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Q8

Not many years ago, river linking was a concept but it is becoming reality in the country. Discuss the advantages of river linking and its possible impact on the environment.

UPSC Civil Services Mains 2017 · GS III · 10 marks · Environment and Conservation

Conservation, environmental pollution and degradation, environmental impact assessment.

Core demand of the question

- Discuss the advantages of inter-linking of rivers as the idea becomes a set of projects
- Discuss possible environmental impacts

Revision summary

The **National Perspective Plan** and **NWDA** studies framed Himalayan and peninsular inter-links; **Ken-Betwa** is an early project moving toward implementation.

Advantages are flood control, irrigation in deficit basins, some navigation, hydropower and city supply.

Environmental costs include forest and tiger habitat loss, fisheries and silt change, delta salinity, seismic risk in the Himalaya, and displacement.

Climate change can reverse which basin is surplus.

Links need basin-wide assessment, not only a canal that looks good on a drought map.

Introduction

River linking was long a map in the **National Perspective Plan** (1980s) with the **National Water Development Agency** studying Himalayan and peninsular links. By 2017 some links were moving from paper to **detailed project reports and clearances**, notably **Ken-Betwa**. The promise is to move water from **flooded** basins to **dry** ones. The risk is that rivers are not pipes: they carry silt, fish, and the rights of people downstream.

Body**Advantages of river linking**

- **Flood moderation** in surplus basins (parts of the Ganga-Brahmaputra and some monsoon-swollen peninsular rivers) if water is stored and diverted before it inundates plains.
- **Drought proofing** and extra **irrigation** in deficit regions such as Bundelkhand (the **Ken-Betwa** logic) and rainfed peninsular tracts.
- **Navigation** on more reliable channels, which can cut diesel trucking if inland waterways are actually maintained.
- **Hydropower** at dams and drops along transfer canals, adding peaking power to the grid.
- **Urban and industrial supply** for growing cities that have outrun local rivers and groundwater.

- **Employment** in construction and, later, in irrigated agriculture, which is the political case in dry districts.
- Intra-basin and smaller links can be less disruptive than a full Himalayan-to-peninsular grid; not every advantage needs the entire map built at once.

Possible impact on the environment

- **Terrestrial ecology:** canals and reservoirs submerge forests and wildlife corridors (**Ken-Betwa** has faced **Panna tiger** habitat concerns).
- **Aquatic ecology:** altered flow, temperature and silt change **fisheries**, dolphins and the pulse that floodplain agriculture needs.
- **Delta and coast:** less water and silt downstream can worsen **salinity**, mangrove stress and relative sea-level problems in already sinking deltas.
- **Himalayan links** add seismic, landslide and glacial-lake risk; climate change makes surplus and deficit **non-stationary**, so a link sized on old hydrology may fail.
- **Displacement and command-area waterlogging** or salinity if irrigation is heavy and drainage is weak.
- **Interstate and transboundary** harm: a link that is an advantage for one State can cut lean-season flow for another, or for Bangladesh on Himalayan rivers.
- Construction **embodied carbon** and quarry damage are large for a national grid of canals.
- Environmental impact assessment and **wildlife clearances** must therefore be basin-wide, not project-sliced, or the 'reality' of linking will export drought and extinction downstream.

Flow diagram

River linking -> Irrigation drought proofing
River linking -> Flood moderation
River linking -> Power navigation
River linking -> Ecology silt deltas wildlife
Ecology silt deltas wildlife -> Need environmental flows
Irrigation drought proofing -> Choose viable links only

Conclusion

River linking can move monsoon surplus to dry fields, cut some floods, and add power and navigation if projects are chosen carefully. It can also drown forests, starve deltas, and lock India into canals based on an old climate. **Ken-Betwa**-type links should proceed only with honest environmental flows, wildlife offsets that work, and consent of downstream users, not as a single national pipe dream.

Facts & figures

National Perspective Plan

1980s Union plan for inter-basin water transfer, later studied as Himalayan and peninsular components.

NWDA

National Water Development Agency: prepares feasibility and detailed reports for proposed river links.

Ken-Betwa

Major peninsular link intended to take Ken water to the Betwa in Bundelkhand; a test case for wildlife and interstate issues.

Environmental flow

Water that must remain in the river for ecology and downstream users; linking that ignores it dries the donor basin in the lean season.

Panna landscape

Tiger reserve and forest tracts affected in Ken-Betwa reservoir and canal alignments, a core environmental objection.

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