
VAJIRAM & RAVI

TAKING WATER TO EVERY HOME AND SOUL

- Tashigang, a village in Lahaul and Spiti situated at 15,256 feet above sea level has the rare distinction of being the highest polling booth in the world. Recently it achieved another impossible feat, the first household tap water connection was provided in this village in September 2020.
- Stories like that of Tashigang are one part of a series of success stories of **Jal Jeevan Mission** which aims to provide tap water connection to every rural household of the country by 2024. In one year of Jal Jeevan Mission, more than 3.73 Crore household tap connections were provided.

Other Steps in Order to Take water To Every Home

- The allocation of the Department of Drinking Water & Sanitation has been increased from Rs. 21, 518 Crore in 2020-21 to Rs. 60,030 Crore in 2021-22.
- The **Swachh Bharat Abhiyan 2.0** is an equally important programme. As per one study conducted by WHO, the **Mission resulted in averting more than 300,000 deaths** (diarrhoea and protein-energy malnutrition) between 2014 and October 2019.
- While, the sanitation coverage rose to 100% by October 02, 2019, the larger challenge of a holistic sanitation coverage remained.
- SBM Phase II, is an attempt to address the challenge of holistic waste management by focusing on various aspects of waste management in rural India, including faecal sludge management and wastewater treatment, source segregation of garbage, reduction in single-use plastic, etc.
- The other **three impact areas** of Swachh Bharat Abhiyan 2.0 are **Bio-degradable Solid waste Management, Greywater management, and Faecal Sludge Management.**
- **Atal Bhujal Yojana** aims to facilitate sustainable groundwater management with an emphasis on community participation and demand-side interventions for sustainable groundwater management in identified water-stressed areas.
- The Yojana came at a precarious time for the country, about **22% of our groundwater resources are in critical or over-exploited category.** With annual withdrawal exceeding annual replenishment of groundwater, demand-side management was the call of the hour.
- It was also found that if only agriculture sector, the prime user of water resources in India, saves 10% water by water-efficient practices, water would be available to all for the next 50 years.
- For this purpose, the grand vision of **Pradhan Mantri Krishi Sinchayee Yojana** was implemented. It also aims to bridge the gap between the potential of Micro Irrigation potential of the country which stands at 6.95 Crore Hectares of which only 10% was achieved till 2014.

Jal Shakti Abhiyan: Key Intervention Areas

1. Water Conservation and rainwater harvesting
2. Recharge and Reuse Structures
3. Renovation of traditional water bodies/tanks
4. Watershed Development
5. Intensive Afforestation

Conclusion

- It was the legendary Ben Gurion, the first Prime Minister of Israel who extolled his countrymen to convert desert into the promised land, and Israel turned from a water-scarce nation to a water secure nation. India can also achieve the same.

- Water scarcity is already visible with the current population size of 1.3 billion. Along with this, with **rising pollution levels and climate change**, the water cycle is expected to undergo significant change.
- It is believed that water will also be a major source of geopolitical conflict in this century. It is therefore critical to manage this natural resource as well.

Water Availability in India: Grim Situation

- India consists of **16 percent of the world's population** but with only **4 percent of the world's water resources**. The total annual water available from precipitation in India is about 4,000 cubic km. Surface water and replenishable groundwater contribute to 1,869 cubic km but only 60 per cent of this can be put to beneficial uses.
- The **2018 Composite Water Management Index (CWMI) 2.0**, a pan-India set of metrics that measures different dimensions of water management and use across the lifecycle of water report released by the NITI Aayog in association with the Ministry of Jal Shakti and the Ministry of Rural Development.
- It indicated that **21 major cities** including Delhi, Bengaluru, Chennai, Hyderabad, and others are **racing to reach zero groundwater levels by 2020**.
- The report also indicated that, by 2030, the country's water demand is projected to be twice the available supply, which will lead to a **6% loss in India's GDP**.

Green Cover in India

- Total Forest Cover (2019) – 80.73 million hectare (24.56% of geographical area)
- Top Three States Showing Increase in Forest Area – Karnataka, Andhra Pradesh, Kerala
- Area Wise Largest Forest Cover in The Country – Madhya Pradesh, Arunachal Pradesh, Chhattisgarh, Odisha, Maharashtra

Steps Taken to address the water related issues

- India has made **considerable progress especially in SDG 6**: Clean water and sanitation by constructing over 11 crore toilets to become open defecationfree (ODF) in five years.
- **NamamiGange Flagship Programme** was launched in June 2014 to accomplish the twin objectives of effective abatement of pollution, conservation, and rejuvenation of the National River Ganga.
- The National Ganga Council is chaired by PM and is working towards this goal by i) adopting a river basin approach to promote inter-sectoral co-ordination for comprehensive planning and management, and ii) maintaining minimum ecological flows in the river Ganga to ensure water quality.
- A draft **National Water Framework Bill, 2016** containing provisions for an overarching national legal framework with principles for protection, conservation, regulation, and management of **water as a vital and stressed natural resource** was suggested under the Chairmanship of Dr. Mihir Shah.
- The Government is planning to update the 2012 version of the National Water Policy (NWP) and **set up a National Bureau of Water Use Efficiency** to bring a paradigm shift in water management.

- The creation of the **Ministry of Jal Shakti** in 2019 by merging the Ministry of Water Resources, River Development & Ganga Rejuvenation, and Ministry of Drinking Water and Sanitation.
- **Jal Shakti Abhiyan** - a campaign for water conservation and water security was launched in 2019 to make water conservation a Jan Andolan.
- The Government launched **Jal Jeevan Mission (JJM)** on India's 73rd Independence Day to provide **Functional Household Tap Connection** at the rate of **55 litres per capita per day (lpcd)** to every rural household (**Har GharNal Se Jal**) by 2024.
- **Atal Bhujal Yojana** (Atal Jal), a groundwater management scheme was launched to improve groundwater management in **seven states of India** - Gujarat, Haryana, Karnataka, Madhya Pradesh, Maharashtra, Rajasthan, and Uttar Pradesh.
- In the Union Budget of 2021-22, Universal Coverage of Water Supply and Swachh Bharat Mission had a special focus.
- Inter-Linking of Rivers project is also in the pipeline. The project comprises 14 rivers in the peninsular region and 16 rivers of Himalayan origin.
- **Steps Taken by Railways** - Introduced **Water vending machines** at Railway stations; **Jaldoot water trains** were sent to drought-hit areas of Maharashtra.
- New Water policy launched for the restoration of water bodies, establishing water recycling plants, rainwater harvesting, efficient water usage, automatic coach washing plants, etc.
- on the occasion of the 72nd Republic Day, the govt. launched a **nationwide movement** named '**Nisarg Raksha**' on Environmental conservation and Water Rejuvenation. It aims to train **1 million NisargaRakshaks** - One volunteer for every village.
- Government is creating a forum named "**Nature Protector forum**' at the National and state level to monitor this project implementation. The project will be implemented through four divisions: State — District — Taluka — Village.
- The main component of the project would be to use **Data Analytics to increase the effectiveness of the project** and low-cost methods using local means to work on initiatives on Environmental conservation and Water Rejuvenation.
- Local stories of change like **Chipko Andolan** to save trees and themes on local culture will be used to strategize new initiatives for conserving water resources.
- 'Nature Protector App' has been designed to help any conscious citizen to participate in the nature conservation campaign. Also, through Rishihood University, Govt. is planning to launch a **one-year fellowship program** for young professionals in the water sector in collaboration with the NITI Aayog and Ministry of Jal Shakti.
- The role of fellows would be to work with respective governments of state and union territories to understand the local issues, administrative structure and gain insights into water governance.

WATER FUTURE IN A CLIMATE-RISKED WORLD: THE INDIAN EXPERIENCE

"Rain is decentralised, so is the demand for water. So, capture rain when and where it falls"

- Water scarcity is indeed growing. However, it is not inevitable that cities will run out of water. This is due to the fact that **water is a replenishable resource** - it snows and rains each year.
- More importantly, other than in the case of agriculture, we do not consume water. We use and discharge. Therefore, it can be treated and then reused and recycled.

- So, this is one future we can change. For this, we need to get the policy and practice of water management right.

Evolution of Water Policy

- Till the late 1980s, water management was largely confined to the issue of irrigation projects — the building of dams and canals to store and supply water long distances. But then came the big droughts of the late 1980s and it became clear that it was not enough to plan for augmenting water only through large projects.
- In the droughts of the late 1990s, state governments **launched massive programmes to capture rainwater**. Later, these efforts coalesced into the **Mahatma Gandhi Rural Employment Guarantee Act**, investing labour into building rural water assets.
- By this time, it was also understood that **groundwater**- considered a “minor” resource was the “**major**” **supplier of water** for both drinking water and irrigation in the country.
- It was also understood that over 50 per cent of agriculture was still rainfed and so water conservation and decentralised rainwater harvesting was critical for productivity.
- In the decade of 2010, the **crisis of urban drought hit homes**. But again, policy evolved as it learned that **augmenting water supply was only one part of the challenge**. Other challenges were – long distance source; pumping and piping led to discharge loss; electricity consumption etc.
- It made the available **water expensive and more inequitable**. As water supply dried up, **people turned to groundwater** and without recharge meant declining water levels. water supply was linked to pollution — the **more the water supplied the more is wastewater** generation. This, without adequate treatment, leads to pollution of rivers.
- Later, research revealed that the bulk of urban residents **depend on on-site sewage ‘disposal’ systems**, as they are not connected to the underground sewerage network.
- In all this, **new solutions emerged** — if the affordable water supply was critical, then cities needed to cut the length of their distribution pipelines.
- If cities needed to ensure affordable sanitation for all and affordable treatment of wastewater, on-site systems could be re-engineered so that waste was collected from each household, transported, and treated.
- We have learned that if this **urban-industrial wastewater is treated for reuse then water is not lost**. More importantly, our rivers will not be lost.
- The Indian experience shows the world how water management can be reinvented so that it is affordable and sustainable; it puts **water in the hands of communities** and focused on decentralised recharge and reuse. **Making water everybody’s business is the only way ahead.**
- The Government’s Har Ghar Jal mission has recognised the fundamental flaw in water infrastructure projects and, therefore, has stressed on sustainability as a key objective.
- This requires focusing on **improving the durability of the water asset** that is created — it means ensuring that the pond or lake or tank is not encroached and that the watershed is not destroyed.
- The problem lies in the fact that **land and water bureaucracies are fractured** — somebody owns the pond; another agency the drain, and yet another, the catchment.
- **Water security requires this to change**. This means giving much greater control over the water structures to the local community is then the answer to water management.

Conclusion

Our water future is about our water wisdom and in this we must recognise that **water and culture go together**. Water shortage is not about the mere failure of rain. It is about the failure of society to live and share its water endowment.

USHERING A SOCIAL REVOLUTION

Until August 15, 2019, **only 3.23 Crore rural households** out of a total 19.18 Crore households **had piped water connections**.

Water and Gender

- Women and girls in India spend a considerable time (up to 352 minutes/day) performing domestic chores. Collecting drinking water for their families constitutes a major part of it.
- This poses a major barrier to the enrolment of girls in schools, especially those belonging to poor households. Variability in water supply due to heavy dependence on monsoon rains and groundwater adds up to their vagaries. It **exacerbates gender inequality**.
- It is well known that extreme weather events like droughts have a devastating impact on weaker sections of society as they lose out on livestock and crop yield. Food prices shoot up and it has a crippling effect on their health and nutrition, ultimately affecting human capital.
- As per a study, it was observed that women who have experienced a large number of dry shocks (below-average rainfall) during infancy are 29% more likely to have their child suffer through some anthropometric failure.

Addressing Water Crisis

- **Water is enshrined as a Human Right** in Resolution Number 64/292 of the UNGA, which calls upon Governments to **ensure adequate and affordable quantities of safe water for domestic use**.
- Govt. has launched flagship program “**Jal Jeevan Mission**”. The newly created Jal Shakti Mantralaya is implementing the centrally sponsored scheme in partnership with States to provide “**Nal Se Jal**” and to secure the “**Har Ghar Jal**” target by 2024.
- A tap water connection is being provided to everyone with an approach i.e. “No one is left behind”. Priority has been given to villages with a **majority SC/ST population** to secure 55 lpcd. It is proving to **be a Social Revolution**.
- The Mission requires skilled manpower like plumbers, masons etc. It will create entrepreneurial opportunities in villages.
- The entire Mission follows a **bottom-up approach**. It requires the formation of **Village Water & Sanitation Committees/Pani Samitis** that will prepare a 5-year Village Action Plan. These committees are mandated to have 50% women members.
- It is a fact that Panchayats with greater women membership have performed better in projects like drinking water supply, sanitation, etc. (UN Report). Further, a suitable representation of the weaker section of the society is there in the Pani Samiti.
- Information Technology has been leveraged to **collate and display real-time nationwide water data** on a portal www.ejalshakti.gov.in.
- A **Rashtriya Jal Jeevan Kosh (RJJK)** is setup for accepting contributions from private players.

- The average annual precipitation of 3,880 billion cubic meters (BCM) in India is highly variable, both in time and space. After evaporation, we are left with about 2,000 BCM of water. We cannot utilise this quantity in full, owing to geological and other factors.
- The **utilisable water resources are about 1,122 BCM** (690 BCM, or 61%, surface water and 432 BCM, or 39%, groundwater).
- The water resources utilised are about 700 BCM (450 BCM of surface water and 250 BCM of groundwater). It is estimated that our annual requirement would be about 843 BCM in 2025 and 1,180 BCM in 2050.

Water Uses: Statistics

- About **78% of water utilised goes for agriculture: 8% goes towards domestic use**; 6% is used for industry, and the remaining 8% goes towards other uses.
- India's **per capita water availability is declining** – it reduced from 1816 cubic meters in 2001 to **1545 cubic meters in 2011**. We are already in a **water stressed situation** defined by per capita availability of less than 1700 cubic meters.

Water Governance Issues

- Making an adequate quantity of drinking water available to the people
- Improving the low water-use efficiency in irrigation and industry
- Tackling pollution of water bodies
- Recycle and reuse

The Approach

- In May 2019, a much-needed policy reform was undertaken at the highest level with the **creation of the Jal Shakti Ministry**. The main aim was to bring all aspects of water under a single umbrella in line with **India's National Water Policy** and shift from a compartmentalised approach to a comprehensive approach.
- The **Jal Shakti Abhiyan**, first launched in 2019, is a water conservation campaign. Community awareness and mobilisation are at the core of the campaign.

Piped Water Delivery to Households

- The Jal Jeevan Mission aims to provide 55 litres of water per person per day to every rural household in the country by 2024. The **announcement of Jal Jeevan Mission (Urban)** in the Union Budget in 2021, would provide piped water to urban households.

Improving Water Use Efficiency

- The "Per Drop More Crop" component of Pradhan Mantri Krishi Sinchayee Yojana promotes water use efficiency through drip and sprinkler irrigation. To provide impetus to micro-irrigation in the country, a **Micro Irrigation Fund** with a corpus of Rs. 5,000 Crore was created with NABARD during 2018-19, **for the 'Per Crop More Drop' component**.
- The activities under **National Water Mission** aim to optimise water use efficiency by 20%. It looks to conserve water and minimize wastage.
- The National Water Mission has been able to nudge various stakeholders to see water as a limited resource through campaigns like 'Catch the Rain', 'SahiFasal' etc.

Water Pollution

- The **National Project on Aquifer Management** envisages the formulation of aquifer management plans to facilitate the sustainable management of groundwater.

JAL JEEVAN MISSION – HAR GHAR JAL

- To improve the quality of life and enhance the ease of living of people of the country, Jal Jeevan Mission (JJM) was announced on 15 August 2019.
- It aims to reach **all rural households by 2024**, which is six years well ahead of the Sustainable Development Goal—6 target. The mission will also give a boost to the manufacturing industry, creating job opportunities, and helping the rural economy.

Focus on Service Delivery

- Under the mission, the **focus has shifted to the assured supply** of potable water to every home **rather than merely infrastructure creation**. Massive training and skilling programmes are being taken up to build the capacity.
- Under JJM, all villages with water quality issues, have been prioritised for potable tap water supply. Provisions have been made to **install community water purification plants** to provide safe water.
- Drinking **water quality testing laboratories** in various states/UTs have been opened to the general public so that they can get their water samples tested at nominal charges. **At least five persons** in every village, preferably women, are trained to use Field Testing Kits (FTKs) for testing water quality at the village level.

Special Focus on Children

- Children are most susceptible to water-borne diseases and they spend a considerable amount of time in their educational spaces such as schools, Anganwadi centres etc.
- Therefore, making provision of potable tap water in these institutions has been taken up in a campaign mode. On October 2, 2020, a **100day-campaign** was launched to ensure potable tap water supply in adequate quantity in these premises.
- So far, States like Andhra Pradesh, Goa, Haryana, Himachal Pradesh, Tamil Nadu, and Telangana have provided tap water supply to 100% of schools and Anganwadi centres.

Making Water Everyone's Business

- Every village has to prepare a **Village Action Plan** co-terminus with 15th Finance Commission period. The motto of Jal Jeevan Mission is '**Building Partnerships, Changing Lives**'.
- **Village Action Plan** – Gap analysis of existing water supply system; Water demand-drinking, cattle, agriculture; Source sustainability; Grey Water management; Proposed water supply scheme; Community contribution, proposed user charges; Appropriate technology, financial efficiency
- **Role of Village Water & Sanitation Committee** – Function as local water utilities; Play lead role in planning, implementation, management and operation & maintenance of in-village water supply systems; Mobilize and motivate community to contribute 5% or 10% of in-village capital expenditure in cash and/or kind and/or labour; Ensure periodic water quality testing; develop and collect water user charges

What is Village Water & Sanitation Committee?

- Sub-committee of Gram Panchayat, also called as Pani Samiti

- Consists of 10-15 members comprising – up to 25% elected member of GP; 25% representation from weaker sections (SC/ST) of village; at least 50% women
 - Headed by Sarpanch/ up-sarpanch/ traditional village head etc. as decided by the Gram Sabha
 - Panchayat secretary/ patwari/Talati may act as Secretary of the Committee
- **Atal Bhujal Yojana** has been started in 78 waterstressed districts of 7 States, to conserve water **by involving the village community and Gram Panchayats.**
 - Trusts, foundations, NGOs, etc. are **empanelled as ‘Sector Partners’** as JJM aims to harness the huge potential of organisations working in the drinking water sector.

Technological Interventions

- Jal Jeevan Mission **leverages the use of technology** to ensure transparency, accountability, proper utilisation of funds, and service delivery.
- A robust **JJM-IMIS** captures physical and financial progress under JJM with a dedicated ‘Dashboard’ is in the public domain.
- A ‘**MobileApp**’ is for the use of all stakeholders to bring in ease of working. A **sensor-based IoT solution** is piloted for measurement and monitoring water supply with respect to quantity, quality, and regularity in villages on a real-time basis.
- Every **water supply asset created is geo-tagged**. Hydro-geo morphological maps are used in the planning of single-village schemes in identifying drinking water sources as well as building aquifer recharge structures.
- Household tap connections provided are **linked with Aadhaar number** of the ‘head of household’ and more importantly, all financial transactions are undertaken through **Public Finance Management System**.

Progress

- Since the announcement of the mission, the tap water supply has increased from 3.23 Crore (17%) to 7 Crore (37%) rural households in the country. Presently, **Goa and Telangana States have become ‘Har Ghar Jal’ States.**

Conclusion:

- In JJM, there is a **paradigm shift** from the ‘**department-based and construction-based**’ approach to ‘**service delivery**’ approach with the index being empowered communities managing water supply in their villages.
- **Jal Prabuddh Gaon** (water enlightened villages) will lead the path to make the AatmaNirbhar Bharat (Self-Reliant India).

FRAMEWORK FOR RIVER REJUVENATION

NamamiGange was launched in 2014- 15 for the rejuvenation of Ganga and its tributaries. **National Mission for Clean Ganga** (NMCG) is the implementing agency. Backed by Ganga River Basin Management Plan by a consortium of 7 IITs, the plan focuses in four broad categories:

- ✓ **Pollution Abatement (Nirmal Ganga)** - Sewerage infrastructure; Industrial Pollution; Wastewater Reuse and recycle; Rural Sanitation; Solid Waste Management

- ✓ **Improving flow and ecology (Aviral Ganga)** – E-flow; wetland mapping and conservation; Floodplain Protection; Sustainable Agriculture; Afforestation and Biodiversity Conservation; Small River Rejuvenation
- ✓ **Strengthening People-River Connect (Jan Ganga)** – River front, ghat and Crematoria; Community Engagement; Ganga Run; Ganga Amantran (Rafting Expedition), Ganga Utsav (Celebrating national river), Ganga Quest (Online quiz)
- ✓ **Research, Knowledge Management (Gyan Ganga)** – Water quality monitoring; High Resolution Mapping of Ganga; Aquifer Mapping and Spring Rejuvenation; Cultural Mapping and Climate Scenario Mapping, Microbial Diversity, Urban River Management Plan

Improving Governance and Empowering Institutions

- The government notified **NMCG as an authority** under EP Act, 1986 and created empowered institutions, and laid down fundamental principles with a comprehensive framework for rejuvenation of rivers in the Ganga Basin.
- It integrates rivers, tributaries, wetlands, flood plains, springs, and small rivers as a single system.
- **Institutional Structure:** National Ganga Council (headed by PM) > Empowered Task Force > National Mission for Clean Ganga > State Ganga Committee > District Ganga Committee (Headed by DM)

Pollution Abatement (Nirmal Ganga)

- A total of 156 sewerage infrastructure projects has been sanctioned to create 4856 MLD treatment capacity in the Ganga basin.
- NamamiGange introduced **PPP for sewerage infrastructure for the first time** in India, through **Hybrid Annuity Mode (HAM)** with 40% of capex being paid during construction and 60% with interest by 15-year annuity with separate payment for operation & maintenance (O&M).
- This model has brought a **paradigm shift from payment for construction to Performance-Linked Payments**. The 'One City One Operator' approach to improve governance was introduced.
- Major drains falling into Ganga have been intercepted and diverted to STPs. The improvement in the quality of water is established through monitoring and visible to people. Kumbh is an example.
- Annual inspection of grossly polluting industries by expert institutions, online monitoring, process improvement, Common Effluent Treatment Plant (CETP) helped in checking industrial pollution.

Improvement in Flow and Ecology (Aviral Ganga)

- The **historic Notification of Ecological flow for river Ganga** in October 2018 is a big step for **Aviral Ganga**.
- Demarcation and protection of floodplains, protection & conservation of wetlands and small river rejuvenation projects are under implementation. Sustainable Agriculture is being promoted. Demand-side management, Rainwater harvesting, aquifer mapping, and recharge are in progress.
- Afforestation along Ganga as per the scientific plan by FRI is a model for similar work for 13 more rivers. Conservation of Gangetic Dolphin, the National Aquatic Animal is a top priority.

People River Connect (Jan Ganga)

- **Jan Bhagidari is central to this mission**. Dedicated Cadres of **Ganga saviors** are working to reach out to the community and create awareness.

- Several **innovative public outreach activities** such as Ganga Quest quiz, rafting expeditions, Ganga run, Ganga Utsav, etc. are conducted throughout the year.

Research, Policy & Knowledge Management (Gyan Ganga)

- **Centre for Ganga Management & study** was set up at IIT Kanpur for long-term basin studies, technology development.
- Scientific mapping of different aspects, mapping of springs, microbial diversity, fisheries, biodiversity, heli survey for aquifers help in evidence-based decisions. The **unique cultural mapping** for natural, built and intangible heritage has potential for the development of tourism.
- A new paradigm for planning for **River Cities to mainstream river health in urban planning** and a **national framework for reuse of treated wastewater** are being formulated.
- NamamiGange is now leading to the development of **Arth Ganga model** linking the economic development of the Ganga Basin with ecological improvement and Ganga Rejuvenation.

GROUNDWATER MANAGEMENT: A PARADIGM SHIFT

Groundwater is sometimes called an invisible resource. Everybody uses it. It sustains critical ecosystems, such as lakes, wetlands, and woods. It is, however, **largely invisible** and users have no knowledge about aquifers that yield the groundwater they use.

The Indian Context

- India is the largest user of groundwater in the world, using more than a quarter of the available global resources. This finite resource currently caters to more than 60 per cent of irrigated agriculture, 85% of rural drinking water supply, and more than 50% of urban water supply.
- From the large-scale loss of livelihoods to health issues related to lack of availability of safe drinking water to people migrating, the impact of water scarcity is severe. This is compounded by climate change, which makes precipitation patterns erratic.
- Small and marginal farmers, women, and weaker sections of the society, disproportionately bear the brunt of groundwater depletion and contamination.

Defects in Earlier Approach of Water Conservation

- It did not focus on reducing demand through more efficient use.
- It suffered from a top-down approach with little or no community participation.
- Most of these schemes were implemented in isolation.
- Lessons learned from success stories of community-led groundwater management, mostly in the non-government space, were not incorporated

The Community Leads the Way

- Success stories of initiatives taken up at **Hivre Bazaar, Ralegaon Siddhi**, and elsewhere in the country provided **inspiring examples of community-based groundwater management**.
- In the Hivre Bazar village in Maharashtra, combined efforts of locals turned a drought-ridden village into a thriving community.
- The **water table in the village rose** from 70-80 feet to 20 to 25 feet, change in cropping pattern was brought about and the standard of living improved considerably due to economic stability.

Atal Jal — Scaling-up Informed Demand Management

- The need for Government intervention was felt to institutionalise this approach (community-led approach). The **Atal Bhujal Yojana** (Atal Jal) is an important step in this direction.
- The goal of Atal Bhujal Yojana is to **demonstrate community-led sustainable groundwater management**, taken to scale. The major objective of the scheme is to improve the management of groundwater resources through a convergence of various ongoing schemes.
- Atal Bhujal Yojana is a **Central Sector Scheme**. For now, the scheme is being **implemented in seven States**— in water-stressed areas of Gujarat, Haryana, Karnataka, Madhya Pradesh, Maharashtra, Rajasthan, and Uttar Pradesh.
- The scheme, partly funded by the World Bank, was launched on Good Governance Day i.e., December 25, 2019.

Disbursement of Resources against measurable indicators

- A key feature of this outcomefocused scheme is the **disbursement of incentive funds** (disbursement linked indicators - DLIs) to states based on performance against selected indicators. These indicators are:
 - DL#1 - Public of groundwater data/information and reports
 - DLI#2 - Preparation of Community-led Water Security Plans:
 - DLI#3 – Public financing of approved Water Security Plans through a convergence of ongoing/new schemes
 - DLI#4 - Adoption of practices for efficient water use:
 - DLI#5 - Improvement in the rate of decline of groundwater levels
- This scheme encourages the creation of “water aware” communities, that have the knowledge and the ability to plan their water use based on available water.

Way Forward

Strengthened water-aware communities, reliable water data that informs decision making, and a **participatory regulatory framework** are the three pillars that will support sustainable groundwater use in the country, making water available for life, for livelihoods and culture and enable us to combat the effects of climate change.

SWACHHATA MOVEMENT CONTINUES

- Swachh Bharat Mission (SBM) became the world’s largest behavior-change programme in India and as a result, it achieved the seemingly impossible huge task of becoming open-defecation free in five years.
- As a result of the Mission, **rural sanitation coverage has increased from 38.7 per cent in 2014 to 100 per cent in 2019**, with over **10.25 Crore toilets built across India**.
- **India achieved SDG Goal 6.2** declared by the United Nations for providing safe sanitation for all 11 years before the targeted year, 2030. The success of the programme is attributed to the **4 Ps - political leadership, public financing, partnerships, and public participation**.
- In February 2020, Union Cabinet approved Phase II of the Swachh Bharat Mission- Grameen (SBM-G) to focus on solid and liquid waste management (SLWM), and the sustainability of ODF status.

- At about the same time, the 15th Finance Commission report for the year 2020-21 was released. It also **provided much-needed tied grants for sanitation** to rural local bodies.
- The Department of Drinking Water and Sanitation (DDWS) is implementing this in a Mission Mode from 2020-21 to 2024-25.

SBM Phase II: From ODF to ODF Plus

- The key objective of the SBM Phase II is to make villages across India ODF Plus villages. An **ODF Plus village** is a village that sustains its open defecation-free (ODF) status and also ensures solid and liquid waste management and is visually clean.
- In Phase II of SBM, **visual cleanliness has also been defined**. A village is called visually clean if **at least 80 per cent** of its households and all its public places have a minimal litter and minimal stagnant water, and the village does not have any plastic waste dump.
- Thus, to become an ODF Plus village, a village has to ensure that:
 - All households have access to a functional toilet facility.
 - All schools, Anganwadi centres, and Panchayat Ghars have access to a functional toilet, with separate toilets for females and males.
 - Public places are visually clean.
 - At least 80 per cent of households and all public institutions have arrangements for managing solid and liquid waste.
 - The village has a plastic segregation and collection system.
 - At least five ODF Plus IEC wall paintings per village on five key themes of ODF sustainability, handwashing with soap, biodegradable waste management through compost pits, greywater management through soak pits, and plastic waste management.

Planning for SBM (G) Phase II

- Swachh Bharat Mission **promotes decentralised sanitation interventions**. Therefore, it is required that each Gram Panchayat prepares Village Action Plans for all of its villages in a convergent manner for the SBM (G) and the Jal Jeevan Mission, in a participatory manner. Endorsement of the Gram Sabha should be obtained and recorded.
- At the district level, each district is required to prepare a **District Swachhata Plan** after consolidating its Village Action Plans.
- States and UTs are required to develop a Project Implementation Plan (PIP) and Annual Implementation Plan (AIP) every year consolidating the District Swachhata Plans to achieve the objectives of SBM (G) Phase II.
- The **National Scheme Sanctioning Committee** (NSSC) then considers and approves the PIPs and AIPs. The States and UTs are required to develop and upload these plans on the Integrated Management Information System (IMIS) by the **1st March of every year**.

Profound Impact Of SBM

- **SBM saves lives** - 307,000 diarrheal deaths avoided when India becomes ODF
- **SBM Leveraged resources** - Mobilised a spend equivalent to INR 26000 Cr. on monetary IEC activities
- **SBM saves the environment** – ODF villages 11.25 times less likely to have ground water contaminated.

- **SBM ROI** – 43% Return on Investment (ROI)
- **SBM saves money** - Household in an ODF villages in India saves on average approx. \$720 per year
- **SBM creates jobs** - 7.55 million jobs created between Oct 2014 and Feb 2019

ACCESS TO WATER IS ACCESS TO EDUCATION AND OPPORTUNITY FOR ALL

- Against the backdrop of Covid-19 out, children will have to continue to practice cleaning their hands with water and soap. Early habits of sanitation and hygiene cannot be taught in the absence of regular access to the said facilities.
- According to the data submitted to the Lok Sabha back in **2019, almost 160,000 Anganwadi Centres (AWCs) did not have access to water.**
- With regards to the value of water and sanitation, **every dollar invested in water access and sanitation yields an average of \$6.80 in return**, through averted health and productivity costs.
- Given the health implications of no water in school and Anganwadi centre grounds, especially due to the closures and the impact of the pandemic, the Government launched a **100-Day Campaign**.
- The campaign mandated States/ UTs to actively prioritise the provision of piped water supply in schools and AWCs in previously unserved or serving vulnerable communities.
- Against the campaign's baseline, **six States reported achieving 100 percent coverage for schools, another five States reported achieving coverage above 90 percent.**
- UNICEF has been a proud partner of the Campaign and has been working with both central and state governments to drive forward the vision of achieving universal access to safely managed drinking water and sanitation.

SAFE, ADEQUATE, AND SUSTAINABLE DRINKING WATER

International Community on Water

- The **Alma-Ata Declaration on primary health care** in 1978 identified the availability of safe water and basic sanitation as essential to achieve the 'Health for All' goals by 2000.
- **Under the SDG6, Target 6.1 aims to achieve universal and equitable access to safe and affordable water for all.**
- Due to the direct impact, water has on health, **countries have pledged two targets on water under the health SDG**. i.e., to combat water-borne diseases by 2030 (3.3); and, to substantially reduce the number of deaths and illnesses from water pollution and contamination (3.9).

Water and Health

- Water is necessary for personal hygiene and allows for hand hygiene which are key factors in preventing the spread of respiratory diseases and trachoma which is yet to be eliminated in India. The Covid-19 pandemic has highlighted the need to accelerate water goals as handwashing is the key to preventing Covid-19.
- Many vectors which transmit diseases like lymphatic filariasis, dengue, malaria, Japanese Encephalitis, etc. breed in water bodies.
- In Arsenic and Fluoride-affected areas, drinking water can expose people to these chemicals, and prolonged exposure could lead to Arsenicosis and Fluorosis.

- Also, safe drinking water has a **positive impact on the nutritional status of children** and **prevents financial loss** in the household and contributes to the overall economy of the country.

India's achievement in drinking water

- As of 2019, **more than 93% of the population** has access to basic drinking water. After the successful implementation of Swachh Bharat Abhiyan, the Government has launched JJM to provide safe and adequate water to every household in rural areas by 2024.
- The National Health Policy-2017 recognises access to safe drinking water and sanitation as a cross-sectoral goal and emphasises on the need to eliminate water and sanitation-related diseases.

Way Forward: Convergence of Health and water

- **Prioritise water schemes** in villages/blocks, where water-related disease burden is high. This would require working with the health sector to identify common health-based targets and develop an implementation plan for jointly agreed target areas.
- **Strengthen current operation and management** of water schemes by introducing a systematic risk
- **Develop surveillance** of drinking water quality by an entity independent of those charged with water service provision.

Conclusion

- The nexus between water and health is clear, however, we normally tend to work in isolation.
- Hence, there is an urgent need to change the way we work by converging with health to produce maximum health benefits from Jal Jeevan Mission.

CENTRALITY OF WOMEN IN WATER MANAGEMENT

Women have played an integral role in water management and policies need to be designed in a manner to enhance this role even further.

Gender roles: Ownership and management

- In most rural communities, the **collection of drinking water has been traditionally allotted to women**. Young girls miss school to fetch water, and the drudgery of water collection is known to cause many health problems.
- Gender roles also make women the **“health care-takers of the family”**. Thus, the poor quality of water which causes water-borne diseases also affects women the most.
- In some locations, when water collection has to be done in the early/late hours because of the erratic supply or nature of the source (sandy river beds), there are **issues of women's safety also**.
- Being **water carriers and water managers, women are traditional knowledge bearers** of the season-wise water availability in different water sources, source-wise water quality as compared to men.
- This knowledge is very useful for planning the water supply scheme. Hence, **women become the core stakeholder** in the provision of Functional Household Tap Connections.
- For an equal society, we do want men also to take up an equal role in providing drinking water, but till this gender transformation takes place, we need to ensure that **women are empowered in all decisions** related to drinking water management in a village.

- By involving women, the programme also empowers the women thus **creating a gender transformative impact**.

There are many ways in which women's contribution can be sought and their voice be given weight. These are

- Mandatory 50% participation of women, especially those belonging to SCs/ STs and OBCs, in the Village Water & Sanitation Committee (VWSC).
- Elected women representatives at local levels should be given greater powers in all water-related schemes and separate training empowering them in decision-making also.
- Special recognition of VWSCs with women leaders or larger women's membership. For example, **in Gujarat, additional funds were granted to villages with allwomen VWSCs**.
- Gender sensitisation of the implementation team staff is essential
- Train at least five village women for the supervision of implementation, and later for a regular supply of water. **Nominate and train women as Jal Doots/ BhuJaankar**, if there is a cadre of water para-legal workers.
- Develop women entrepreneurs and SHG-led enterprises for water supply services like de-fluoridation treatment plants, water-testing kits etc.

Case Study:

In Bihar (Panchayats of Muzaffarpur and Samastipur), we have many examples of women SHGs not only contributing towards the planning and implementation of ward-level water schemes but also ensuring that water is tested regularly (paying Rs. 35/test) and closing hand-pumps where water quality is poor.

- Rural women also play a key role in livestock management, hence they need to be involved in all provisions for drinking water for cattle.
- Women do 60% of the work in agriculture, and in many hilly and poor regions, they do the bulk of farming when men have migrated out. Yet, most irrigation committees have no women representatives.
- Thus, women across the country need to be engaged in rural drinking water supply schemes consciously for long-term water security in villages.

TECHNOLOGICAL INNOVATION FOR ASSURED WATER SUPPLY

- Based on the report of **NSS 76th Round**, about 87.6 percent of the households in the rural areas, about 90.9 percent of the households in the urban areas, and about 88.7 percent of the households in total had sufficient drinking water throughout the year from the principal source.
- At the same time, the average annual per capita water availability in the years 2001 and 2011 was assessed as 1,816 cubic meters and **1,545 cubic meters** respectively which may further reduce to 1,486 cubic meters and 1,367 cubic meters in the years 2021 and 2031 respectively.

JJM And Technology

- Besides creating a Dashboard for transparency, use of Aadhar for tap connection and use of Public Fund Management System (PFMS) for fund disbursement are other technological features of JJM.
- The challenges of effectively monitoring and managing rural water supply systems across the length and breadth of a vast and diverse country like India are daunting.

- To address the above challenges, the Jal Jeevan Mission has advocated taking the digital route to effectively monitor water supply in each village.
- It was decided to **explore the Internet of Things (IoT)based remote monitoring** which provides real-time information by using sensors and communication infrastructure without any manual intervention.
- The JJMenvisions creating a **Digital Wall and Remote Command and Control Center** for monitoring and managing supply of good quality water every day in all of more than 19 Crore rural households of India.

Advantages of Using Technology:

- **Equitable distribution of water** - all clusters now get water supply (adequate quantity and pressure): recognition of low-pressure issue in two clusters led to the community installing two gate valves to regulate pressure;
- **Long term sustainability of water source:** Observing the fast-depleting groundwater level on a TV screen dashboard on a real-time basis led to the awareness in the community to create rainwater harvesting structures and management of watershed
- **Regular chlorination process at the service reservoir:** ‘Visibility’ of chlorine levels on the TV screen dashboard created awareness and led to another behaviour change of getting regular disinfection done by local community operator;
- **Efficient and responsible use of water by consumers** due to household level metering and reduced cost of operations through data-enabled leak detection, predictive maintenance, and automation.
- **On a systematic level**, the benefits of such a system will include **minimisation of Non-Revenue Water** (leakage and unauthorized connections), **reduction in repair and maintenance costs** with predictive maintenance and automation for pump, **reduction in excess manpower, efficient use of resources** (water and electricity), and **reduction in wage loss and healthcare costs for villagers.**
- For assurance of water quality at the household level all the water testing laboratories under the control of rural water supply/ public health and engineering department have been opened to public for testing of water samples. The network of labs is also being strengthened with 2% funds exclusively earmark for this purpose.
- To **democratise the testing of water further**, in both urban and rural areas, another technology challenge has been launched with DPIIT to **develop portable devices to test the quality of water.** This device, when developed can be used to test the quality of water from the comfort of the house.

INSIDE INDIA’S INLAND WATERWAYS PLAN

- Independent India created the **Inland Waterways Authority of India** in 1986 to help maintain and energise infrastructure around key inland waterways.
- Five such waterways were identified at that time:
 - the Ganga-Bhagirathi-Hoogly river system between Haldia (Sagar) and Allahabad (1,620 kilometres),
 - the river Brahmaputra between Sadiya and the Bangladesh border (891 kilometres),

- the west coast canal (Kottapuram to Kollam), the Udyogmandal canal, and the Champakara canal, a total of 205 kilometres,
 - the Kakinada-Puducherry stretch between - Rajahmundry stretch of River Godavari and Wazira - Vijayawada stretch of River Krishna (1,078 kilometres),
 - the Talcher- Dhamra stretch of River Brahmani, Geonkhali-Charbatia stretch of the east coast canal, the Charbatia-Dhamra stretch of River Matai and the Mangalgadi-Paradip stretch of Mahanadi delta rivers (623 kilometres).
- India has an elaborate network of inland waterways in the shape of rivers, canals, backwaters, and creeks. Of the total length that can be navigated **20,236 kilometres** - 17,980 kilometres of the river and 2,256 kilometres of canals - can be used by mechanized crafts.

Advantages of Waterways

- The national highways are contributing to about **40% of the road accidents** and trucks being the major contributor in this. **Water transportation** being the safest mode, can **reduce road accidents** and result in casualties significantly. It also reduces treatment and rehabilitation costs to a great extent.
- Moreover, the land acquisition for the highways/roads have been a major problem. Switching to water mode would be the most viable option to reduce the dependency on roads, **particularly for the transportation of bulk and oversized cargo**.
- **Waterways have lots of tourist potential** especially for pilgrimage as many famous pilgrim centres are mainly located on river side.

Steps Taken by the Govt.

- For many years, **freight transportation by waterways has been utilised well below its potential**. To transform this situation and make the best use of the inland waterways' potential of India, **106 additional inland waterways** were declared as **national waterways** through The **National Waterways Act, 2016**.
- State Governments have not been able to take adequate measures for the development and maintenance of inland waterways due to insufficient financial outlays, lack of expertise and other pressing priorities.
- Thus, only Central Government is capable to take the initiatives to develop this sector and as per the Constitutional provision, **Central Government can undertake development and regulation of an inland waterway for navigation, only when it is declared as a National Waterway by an Act of Parliament**.
- In 2020, the Ministry of Shipping declared that **all usage charges from waterways would be removed**, for an initial period of three years, to promote the greater commercial and tourist exploration of the inland waterways network. This was done to promote the idea that inland waterways could **serve as a supplementary mode of transport that is not only more economical but also environment friendly**.
- This move is expected to **reduce the costs to industries, simplify administration, and ultimately promote ease of doing business** in the country.
- The signing of a Memorandum of Understanding (MoU) between the Inland Waterways Authority of India and the MOL Group, which is a global leader in gas carriers is also significant.

Maritime India Vision 2030

Includes a 10-year plan for infrastructure creation and improvement of services.
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- MOL (Asia Oceania) Limited is investing in the construction and operation of LPG (Liquified Petroleum Gas) barges, as part of the Government's Make in India initiative. The LPG, according to the agreement signed would be carried via the barges on National Waterways 1 and 2.
- The **usage of waterways will reduce the logistical costs** that were being faced earlier, which in **India stand at a high 13 to 14 per cent of GDP as opposed to a global average rate of 8 per cent**. It will also lead to reduction in our carbon footprints.

Conclusion

- The use of inland waterways has opened up a whole new innovative vision of transportation in India combining speed and safety.
- For the 2016 Act, the country now has a total of **111 inland waterways** which are marked as national waterways and the **total length of the national waterways is 20,275 kilometres spread across 24 states**.

History of Sanitation Programme in India

- The first sanitation programme for rural India was introduced in 1954 as a part of the **First Five Year Plan** of the Government of India (Gol).
- **International Decade for Drinking Water and Sanitation** (1981-90).
- **Central Rural Sanitation Programme** (CRSP) in 1986
- From 1999, a “**demand-driven**” approach under the “**Total Sanitation Campaign**” (TSC) was adopted.
- The ‘**Nirmal Bharat Abhiyan**’ (NBA), the successor programme of the TSC, was launched on April 1, 2012.
- While the above-mentioned programmes made some progress for the rural sanitation landscape of the country, in the census of 2011, rural sanitation coverage (households with individual latrines) was found to be only 33%.

