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Changes in the course of the Hooghly River: an environmental crisis and a potential threat to the city of Kolkata

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Abstract:

The change in the course of the Hooghly River presents a significant environmental and socio-economic challenge, with profound implications for a major metropolis like Kolkata. This abstract delves into the current status of the Hooghly River, the factors contributing to its changing course, the potential impacts on the region, and suggested measures for mitigation. The Hooghly River, a crucial tributary of the Ganges, serves as a key water source and a major commercial route for Kolkata and Howrah. However, the river faces challenges due to shifting currents, which result from a combination of natural and anthropogenic influences. One of the primary reasons for the shifting course is the geography of east bank erosion and west bank siltation. Areas like Garden Reach, Metiabruz, and Cossipore have experienced increased erosion due to silt accumulation on the western bank, forcing the river current eastward. This phenomenon also affects rural regions in South 24 Parganas, such as Diamond Harbour, Sagardwip, and Namkhana. The resulting soil erosion disrupts settlements, damages agricultural land, and necessitates the relocation of affected communities. Silt buildup in regions like Howrah and East Midnapore further alters the river's flow, exacerbating erosion on the eastern side and creating a cycle of land loss and settlement damage. Other contributing factors include natural changes in river dynamics, man-made activities like dam construction and unregulated urbanization, climate change effects, and the destruction of mangrove forests and wetlands. The consequences of this shift are manifold, including water supply issues, disruptions to Kolkata's shipping routes, heightened soil erosion, and an increased risk of flooding in low-lying areas, leading to economic losses and displacement of residents. To mitigate these challenges, a range of solutions is proposed. These include regular river dredging to maintain flow depth, stricter controls on industrial waste disposal, maintenance of dams and barrages, and conservation efforts for forest and wetland areas along the river. Public awareness campaigns and community involvement in river conservation are also emphasized as critical components of a sustainable approach. In conclusion, the changing course of the Hooghly River poses serious risks to Kolkata's environment, socio-economic structure, and the lives of its residents. Addressing this issue requires a coordinated effort between government bodies, local stakeholders, and environmental groups. Through initiatives such as dredging, dam maintenance, and community engagement, it is possible to manage the river's flow, mitigate erosion, and safeguard the region's ecological balance..

Introduction

The change in the course of the Hooghly River is a serious and important environmental and socio-economic problem, which can have huge implications for a large metropolis like Kolkata. In recent years, there has been

increasing discussion about changing the course of the Hooghly River. We will discuss the current status of the Hooghly River, the reasons for the change, its impact, and possible future actions. The current state of the Hooghly River. The Hooghly River is a tributary of the Ganges River, which flows through various parts of West Bengal and empties into the Bay of Bengal through the city of Kolkata. The river is the main source of water for the cities of Kolkata and Howrah and an important route for commercial transportation. Although the river is closely associated with the life of the city of Kolkata, there are concerns about changes in its course.

Reasons for the change of the river

There are several reasons for the change in the course of the Hooghly River: Geography of the impact of east bank erosion and west bank siltation In various parts of Kolkata, such as Garden Reach, Metiabruz, and Cossipore, the problem of erosion on the eastern side of the river often becomes acute. Due to siltation on the western bank, the river current pushes eastward, causing damage to settlements, roads, and riverside structures along the river. In some areas of South 24 Parganas, such as Diamond Harbour, Sagardwip, and Namkhana, erosion on the east bank of the Hooghly River has become a problem. Due to the change in the course of the river, soil erosion and settlement are affected. In many areas, agricultural land along the river has been destroyed and the need to rehabilitate residents has arisen.mThe silt accumulation on the western bank of the river, in different areas of Howrah and East Midnapore, obstructs the flow of water to the western bank. As a result, the current bends to the east and the erosion of the eastern bank increases. The impact of the erosion has been particularly felt in the Mahishadal, Nandigram, and Haldia areas of East Midnapore. If more silt is deposited on the western bank of the Hooghly River, the local elevation in the river bed increases, which may cause a change in the direction of the current. When silt is deposited on the western bank, the river current exerts more pressure on the eastern side, resulting in increased erosion on the eastern bank. In this process, the land on the eastern side begins to erode, and in some places the soil on the side collapses towards the river to allow water to flow. The bend or meander of a river is usually identified as an area affected by strong currents. When more silt is deposited on one side of the river, the course of the stream begins to curve. As a result, the impact of the current increases in areas where the river bends more, and erosion is more common there. nIn the case of the Hooghly River, if there is heavy siltation in Howrah and East Midnapore on the western bank, the river current tends to push eastwards towards Kolkata and South 24 Parganas, increasing the risk of erosion in these areas. During the rainy season, when the Hooghly River flows heavily through the main flow of the Ganges, the intensity of the current increases. At this time, due to the accumulation of silt on the western bank,

the pressure of the current towards the eastern bank increases, due to which the erosion of the eastern bank becomes more. In particular, the problem of such erosion is more prevalent in rural areas of South 24 Parganas and parts of Kolkata.

1. Natural Changes: Changes in the natural course of a river are due to natural changes in current, river erosion and filling up of river beds. During the rainy season, the water level of the river rises due to heavy rainfall.

2. Man-made activities: Dam construction, river dredging, and dumping of industrial effluents into the river change the river cavity and may also change the course of the Hooghly River. The natural composition of the river is changing due to the dumping of waste and industrial waste directly into the river and unplanned urbanization of Kolkata.

3. Climate Change: The impact of climate change has a huge impact on the water level fluctuations in rivers. Rising sea levels and changing rainfall patterns are also having an impact on river flows.

4. Destruction of mangroves and wetlands: The destruction of mangrove forests and wetlands adjacent to various rivers, including parts of the Sundarbans, is also one of the reasons for the change in the course of rivers. These forests used to protect the river banks, but now they have been destroyed, increasing river erosion and changing river currents.

Impact of change in course of river Hooghly:

Changes in the course of the Hooghly River can have a variety of effects. Some of the notable ones are:

1. Problems with water supply A change in the course of the Hooghly river could lead to a fall in the water level for Kolkata, which would pose a major problem to the city's water supply. The water crisis can be especially severe in the summer disruption of the shipping system.

2. . The Hooghly River is an important port and shipping route in Kolkata. Changes in the flow and course of the river can cause problems in shipping, which can affect commercial transportation and export-import.

3. Soil erosion and river erosion: If the river erosion rate increases, some parts of Kolkata city, especially the settlements near the river, may be threatened. The risk of losing land increases when areas along the river are prone to erosion.

4. The increased risk of flooding: The risk of flooding in low-lying areas of Kolkata increases during the rainy season when the course of the river changes. It affects people's lives and causes economic loss.

Suggestions and solutions: Various kinds of plans and initiatives need to be taken to prevent the river from changing its course. Some of the effective solutions are:

1. River Dredging and Cleaning:

To restore the depth of the river, it is necessary to regularly dredge the river, so that the water flow remains normal. Also, strict control should be imposed on the dumping of industrial waste and dirt.

2. Maintenance of dams and barrages:

It is very important to maintain the dams and barrages built on the Ganges and Hooghly rivers. They must be regularly monitored and maintained to ensure their effectiveness.

3. Conservation of forests and wetlands:

Special efforts should be made to conserve the forest and wetland areas along the river banks. These areas protect the river banks and help prevent river erosion.

4. Awareness-raising and environmental initiatives

There is a need to raise awareness about river conservation and environment-friendly activities among the general public. Concerted efforts can be made to conserve the river by involving local residents.

Conclusion:

Changing the course of the Hooghly River is a serious issue, which can have a major impact on the environment, socio-economic context and public life of the city of Kolkata. Both natural and man-made factors are responsible for

changes in river currents, and addressing those changes requires coordinated planning and awareness-raising. It is possible to restore the natural course of the Hooghly River through government initiatives and people's participation. Sedimentation and other environmental factors play an important role behind the change in the course of the Hooghly River and the problem of erosion on the eastern bank. Coordinated initiatives by the Kolkata Port Authority and the government, such as dredging, dam construction, and rehabilitation measures, can be helpful in solving this problem.

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Tags: hooghly river, meandering of river, Kolkata, erosion, siltation, River Morphology, drainage, Environmental Impacts, Mangrove Deforestation, Climate Change, Kolkata port,