

IAT-3 WRM questions with solutions.

1. Write a note on NWC. List divisions of NWC.
 - a. Dr. Mihir Shah, member of the Planning Commission (2009-2014), put several working groups in place to look at different aspects of the water sector—all headed by persons from either academia or civil society, instead of bureaucrats.
 - b. The report titled “A 21st century institutional architecture for India's water reforms” submitted by the expert committee emphasized a paradigm shift from the existing paradigm of water management. Water crisis facing the country today is closely linked to an unreformed paradigm of water governance.
 - c. The report argued that the two national apex bodies, **CWC (Central Water Commission) and CGWB (Central ground water Board)** were created in a very different era, with a mandate defined by that era. Objective conditions on ground, demands of Indian economy and society as well as our understanding of water have changed. Also, water strategy has so far concentrated on public investment in infrastructure which although led to national food security, poor returns to public investments in water infrastructure in India (build-neglect-rebuild syndrome). It suggested need of emphasis on management improvements and institutional reforms.
 - d. **The Committee recommended that the CWC and CGWB should be restructured and unified to form a new National Water Commission (NWC).** It reasoned that a unified body will help in the collective management of ground and surface water. The NWC will be responsible for water policy, data and governance in the country.
 - e. **The key functions of the NWC** will include: (i) incentivize state governments to implement irrigation projects in reform mode, (ii) lead the national aquifer mapping and ground water management program, (iii) develop a location- specific program for rejuvenation of rivers, etc.
 - f. **The Committee proposed that the NWC should have eight divisions.** These are:
 - i. **Irrigation Reform Division:** This division will assist states to focus on irrigation projects and improve water management.
 - ii. **River Rejuvenation Division:** This division will help participatory institutions at various levels to implement region-specific programs for rejuvenation of rivers.
 - iii. **Aquifer Mapping and Participatory Ground Water Management Division:** This division will lead the National Aquifer Management Programme for mapping and management of aquifer systems in the country.
 - iv. **Water Security Division:** This division will devise policies and programs to tackle challenges related to water security. These include: (i) ensuring the right to water for life, (ii) protecting the agrarian economy from the impact of floods and droughts.
 - v. **Urban and Industrial Water Division:** This division will help devise cost-effective and appropriate technology to recycle and reuse urban and industrial waste water.
 - vi. **Water Quality Division:** This division will develop and implement programs to control pollution of water bodies and aquifers.

- vii. **Water Data Management and Transparency Division:** This division will create and maintain a transparent and accessible system of data management on water for public use.
- viii. **Knowledge Management and Capacity Building Division:** This division will be responsible for development of institutions for capacity building of water professionals in water and land management.

2. Define WUA. What is the scope of WUAs? Explain functions of WUA.

Community involvement in irrigation management is generally implemented through the formation and operation of Water User Associations (WUAs). WUAs comprise all farmers sharing water from the same source (tertiary canal or groundwater). They are responsible for managing and maintaining the irrigation and drainage system at their level. They also contribute to higher level irrigation and water resources management.

As member needs differ from one association to another, a WUA is normally established in response to aspirations of its members. WUAs are created through state level legislation in many Indian states to manage canals and irrigation. The WUAs form managing committees for attending day to day functioning through voting of WUA members.

a. Scope

1. With greater participation of the farmers, the investments in the canal infrastructure and other irrigated agriculture related services will be need based and hence more effective
2. Optimal use of water and land resources will lead to better agricultural productivity and raised income levels of the farmers

b. The functions

1. Irrigation structure development and maintenance
2. Efficient and equitable water supply and distribution to members
3. Coordinate in recovering irrigation water rates from beneficiary farmers
4. Contribute to irrigation modernisation
5. Protection of ecological and environmental balance
6. Handle disputes internally

3. Write a note on constitutional provisions for water in India.

- The constitution defines the allocation of functions relating to water resource development between the centre and state governments.
- Water is designated as a state subject to the central intervention for coordination and facilitation.
- Entry 17 List II i.e. State List 7th Schedule of the Constitution States “water that is to say water supplies, irrigation and canal, drainage and embankments, water storage and water power subject to the provisions of entry 56 to the List I”. States are thus free to enact the water law and frame policies in accordance with this provision.
- Entry 56 of List I (Union List) refers to above states “regulation and development of interstate rivers and river valleys to the extent to which such regulation and development under the control of the union, is declared by parliament by law to be expedient in the public interest.” (The River Boards Act and the Interstate Water Disputes Act). The central government can also intervene in the interest of protecting

environment and forest, and under provisions regarding national planning for development.

- Under Article 262 of the Constitution, Parliament may by law
 - a. Provide for the adjudication on any dispute or complaint with respect to the use, distribution or control of the waters of, or in, any interstate river or river valley.” and
 - b. Neither the Supreme Court or any other Court shall exercise jurisdiction in respect of any dispute or complaint referred to in (1)

4. Explain existing legal framework of NWC.

- The existing legal framework for water law in India, both at the National and state level is embodied in the nine major Acts at the National and state level. The National Legislations as applicable to water are:
 - Water prevention and Control of Pollution Act 1974;
 - Air prevention and Control of Pollution Act 1977;
 - Environment Protection Act 1986;
 - Forest Conservation Act 1980 and amended in 1988;
 - Public Liability Insurance Act 1991;
 - Environment Assessment Development of Projects, 1994;

The Ministry of Environment and Forest is the nodal agency in the administrative structure of the central government for planning promotion and coordination and overseeing the implementation of environment legislation and programs and regulatory functions like environment clearance.

Ground water rights:

Groundwater rights are under totally private legal regime. These rights belong to the land owner, since it forms part of the dominant heritage and land ownership is governed by the tenancy laws of the state.

There is no limit to the volume of ground water a landowner may draw. Few attempts have been made at the state level.

- In Gujarat, groundwater rules have been reframed by amending the Bombay irrigation Act.
- Tamil Nadu water Board had framed certain model water Bills.
- These attempts have proved inadequate for the larger private and common property legal regimes, nor do they take into account the ecological and social diversities in which the laws needs to operate.
- The need for conjunctive use and integration of groundwater and surface water laws have also been conveniently ignored by the state governments.

5. Define IWRM. Explain implementation of IWRM.

The major components in the implementation of IWRM are,

1. Enabling Environment
2. Institutional structures

3. Management Instruments
4. Infrastructure Development

1) Enabling Environment: The enabling environment essentially consists of rules that are laid out to achieve a sustainable balance between the social, economic and environmental needs for water. These rules can be defined by the use of: **a) Policies b) Legislative Frameworks c) Financing and Investment Structures.** The enabling environment is determined by national, provincial and local policies and legislation that constitute the rules and facilitates all stakeholders to play their respective roles in the sustainable development and management of water resources.

- **Policies** – Setting goals for water use, protection and conservation. Policy development gives an opportunity for setting national objectives for the management of water resources and water service delivery with concerns for the overall development goals.
- **Legal Frameworks** – The rules to follow to achieve policies and goals. The required water laws cover ownership of water, permits to use (or pollute) it, the transferability of those permits, and customary entitlements. They underpin regulatory norms for e.g. conservation, protection, priorities, and conflict management.
- **Investment and Financing Structures** – Allocating financial resources to meet water needs. Water projects tend to be indivisible and capital-intensive, and many countries have major backlogs in developing water infrastructure. Countries need smart national and international financing approaches and appropriate incentives to achieve development goals. Financial resources need also be allocated to public sector financing e.g. for the management of the resource, not only the water services.

2) Institutional structures: In the context of IWRM, governance is defined as the range of political, social, economic and administrative institutions that are in place (or need to be in place) to develop and manage water resources in sustainable manners. Four institutional roles are important for water governance systems to achieve sound IWRM practices. 1) Regulation and Enforcement 2) Water Supply and Sanitation Services 3) Coordination and Facilitation 4) Capacity Building.

3) Management Instruments: Management instruments are specific methods that enable decision makers to make rational and informed choices when it comes to water management. In order to make water governance most effective, decision makers need to select the instruments that are best suited to the specific circumstances, i.e. the context and framing of the problem, social and political consensus, available resources, as well as geographical, social, and economic contexts. For this purpose, they need to have an overview of the management instruments available and the experiences and lessons that have been acquired in the course of applying these instruments in other contexts.

These instruments can be grouped into nine categories, according to their objectives:

1. Understanding Water Endowments

2. Assessment
 3. Modelling and Decision-Making
 4. Planning for IWRM
 5. Communication
 6. Efficiency in Water Management
 7. Economic Instruments
 8. Promoting Social Change
- **Understanding Water Endowments** – Helps to understand water as a physical resource. Considers the analysis of Demand and Supply, the collection of data on the hydrological cycle, the monitoring of water quality and the evaluation of water policies
 - **Assessment** - Helps to understand the connections between water resources and their users as well as to calculate the impacts of uncertain events or policy measures on the resource and its users. The aspects considered are risk and vulnerability, social structures and effects, ecosystems, environment, and economics.
 - **Modelling and Decision-Making**– Visualizes the information that has been gathered and helps to make decisions based on that information according to jointly established criteria with stakeholders. It includes further information on GIS, Stakeholder Analysis, Shared Vision Planning, and Decision Support Systems.
 - **Planning for IWRM** – On the basis of knowledge gained through assessments and modelling processes, plans can be made that integrate environmental, social and economic aspects of water management on different scales: on the national level, river basin level, with regards to ground water, or coastal areas.
 - **Communication** –Water management involves a variety of stakeholders and relies heavily on sharing knowledge in order to design effective plans and foster participation. For that reason, an overview on Communication Tools is given and measures to prevent and deal with conflict are explained, such as Consensus Building and Conflict Management.
 - **Efficiency in Water Management** – Refers to measures that improve the management of demand and supply by enhancing water Demand Efficiency and Supply Efficiency.
 - **Economic Instruments** –Water Pricing, Water Markets, Tradable Pollution Permits, Pollution Charges, Subsidies, and Payments for Environmental Services are examples for economic instruments.
 - **Promoting Social Change** – Social attitudes also play a big role in WRM. A change in attitudes can be fostered through the integration of water management into Youth Education, and through Raising Public Awareness. The concept of the Water Footprint can be helpful to explain the relationship

between water and agricultural and industry, and Virtual water to learn about how much water is used in the industrial production of goods.

