



CURRENT AFFAIRS



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“INTERLINKING OF RIVERS: TRANSFORMING WATER MANAGEMENT IN INDIA”

This article covers the “Daily Current Affairs” topic; Interlinking of rivers in India.

Syllabus mapping: GS -1: Geography: Water bodies and their impact on the flora and fauna.

For Prelims:

What are the various interlinking projects and institutions involved in this initiative, What is the national perspective plan?

For Mains:

What are the advantages and issues related to the interlinking of rivers and ways to make this ambitious initiative successful?

Why In the News?

Maharashtra approves ₹87,342-crore river linking project. The project, with an estimated cost of ₹87,342.86 crore, will irrigate around 3.75 lakh hectares of land, significantly benefiting drought-prone areas such as Marathwada.

The Wainganga (Gosikhurd) – Nalganga (Purna Tapi) Intra-State Link Project proposed by the Government of Maharashtra is a significant water infrastructure initiative to improve water distribution and utilization across the state.

Wainganga River:

Origin and Course: The Wainganga River originates in the Mahadeo Hills in south-central Madhya Pradesh. It flows southward for about 360 miles (580 km) and merges with the Wardha River, which is a headwater of the Godavari, northeast of Kagaznagar in Maharashtra.

Tributaries: The river receives water from several significant tributaries, including the Bagh, Bawanthadi, Kanhan, Chulband, Garhvi, and Thanwar rivers.

Nalganga River:

Location: Maharashtra.

Tributary: Left bank of the Purna River, part of the Tapi River system

Length: Approximately 73 kilometers

Source: Buldhana district Maharashtra.

Confluence: Merges with the Purna River at about 218 meters elevation

What is the interlinking of rivers?

The interlinking of rivers in India is a major infrastructure project to connect the country's rivers through a network of canals, reservoirs, and tunnels. The primary goal is to enhance water resource management by redistributing water from surplus river basins to areas facing shortages.

What are Aim and Objectives?

The interlinking of rivers in India is designed with several key objectives aimed at addressing various water management challenges.

Balancing Regional Water Availability: One of the primary goals is to redistribute water from regions with surplus water to areas facing shortages. This helps in balancing water availability across different regions of the country.

Flood Control: By diverting excess water from flood-prone rivers to areas where water is scarce, the project aims to reduce the incidence of flooding in vulnerable regions.

Drought Mitigation: The interlinking project seeks to provide a more reliable water supply to drought-prone areas, thereby reducing the frequency and severity of droughts.

Improving Agricultural Productivity: Consistent and adequate irrigation is crucial for agriculture. By ensuring a steady supply of water to agricultural regions, the project aims to boost crop yields and support food security.

Enhancing Hydroelectric Power Generation: The movement and storage of water through interconnected river systems can be used to generate hydroelectric power, contributing to the country's energy needs.

Increasing Water Supply for Urban and Industrial Use: The interlinked network can help provide a stable water supply to growing urban centers and support industrial activities that rely on water.

Supporting Navigation: Some river-linking projects aim to enhance the navigability of rivers, facilitating better transportation and trade along these waterways.

Environmental Conservation: Although controversial, the project also aims to incorporate environmental considerations, such as maintaining ecological flow requirements and improving water quality in certain areas.

Reducing Water Conflicts: By managing and distributing water resources more equitably, the project aims to mitigate conflicts between states and regions over water usage.

Promoting Sustainable Water Management: The overall goal is to create a more sustainable approach to water management that can adapt to changing climate conditions and growing water demands.

What are the steps taken by the government?

National Perspective Plan of 1980 (NPP): This outlines the framework for the project, identifying major river basins and linking opportunities.

Peninsular Rivers Development: Linking rivers in southern India.

Himalayan Rivers Development: Linking rivers in northern India.

The Indian government has undertaken several initiatives and projects related to the interlinking of rivers to address water management challenges.

National Perspective Plan (NPP): Launched in 1980 by the National Water Development Agency (NWDA), the NPP outlines the comprehensive plan for linking major rivers in India. It identifies potential river linkages and aims to integrate water resources across different river basins.

National Water Grid: A concept derived from the NPP, the National Water Grid aims to create a network of interconnected rivers and reservoirs to facilitate the transfer of water from surplus to deficit regions. It is a vision to ensure a balanced distribution of water resources.

River Linking Projects: Several river-linking projects have been initiated under the NPP:

Ken-Betwa Link Project: The first project under the interlinking initiative, it aims to transfer water from the Ken River in Madhya Pradesh to the Betwa River in Uttar Pradesh.

Narmada–Purna Link: This project proposes to transfer surplus water from the Narmada River to the Purna River in Gujarat.

Ganga–Yamuna Link: A proposed link to connect the Ganga and Yamuna rivers to manage water resources in the northern region.

Godavari–Krishna Link: Aims to transfer water from the Godavari River to the Krishna River to alleviate water scarcity in southern states.

National Water Policy (2012): The policy emphasizes the need for an integrated approach to water resource management, including the interlinking of rivers to address regional imbalances.

Interlinking of Rivers Authority (ILRA): This authority was established to oversee and expedite the implementation of river-linking projects. It coordinates with various state governments and agencies involved in the process.

State-Level Initiatives: Many states have initiated their own river linking or inter-basin transfer projects. For instance, Tamil Nadu and Karnataka have engaged in projects to transfer water between rivers within their states.

Environmental and Social Impact Assessments: The government has conducted various assessments to understand and mitigate the environmental and social impacts of river-linking projects. These assessments are crucial for ensuring that the projects are sustainable and do not adversely affect local ecosystems or communities.

Funding and Investment: The government has allocated funds for feasibility studies, detailed project reports, and the implementation of river-linking projects. Public-private partnerships have also been encouraged to share the financial burden.

What are the challenges and issues associated with the interlinking of the rivers?

The interlinking of rivers, while offering potential benefits, also presents several significant challenges and issues.

Environmental Impact:

Ecosystem Disruption: Interlinking rivers can alter natural habitats, affect biodiversity, and disrupt ecosystems. Changes in river flow can impact aquatic species, wetlands, and floodplains.

Loss of Biodiversity: Altering river systems can lead to the loss of species that are adapted to specific ecological conditions, potentially causing imbalances in local ecosystems.

Social and Economic Displacement:

Displacement of Communities: Large-scale river projects often require the construction of reservoirs and canals, which can displace local communities and disrupt their livelihoods.

Impact on Agriculture: Shifting water resources might negatively affect the traditional farming practices and crops of communities dependent on specific river systems.

High Costs:

Financial Burden: The cost of planning, constructing, and maintaining interlinking projects is substantial. There are also ongoing costs for operation and potential repairs.

Economic Viability: There are concerns about whether the benefits of interlinking rivers justify the financial investment required.

Technical and Engineering Challenges:

Complexity: Designing and implementing a network of river links involves complex engineering and hydrological challenges. Ensuring the successful integration of various river systems can be difficult.

Maintenance: Keeping the extensive infrastructure in good condition over time requires significant resources and expertise.

Legal and Political Issues:

Inter-State Disputes: Rivers often flow through multiple states, leading to disputes over water sharing and control. Coordinating among different states with conflicting interests can be challenging.

Regulatory Hurdles: Securing necessary approvals, and permits, and addressing legal issues related to water rights can be time-consuming and contentious.

Climate Change:

Changing Water Availability: Climate change affects precipitation patterns, river flows, and water availability. This uncertainty can impact the effectiveness of river interlinking projects.

Extreme Weather Events: Increased frequency of extreme weather events, such as floods and droughts, can complicate the management of interconnected river systems.

Impact on Local Water Bodies:

Altered Flow Patterns: Changes in river flow can affect the health of local water bodies and wetlands, potentially leading to problems such as reduced groundwater recharge or deteriorating water quality.

Ethical and Cultural Concerns:

Cultural Significance: Many rivers have cultural, spiritual, or historical significance for local communities. Interlinking projects might disrupt these cultural connections.

Equity Issues: Ensuring that the benefits of river linking are equitably distributed and do not favor certain regions over others is a significant challenge.

What are the potential solutions to make the interlinking of the rivers successful?

The National Perspective Plan (NPP) for the interlinking of rivers in India provides a comprehensive framework to address water management challenges through the development of a national network of interconnected rivers.

1. Feasibility Studies and Detailed Project Reports (DPRs):

Conduct Thorough Assessments: Before initiating projects, carry out detailed feasibility studies and DPRs to assess the technical, environmental, and economic aspects of proposed river links.

Cost-Benefit Analysis: Evaluate the costs and benefits of each project to ensure that the investment is justified and sustainable. Try to avoid unnecessary delays.

2. Integrated Water Resource Management (IWRM):

Holistic Approach: Implement IWRM principles to manage water resources comprehensively, considering factors such as water availability, quality, and demand across different regions.

Coordination Across States: Foster cooperation and coordination between states and regions to align objectives and manage water resources effectively.

3. Environmental and Social Impact Assessments:

Mitigate Environmental Impacts: Conduct environmental impact assessments (EIAs) and develop mitigation measures to address potential ecological disruptions and habitat loss.

Social Impact Assessments: Assess and address the social impacts, including displacement of communities and changes to local livelihoods.

4. Stakeholder Consultation and Participation:

Engage Local Communities: Involve local communities, stakeholders, and environmental organizations in the planning and decision-making processes to address their concerns and incorporate their insights.

Public Awareness: Promote public awareness and education about the benefits and impacts of river interlinking projects.

5. Sustainable Design and Technology:

Adopt Eco-Friendly Technologies: Use environmentally friendly technologies and designs to minimize negative impacts on ecosystems, such as fish-friendly designs for water intakes and bypass systems.

Low-Impact Infrastructure: Focus on infrastructure designs that reduce the environmental footprint, such as minimizing reservoir sizes and avoiding sensitive areas.

6. Financial Planning and Investment:

Secure Funding: Develop a robust financial plan to secure funding for the planning, construction, and maintenance of river interlinking projects. Explore public-private partnerships (PPPs) and other funding mechanisms.

Cost Management: Monitor and control project costs to ensure financial sustainability and avoid cost overruns.

7. Regulatory and Legal Framework:

Ensure Compliance: Ensure that projects comply with existing environmental regulations and water management laws. Obtain necessary approvals and permits from relevant authorities.

Strengthen Governance: Enhance governance structures to oversee the implementation and management of river interlinking projects effectively.

8. Implementation and Monitoring:

Phased Implementation: Implement projects in phases to manage complexity and address issues as they arise. Begin with pilot projects to test concepts and refine approaches.

Ongoing Monitoring: Establish monitoring systems to track the performance and impacts of river interlinking projects. Use data to make informed adjustments and improvements.

9. Research and Innovation:

Support Research: Invest in research to understand the ecological, hydrological, and socio-economic impacts of river interlinking. Explore innovative solutions to address challenges.

Apply Best Practices: Learn from successful projects and best practices from other regions to improve the design and implementation of river interlinking projects.

10. Address Regional Disparities:

Focus on Equity: Ensure that the benefits of river interlinking are distributed equitably among regions, and address disparities between water-rich and water-scarce areas.

Successful Examples:

1. Indira Gandhi Canal Project (India): A canal system that brings water from the Sutlej River to the desert areas of Rajasthan in India.

2. California State Water Project (USA): A large system of canals, dams, and pipes that moves water from Northern California to Southern California.

3. Grand Canal (China): A huge canal that connects different rivers in China, like the Yangtze and Yellow Rivers.

4. Chao Phraya River Diversion Project (Thailand): A project that diverts water from the Chao Phraya River to reservoirs and irrigation systems.

Conclusion

The interlinking of rivers offers a promising solution to several water-related issues, including regional water shortages and inefficient water management. By redistributing water from surplus to deficit areas, it has the potential to boost agricultural productivity, enhance drinking water availability, and stabilize water flow in rivers prone to seasonal fluctuations.

Prelims questions:

Q. Consider the following statements:

1. The Wainganga is a tributary of the Godavari river.
2. The Nalganga River drains directly into the Tapi River.
3. The Purna River directly flows into the Tapi River

How many of the statements given above are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

ANSWER: B

Mains Questions:

“What are the key environmental, social, and economic impacts of river interlinking projects, and how can these impacts be effectively managed to ensure sustainable and equitable benefits?”

(150 words 10 marks)

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