quick discharge of water to other areas.
- To reduce the pace of water we can convert the steep slopes into terraces plain.
- In the flood-affected area, we can develop mangroves forest where trees are deeply rooted that help in reducing soil erosion and intensity of flood.
- We should use Modern techniques for forecasting by using satellite, GPS, the Internet, 'what's app', social media, and news channels that help in spreading the news of flood and other disasters.
- Cementation of both the sides of the riverbank that reduce the chances of lateral erosion caused by the river.
- Diversion of floodwater in the low-lying areas through artificial channels like dykes, walls, and stone spurs, etc.

Government plan to reduce the floods in Bihar

- The government of Bihar has initiated by providing 'the modern rescue operation kits' to the flood-prone districts.

- Some motorboats are given to each flood-prone district but that is not enough.
- The home guard of Bihar is trained by NDRF (National disaster response force) for disaster response.
- The state government has started the construction of approx 200 flood shelters for flood-affected people in the flood-affected districts of Bihar.
- Various projects on the inter-linking of rivers have been planned.
- The National Water Development Agency (NWDA) has planned thirty major river link canals in India to transfer the water from surplus region to water deficit region. Out of these 30 major river link canals, six are directly interconnected to Bihar.
- Inter-linking canals directly interconnected to Bihar, which are mention below:

  Kosi-Mechi Link Canal.

  Kosi-Ghaghara Link Canal.

  Sone dam-southern tributaries of Ganga Link Canal.

  Chunar-Sone Barrage Link Canal.

  Brahmaputra-Ganga (Manas-Sankosh-Teesta-Ganga) Link canal.

  Gandak-Ganga Canal.

Impact of flood

Every people are affected by flood that lives in the flood area. The flow of the water sometimes become very fast that damage the electric poles and create hindrance in supply of electricity which leads to scarcity of the freshwater. Sometimes people get house arrest in their home and they cannot able to do any economic activity and the whole economic activities become stagnant. Therefore, the source of earning becomes difficult for them. The poor people become severely affected because they have not much source of income and savings .So, they find difficulty in survival of his life. All the other development activities sponsored by the government are also affected like the construction of road, the educational activities become closed, all schools and college are closed due to water logging. Hospitals are also affected due to flood water reached to the hospitals; as a result, health facilities are also hampered. In a flood situation, every sector is affected whether agriculture or industry or the service sector.

Drought in Bihar

For a long time, Bihar is facing the problem of flood in the northern area and drought in the southern area. Now a day's districts like Gaya, Jehanabad, Nalanda, Rohtas, Aurangabad, Patna, Begusarai, Sheikhpura, Sahrasa, Banka, etc. receive 26-55 % less rainfall than normal. Most of these districts are well known as the drought-prone district of Bihar, which comes under the Maghadh region of the state. There is an acute shortage of water in that district, especially in the summer season. The water level in that area comes down to 20 ft to 40 ft approx. There are many water bodies like pound like structure and wells in that area but these are facing encroachment by land mafia. Approx 12000 water bodies among 2 lakh, have been encroached or captured by real estate. Many lands are going to be a barren due to scarcity of rain and reducing the water retention capacity.

Bihar is an agriculture-based economy so the most affected class due to drought is a farmer and its family. The productivity of land becomes low which affects the income of the farmer. The most affected crops are paddy because it requires a lot of water. Due to drought, the availability of grains and crops becomes less, and its direct effect on the price of those goods. The price of that goods increases, the poor and middle-class people face the problem of inflation, they become difficult to survive their life.

Conclusion

Overall, we can conclude that basically there are two major problems in Bihar i.e. flood and drought. And these problem cannot be solved alone. So, One's a problem of flood could be a solution of another's problem of drought, if we could able to drain out the excess of flood water in drought area.

The economic development and poverty eradication can also be solved if we solve these two problems. As well as our other important things like increment of per capita income, improvement in education, enhancement in health facility, infrastructure development will be improved simultaneously. We can also improve our agriculture sector and if the agriculture sector improve then it will support in the development of industry, especially those industry which requires raw material from agriculture. After that, the service sector will be also developed more because it supports the agriculture and industry sectors. And if all these sectors improve then our economy will boost and more employment generate which will bring prosperity and healthy life.

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