REFORMING INDIA'S

WATER GOVERNANCE TO MEET EMERGING CHALLENGES

"Anyone who can solve the problems of water will be **worthy of two Nobel Prizes- one for peace and one for science".** This quote by John F. Kennedy rightly captures the issue of poor water resource management coupled with governance challenges. Undoubtedly, clean water is a basic human right. Yet, **1.8 billion people are likely to face absolute water scarcity by 2025** [Food and Agriculture Organization (FAO)], hence arises the question of water governance.

India has **around 18% of the world's population but only 4% of the world's freshwater resources.** Despite significant investment and improvement in the water sector, it is becoming very difficult to **manage the ever-increasing demand for water in India.** If the status quo is not changed, India's water problems will be further aggravated.

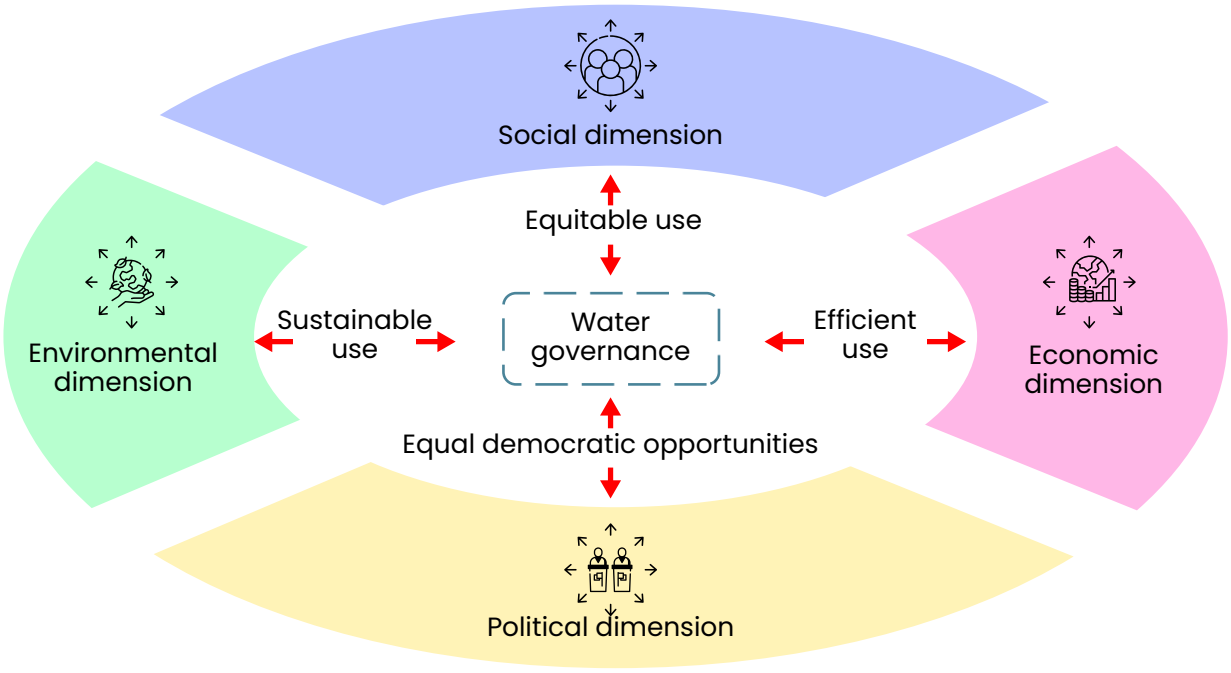
IN THIS DOCUMENT

1. What is water governance, and what are the components of water governance in India?

Water governance relates to the range of **political, social, economic and administrative systems** that are in place to develop and manage water resources and the delivery of water services at different levels of society.

- It is simply an **enabling environment** where **water management actions** take place. it includes:
  - **Policies, strategies, plans, finances** and incentive structures concerning water resources.
  - **Legal, regulatory frameworks and institutions** associated with water.
  - **Planning, decision-making and monitoring** processes.
- It entails **responsible actions to protect and ensure the sustainable use of water resources.**

Figure 1.1 Dimensions of Water Governance



Elements of Water Governance in India

Water is a State subject, steps for augmentation, conservation and efficient management of water resources are primarily undertaken by the respective State Governments. In order to supplement the efforts of the State Governments, Central Government provides **technical and financial assistance to them through various schemes and programmes.**

- **Constitutional Framework**
  - **Article 262:** Parliament may by law provide for the **adjudication of any disputes** with respect to the use, distribution, or control of the waters of any inter-state river or river valleys.
    - Further, **Neither the Supreme Court nor any other court shall** exercise jurisdiction in respect of any such dispute.
- **Legal Framework**
  - **Inter-State River Water Disputes (ISRWD) Act, 1956** provides for the constitution of a **Water Disputes Tribunal** by the Central Government for the adjudication of the water dispute.
    - So far **9 water disputes Tribunals have been constituted,** out of which five are dissolved and 4 are still operational.
  - **River Boards Act, 1956,** provides for the **establishment of River Boards** for the regulation and development of inter-state rivers and river valleys by the Centre.
  - **Water (Prevention and Control of Pollution) Act, 1974:** Central pollution control boards and related state boards were set up **to monitor, control and give directions related to sewage and plant effluents.**
  - **Environment (Protection) Act, 1986:** It **empowers the Central Government** to establish authorities charged with the mandate of preventing environmental pollution in all its forms.

- **Institutional Framework**
  - **Central Ground Water Board (CGWB):** National Apex Agency under the **Ministry of Jal Shakti** is entrusted with the responsibilities of providing scientific inputs for management, exploration, monitoring, augmentation and regulation of ground water resources.
  - **Central Water Commission (CWC):** Premier Technical Organisation charged with the general responsibilities of coordinating schemes for control and conservation of water for flood control, irrigation, drinking purposes in consultation with the State Governments.
  - **National Institute of Hydrology:** Premier research organization working in the area of Hydrology and water resources in India under the Ministry of Jal Shakti.
  - **National Mission for Clean Ganga (NMCG):** Registered society acting as the implementation arm of the **National Council for Rejuvenation, Protection and Management of River Ganga (referred to as National Ganga Council under the chairmanship of the Prime Minister)** constituted under the Environment (Protection) Act, 1986.

Box 1.1 Water Governance: Global scenario

- **The Helsinki Rules on the Uses of the Waters of International Rivers:** It is an international guideline **regulating how rivers and their connected groundwaters that cross national boundaries may be used,** adopted by the International Law Association (ILA) in 1966.
- **Ramsar Convention on Wetlands:** It is the intergovernmental treaty that provides the framework for the **conservation and wise use of wetlands and their resources.**
- **Sustainable Development Goal 6:** It deals with availability of Clean Water and Sanitation to be achieved by 2030 to everyone.
- **UNDP-SIWI Water Governance Facility (WGF):** It seeks to enhance the role and contribution of **water governance towards the realization of a "water-wise world".**

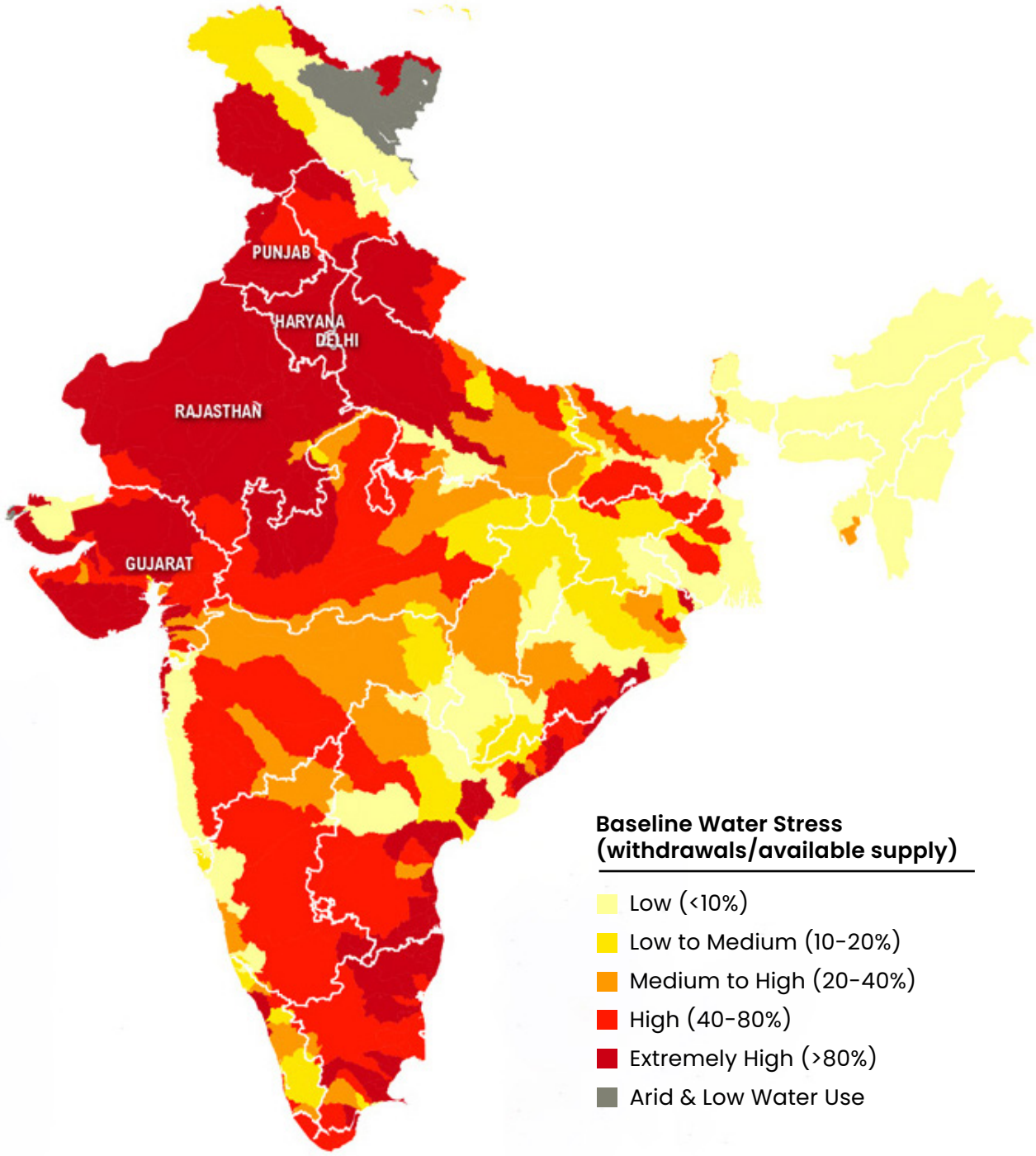
2. Why do we need effective water governance?

Effective rules and regulations relating to water are vital for achieving **multiple goals** like responding to the climate crisis, ensuring food security, fighting poverty, and resolving conflict, etc. making it the foundation for a more sustainable and equal world.

- **Right to water for life:** Every person has a right to a sufficient quantity of safe water for life within easy reach of the household.
  - The **right to clean drinking water is a fundamental right,** protected under Article 21 of the Constitution.
- **Presence of Trans-Boundary Rivers:** India **encompasses 25 major river basins and 103 sub-basins** extending across multiple states.
  - It also has several Trans-boundary Rivers like the **Indus, Teesta, Brahmaputra, etc.** with each riparian state/country claiming jurisdiction over it.
- **Tackling Water Scarcity:** Several factors contribute to the scarcity of water.
  - **Physical scarcity** (limited access caused by climatic conditions or unsustainable management); **socio-economic scarcity** (inability of society to create additional water infrastructure), and **forced scarcity** (due to political conflict).
  - **54% of India** faces high to extremely high water stress (Figure 2.1)
- **Water pollution:** Rivers and our groundwater are polluted by untreated effluents and sewage.
  - Central Pollution Control Board's 2011 survey states that only **2% of towns** have both sewerage systems and sewage treatment plants
- **Promoting Water and Sanitation Hygiene:** It can play a role in overcoming various illnesses like Diarrhoea, Neglected Tropical Diseases like Trachoma, and other waterborne illnesses.
- **Climate change:** It poses fresh challenges with its impacts on the **hydrologic cycle.**
  - More extreme rates of **precipitation and evapotranspiration** will exacerbate the impacts of floods and droughts.
- **Low Water use efficiency in agriculture:** Agriculture consumes around 80 per cent of our water resources, having one of the lowest water use efficiency in the world.
  - **At 25-35 per cent presently,** it is low as compared with 40-45 per cent in Malaysia and Morocco and 50-60 per cent in Israel, Japan, China and Taiwan.
- **Virtual water export:**From a negligible value of virtual water export until 1990, India's virtual water export has risen to 32 billion m^3 in the period 1990–2018.

- Virtual water, also known as "embedded water", is the **water used to produce goods and services,** but is not directly seen by the end-user
- **Building water infrastructure:** Functional and Effective water governance frameworks provide for **stronger and more efficient investments** in the water infrastructure by reducing risks for investors.
- **Addressing Wastage of Water:** Estimates suggest that around 48 billion bottles of one litre, is wasted every day in India.

Figure 2.1 Water-Stressed Regions in India



Box 2.1 In Conversation!: Water Trading

Hey Vinay, did you read about the water trading mechanisms gaining ground in some countries.

Vini

Not really, what is water trading?

It is a kind of market mechanism that treats water as a commodity to be traded to users using water trading certificates.

But how does it work?

In this, water rights are first allocated to each sector as per their needs, and they can buy in case they need more or sell in case they need less.

Vinay

Nice!! It sounds like a potent tool for overcoming the pertinent issues of water scarcity.

Yes!! Murray Darling Basin in Australia has adopted this and is quite successful in Spain as well.

Great!! Even our country should promote research in adopting this technique to ensure water use efficiency.

Definitely!!

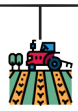
3. What are the shortcomings in the existing Water Governance strategies?

The current situation of the water crisis has brought to light the challenges present in the existing frameworks. Without proper evaluation of these challenges, a suitable water governance strategy cannot be formulated.

- **Command-and-control Nature:** This approach to water governance does not take into account the understanding of river systems or their interconnections with the health of the catchment areas or groundwater.
  - It is a **narrow approach** entailing the construction of dams or extraction of groundwater(See Figure 3.1) and is based on the single discipline of engineering and hydrogeology.
  - It is a **one-dimensional approach** focussing on the economic use of water only.
- **Bureaucratic Governance:A large, centralized or top-down approach** ignores the perspectives of stakeholders involved including local communities, government, industries, etc.
- **Instrumental View of Water:** In case of rivers and groundwater, which are looked at completely in terms of usage, ignoring the ecosystem services provided by them.
  - In this case, there is no regard given to the sustainability of the water resource, both in case of rivers as well as in case of groundwater.
- **Focus on Supply:** There has been hardly any effort in management of demand of water resources with the entire focus being on increasing the supply of water.
- **Water in Silos:** Water is divided into silos of groundwater and surface water, as also irrigation and domestic use, with little dialogue across silos.
  - **Different bodies such as CGWB, CWC and local bodies** do overlapping functions.
- **Lack of Transparency and Access to Water-Related Information:** Limited sharing has given rise to conflicts among various stakeholders over the issue of access to water.
- **British Common Law:** The legal framework governing water belongs to the 19th-century British common law, which **legitimizes and perpetuates inequity in access to water by giving unlimited water withdrawal powers to land owners.**
- **Interstate (River) Water Disputes:** These are a continuing challenge to federal water governance in India.

Figure 3.1 Ground Water (GW) crisis in India

Contribution of GW



- India-is the **largest Consumer of GW**
- More than **60% of irrigated agriculture and 85%** of drinking water supplies are dependent on **groundwater (World Bank)**

Status

- **As per 2022 Assessment, 14% (i.e. 1006 assessment units) of the total assessment units** (i.e. 7,089 assessment units) in the country have been categorised as 'over exploited'

Causes

- **Climate Warming, Overextraction** due to rising population, agricultural intensification, industrial demands, urbanisation,

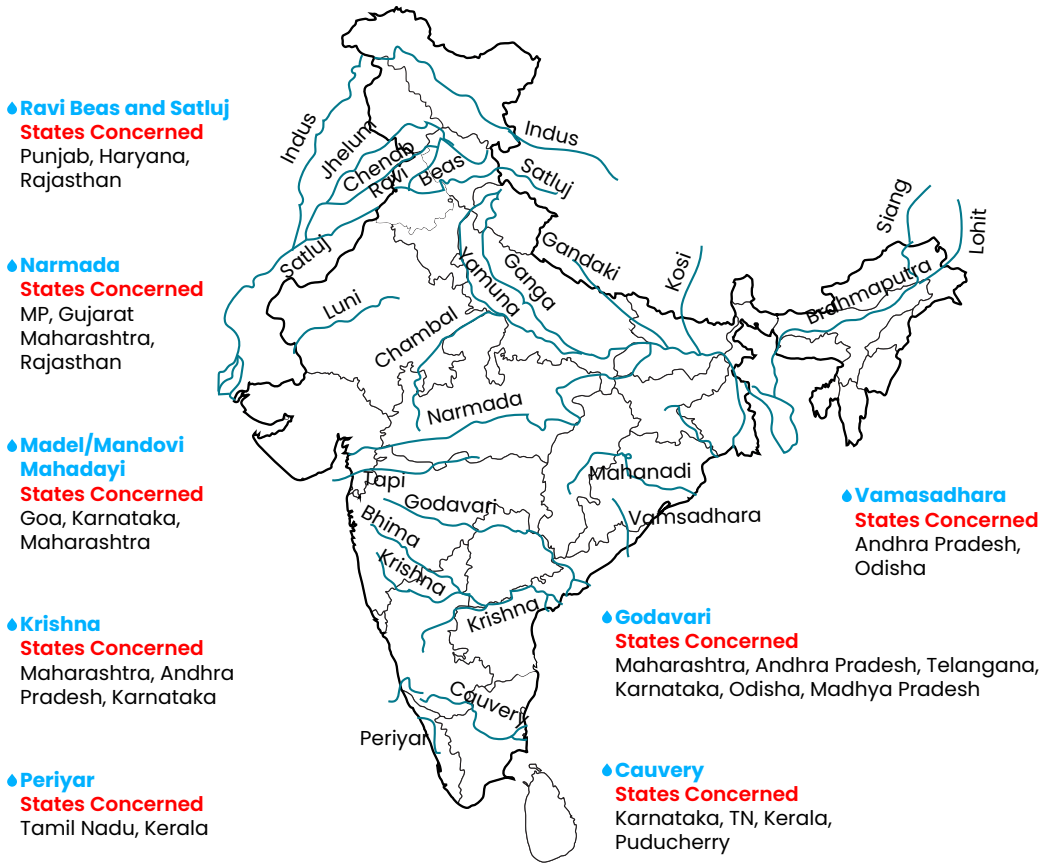
Box 3.1. Major Reasons for the Inter-State Water Disputes in India

- **Legal Ambiguity: Schedule 7** of the Constitution provides an imprecise distribution of power between the **Centre and the States.**
  - Gives **Union Parliament** the power to formulate laws for regulating interstate rivers **(Union List: Entry 56, List 1),**
  - **States have autonomy** over water utilisation for purposes such as water supply, irrigation and canals, drainage and embankments, water storage and power **(State List: Entry 17 of List 2)**
- **Historical Factors:** Since independence, states have been carved out based on **political and cultural considerations,** without much focus on ecological aspects.
- **Institutional Arrangement:** While **Article 262** prohibits the higher judiciary from adjudicating on the Interstate Water Disputes, **Article 136** empowers it to hear appeals against the tribunals.

- **Article 136: Grants special leave** to Supreme Court to appeal from any judgement, decree, determination, sentence, or order in any matter passed by any court or Tribunal.

- **Technological Challenges:** The **reductionist approach (fragmenting a basin based on the geographical borders of the states)** has led to conflicting perceptions on property rights leading the emergence of disputes.

Figure 3.2 Major Inter-State Water Disputes



4. What is the role of Local Government in the management of Water Resources?

As per the Indian Constitution, **Water is a state subject.** However, the **11th and 12th Schedules** of the Constitution specifically mention subjects like drinking water, water supply, etc. under the **domain of the local governments.** Hence, highlighting the significant role played by them.

- **Planning processes:** Help in promoting and planning the development of economic activities at the local level simulating agricultural development, industries or tourism, etc.

- **Prioritising allocation:** Decentralised management of resources ensures that essential services like water are prioritised to those who need them the most.
  - Local bodies also help **in maintaining infrastructure and collecting fees for usage**.

- **Engage Stakeholder Participation:** Being closer to the grassroots, they can enable the participation of a range of stakeholders like farmers, fishermen, and community organisations in the management of water resources (See box for example of community participation).

- **Role in Watershed Management:** As watersheds may extend across boundaries of States/Countries, local governments can play a role in building consensus to protect water.

- **Disaster Management:** Effective mitigation of the impact of disasters like floods can be done at the level of local government.
  - Ex. **Flood Forecasting and Early Warning System** has been built by the city administration of Kolkata to make cities resilient to floods.

Box 4.1 Examples of Community Participation in Water Management

- **Local Jal Samitis under Jal-Jeevan Mission**: Involves the participation of atleast 50% local village women.
- **Atal Bhujal Yojana (Atal Jal):** It aim to demonstrate community-led sustainable ground water management which can be taken to scale.
  - Presently, **implemented in water stressed district** of Gujarat, Haryana, Karnataka, Madhya Pradesh, Maharashtra, Rajasthan and Uttar Pradesh..
- **Neeru-Chettu (Andhra Pradesh):** Rejuvenating and revitalising natural resources. Aiming at collective participation and spread of awareness.
- **Jal Jeevan Hariyali (Bihar):** Identification, restoration, and renovation of all public water storage structures - ponds/ canal, etc. Encouraging farmers to participate in water conservation initiatives.
- **Mission Kakatiya (Telangana):** Reclamation of water tanks by restoring minor irrigation sources and strengthening community based irrigation management .

5. What initiatives are taken by the Indian Government for the management of Water Resources?

Several initiatives have been taken at the National, Global, and Local levels to bring about the effective management of water resources. Some of them are,

- **Jal Shakti Abhiyan (2019):** Under Ministry of Jal Shakti, aims to undertake water conservation through rainwater harvesting, renovation of traditional and other river bodies, etc.
  - Its scope was later expanded with the theme **"Catch the Rain - Where it Falls When it Falls"** covering all the blocks across the country
- **Jal Jeevan Mission (JJM):** It was launched in 2019, with the ambitious goal of **providing tap water supply to every rural household by 2024.**
- **Atal Mission for Rejuvenation and Urban Transformation (AMRUT) 2.0:** It includes provisions for harvesting rainwater through stormwater drains into the water bodies.
  - Through preparation of the **'Aquifer Management Plan',** it also seeks to strategise groundwater recharge.
- **Pradhan Mantri Krishi Sinchai Yojana (PMKSY)**: To enhance physical access of water on farm and expand cultivable area under assured irrigation, improve on farm water use efficiency, introduce sustainable water conservation practices etc.
  - It has three components/ schemes namely
    - **Har Khet Ko Pani (HKKP),**
    - **Repair, Renovation & Restoration (RRR) Scheme of Water Bodies and**
    - **Surface Minor irrigation (SMI) Scheme.**
- **Mission Amrit Sarovar:** Includes provisions for creation/rejuvenation of at least 75 Amrit Sarovars in every district to harvest and conserve water.
- **National Aquifer Mapping (NAQUIM) Project:** Involves water conservation measures through recharge structures covering the entire mapable area of about **25 lakh sq. km. shared with the states for implementation.**
- **National Water Policy (2012):** Advocates rainwater harvesting, conservation of water and the need for augmenting the availability of water through direct use of rainfall.
  - The Ministry of Jal Shakti had set up a committee of independent experts led by Mihir Shah to draft a **new National Water Policy in 2019.**
- **Namami Gange Programme:** Integrated conservation mission with the twin objectives **of effective abatement of pollution, conservation and rejuvenation of National River Ganga.**
- **National Water Mission (2009):** 1 of the 8 missions under the National Action Plan for Climate Change includes basin-level integrated water management.

Box 5.1 Traditional Methods for the Conservation of Water

Archaeological evidences have shown the existence of water harvesting and storage systems. Dholavira settlement is an example of water channeling and storing for dry season. Irrigation and water harvesting system also find mention in Chanakya's Arthashashtra. Some other examples include:

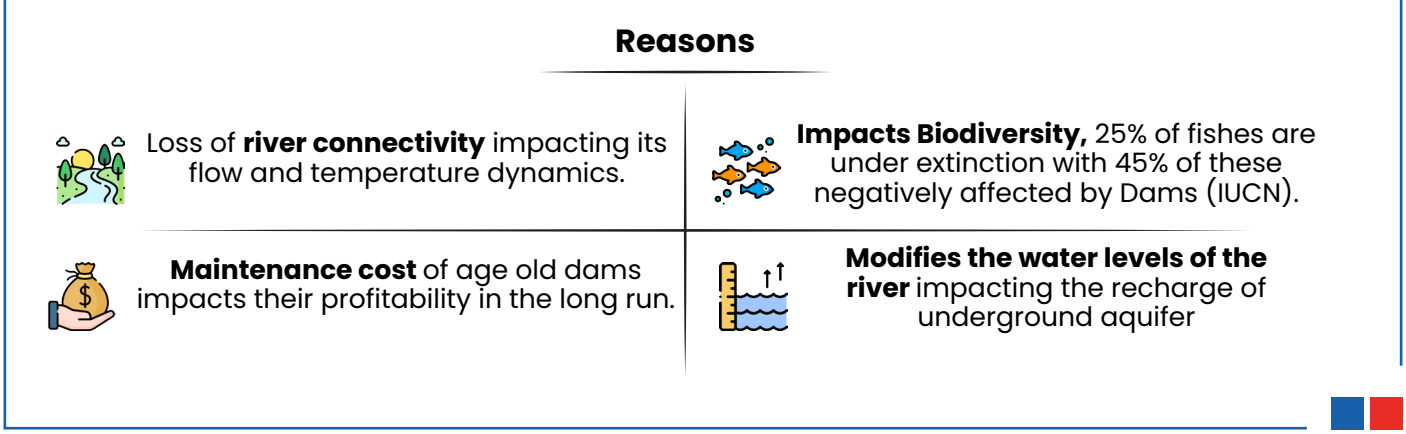
- **Jhalara:** Human-made tanks mostly found in Rajasthan and Gujrat having steps in a series of levels.
- **Bawari and Step Well:** Unique water storage structures once part of an ancient network of water storage. Based on stepwell concept, helps in centralizing the water flow and minimizing its evaporation. E.g., Rani ki vav.
- **Paar System:** It is non-polluting, eco-friendly method used to underground store rainwater in water stressed areas of Rajasthan.
- **Taanka:** Traditional rainwater harvesting technique in Thar desert region of Rajasthan, involves the use of underground pit to store rainwater.
- **Zing:** Found in the cold regions of Ladakh where a part land is dug to construct tanks that help to store water from melting glaciers.
- **Eri:** Old water management system used in India to control floods, prevent soil erosion and stop runoff during heavy rainfall seen mostly in Tamil Nadu.

6. What measures are needed to ensure effective water governance?

An effective water governance strategy must cover all aspects of water cycle including **water management functions** (e.g. drinking water supply, flood protection, etc.), **water uses** (e.g. domestic, industry, agriculture, energy) and **ownership of water resource** (e.g. public, private, mixed).

- **Adopting OECD Principles on Effective Water Management:** It calls for open, transparent water institutions, inclusive, equitable, ethical, and accountable policies, etc.
- **River basin as the basic unit of governance: Innovative technologies** that seek to save water, by understanding its social, ecological, and economic roles rather than sole focus on increasing supply of water.
- **Establishing a repository of multidisciplinary knowledge:** About the river basin by taking into account the traditional roles played by the communities in the management of water.
- **Management of Demand:** Shift towards **management of demand** through crop diversification as constraints exists in augmenting water supply.
- **Effective wastewater management:** Adopting the strategy of Reduce-Recycle-Reuse using decentralised wastewater management.
  - **NITI Aayog** recommended for the idea of water trading in case of reuse of water.
- **Sustainable and Participatory Groundwater Management:** Adequate information on aquifer boundaries, water storage capacities, and flows to be available to all stakeholders for inclusive action.
  - **Local government can be strengthened** in terms of finance and skills to improve water governance.
- **Integrated Water Resource Management (IWRM):** It deals with the coordinated development and management of water, land and related resources i.e., treating water as an integral ecosystem component.
  - This approach is **opposite to the traditional hydrological approach** that involves the construction of dams to solve water crisis transferring it from surplus to deficit regions.
- **Institutional Reforms as suggested by the Mihir Shah Committee:** Recommended for the establishment of the **National Water Commission (NWC)** as a single unit by subsuming the Central Water Commission (CWC) and Central Ground Water Board (CGWB) thereby de-bureaucratizing the governance of water.
- **Role of Technology in Water Management:** Technology such as IoT and AI devices can be integrated to effectively predict weather patterns,
  - **Smart meters** can be used for the detection and reduction of water leakages.
- **Interstate water dispute: The National Commission to Review the Working of the Constitution (NCRWC)** recommended a comprehensive central legislation, after consultation with states, to define the constitution and jurisdiction of river boards.

Figure 6.1 Reasons for Dismantling Dams in Europe and Other Countries



Box 6.1 Gender in Waterscape

Women possess a profound understanding of **local water resources,** their locations, and their quality. Women are involved in tasks such as collecting, storing, recycling, and distributing water for various domestic purposes, including drinking, bathing, food preparation, and sanitation. Across the world, women spend up to **200 million labour hours on activities related to water management daily.** Despite their indispensable role in water management,

- Women are frequently excluded from **critical decision-making processes related** to water governance.
- Their exclusion results in **ineffective water governance strategies and policies.**
- At the same time, the **intra-household division of labour and production organisation** is poorly understood by institutions responsible for water governance.
- Consequently, the failure to consider gender dynamics during the planning and design phases undermines **the effectiveness of well-intentioned policies.**

Recognising the need for change, **the Dublin-Rio Principles,** adopted at the **1992 Rio Earth Summit,** can prove to be instrumental in provoking gender-responsive interventions in water management worldwide.

Conclusion

The limitations of the **traditional approach to water governance** have been highlighted by the lack of sustainability that would result in increased stress in the future causing further conflicts over water. Therefore, there is a need to **shift from a traditional engineering perspective to the idea of holistic and interdisciplinary approach.** Hence, the upcoming water policies should essentially be more grounded, realistic, and have holistic perspective in dealing with the problems of the 21st century.

TOPIC AT A GLANCE

Reforming India's Water Governance to Meet Emerging Challenges

Despite significant investment, it is becoming very difficult to **manage the ever-increasing demand for water in India. Globally, 1.8 billion people are likely to face absolute water scarcity by 2025** (FAO) raising the question of water governance.

Water governance and Its components

- It refers to range of **political, social, economic and administrative systems** to develop and manage water resources.
- **Elements of Water Governance**
  - Water is a **State subject**
  - **Constitutional Framework: Article 262**
  - **Legal Framework:** Inter-State River Water Disputes (ISRWD) Act, 1956; River Boards Act, 1956; Water (Prevention and Control of Pollution) Act, 1974; Environment (Protection) Act, 1986; etc.
  - **Institutional Framework:** Central Ground Water Board (CGWB); Central Water Commission (CWC); National Institute of Hydrology; National Mission for Clean Ganga (NMCG), etc.

Need for Water Governance

- **Right to water for life:** Under Article 21 of the Constitution.
- **Presence of Trans-Boundary Rivers**
- **Tackling Water Scarcity: 54% of India** faces high to extremely high water stress.
- **Water pollution:** Due to untreated effluents and sewage.
- **Promoting Water and Sanitation Hygiene**
- **Climate change**: Extreme rates of precipitation exacerbate floods and droughts
- **Building water infrastructure.**
- **Addressing Wastage:** Around 48 billion bottles of one litre, is wasted every day in India.

Shortcomings in the existing Water Governance

- **Command-and-control Nature: Narrow approach** entailing the construction of dams.
- **Bureaucratic Governance:**Top-down approach.
- **Instrumental View of Water:** It ignores the ecosystem services provided by water.
- **Focus on Supply:**Less focus on demand.
- **Water in Silos:** of groundwater and surface water with little dialogue across silos.
- **Lack of Transparency and Access to Water-Related Information.**
- **British Common Law:** Legal framework governing water belongs to 19thcentury British law.
- **Interstate (River) Water Disputes:** Causing challenge to federal water governance.

Role of Local Government

- **Planning processes:** Planning the development of economic activities at the local level.
- **Prioritising allocation:** Essential services like water are prioritised to those who need them the most.
- **Engage Stakeholder Participation**
- **Role in Watershed Management:** Play a role in building consensus to protect water.
- **Disaster Management: Ex. Flood Forecasting and Early Warning System** built by the city administration of Kolkata, etc.

Initiatives taken by the Indian Government

- **Jal Shakti Abhiyan (2019):** Under Ministry of Jal Shakti
- **Jal Jeevan Mission (JJM):** To provide tap water supply to every rural household
- **Atal Mission for Rejuvenation and Urban Transformation (AMRUT) 2.0**
- **Pradhan Mantri Krishi Sinchai Yojana (PMKSY):** To enhance physical access of water on farm.
- **Mission Amrit Sarovar:** Creation/rejuvenation of at least 75 Amrit Sarovars in every district.
- **National Aquifer Mapping (NAQUIM) Project:** Water conservation measures through recharge structures.
- **Others:** National Water Policy (2012); Namami Gange Programme; National Water Mission (2009)

Measures Needed to ensure effective water governance

- **Adopting OECD Principles:** On Effective Water Management.
- **River basin as the basic unit of governance.**
- **Establishing a repository of multidisciplinary knowledge**
- **Management of Demand:** Through crop diversification, etc.
- **Effective wastewater management:** Strategy of Reduce-Recycle-Reuse.
- **Integrated Water Resource Management (IWRM):** Opposite to the traditional hydrological approach.
- **Institutional Reforms:** Establishment of the **National Water Commission** (Mihir Shah Committee).

Figures and Boxes