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Water Management needs a Hydro-Social Approach

What is the issue?

The Global Water System Project implies global concern about the human-induced transformation of fresh water and its impact on the earth system and society.

The GWSP (2003) is a joint initiative of Earth System Science Partnership (ESSP) and Global Environmental Change (GEC) programme to produce evidence on the scientific and human aspects of water use in an era of global environmental change.

What were the findings regarding water management?

- The **IPCC's 4th assessment report** (2007) highlighted the link between societal vulnerability and modifications of water systems.
- It is globally estimated that the gap between demand for and supply of fresh water may reach up to 40% by 2030 if present practices continue.
- The **2030 Water Resource Group** was formed in 2008, at the instance of the World Economic Forum.
- The World Bank promoted the group's activity since 2018 and these measures help to achieve the Sustainable Development Goal on water availability and sanitation for all by 2030 (**SDG 6**).
- The **UN World Water Development Report**, 2021, titled 'Valuing Water', has laid stress on the proper valuation of water by considering five perspectives.
 1. water sources
 2. water infrastructure
 3. water services
 4. water as an input to production and socio-economic development
 5. socio cultural values of water

What are the anthropogenic factors that influence a freshwater system?

- **The anthropogenic factors directly influencing a freshwater system are**
 - engineering of river channels
 - irrigation and other consumptive use of water

- widespread land use/land cover change
- change in an aquatic habitat
- point and non-point source pollution affecting water quality
- reduction in natural storage capacity
- deterioration in catchment efficiency

How to rectify the imbalance in water availability?

- **Intra- and inter-basin transfer (IBT)**- A recent document indicates that there are 110 water transfer mega projects that have either been executed or being planned/under construction across the world such as the National River Linking Project of India.
- These projects, if executed, will reengineer the hydrological system with considerable local, regional and global ramifications.
- Inter-basin transfer of water drew attention in India due to a provision made in Budget 2022 for the [Ken Betwa river link project](#) which is a part of the National River Linking project.

The National River Interlinking Project will comprise of 30 links to connect 37 rivers across the nation through a network of nearly 3000 storage dams to form a gigantic South Asian Water Grid.

- **Agriculture, grey water use**- Even at the crop level we consume more water than the global average.
- Rice and wheat accounts for more than 75% of agricultural production use.
- The agriculture sector uses a little over 90% of total water use in India.
- In industrial plants, consumption is 2 times to 3.5 times higher per unit of production of similar plants in other countries.
- It is estimated that 55% to 75% of domestic water use turns into grey water depending on its nature of use, people's habits, climatic conditions, etc.
- The grey water can be treated and put to use, given the size of India's urban population.

What are the challenges in Intra- and inter-basin transfer (IBT)?

- **Alterations in surplus and demand**- There is contestation on the concept of the surplus and deficit basin itself as the exercise is substantially hydrological.
- Water demand within the donor basin by factoring land use, cropping patterns, population growth, urbanisation, industrialisation, socio-economic development and environmental flow are hardly worked out.
- Rainfall in many surplus basins has been reported as declining which may alter the status of the surplus basin.
- **Water utilization**- There is concern about the present capacity utilisation of water resources created in the country.
- By 2016, India created irrigation potential for 112 million hectares, but the gross irrigated area was 93 million hectares which indicates a gap of 19%.
- The average water use efficiency of irrigation projects in India is only 38% against 50%-60% in the case of developed countries.

What is the planning ahead?

- A hybrid water management system is necessary, where the individual, a community and society have definite roles in the value chain.
- It is important to include less predictable variables and involve non-state actors in decision-making processes.
- The need of the hour is
 - source sustainability
 - renovation and maintenance of traditional water harvesting structures
 - grey water management infrastructure
 - groundwater recharge
 - increasing water use efficiency
 - reuse of water

References

1. <https://www.thehindu.com/todays-paper/tp-opinion/water-management-needs-a-hydro-social-approach/article65209195.ece>
2. <https://www.indiawaterportal.org/articles/national-river-linking-project#:~:text=The%20National%20River%20Linking%20Project,inter%2Dbasin%20water%20transfer%20projects>



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