GS SCORE

An Institute for Civil Services

JAL JEEVAN MISSION

HAR GHAR JAL

GIST OF YOJANA

APRIL, 2021

www.iasscore.in

GSSCORE
An Institute for Civil Services

IAS 2022
GS FOUNDATION

IAS 2022
GS FOUNDATION
1 Year & 2 Year PROGRAMME

EVENING BATCH

16 JULY 2021

BATCH 1

GS MAINS ADANCE
A Solution for 1250 Marks

BATCH STARTS 15 JULY, 2021

PATHWAYS
for UNDER GRADUATES
3 & 2 Year IAS FOUNDATION PROGRAMME

BATCH STARTS 22 JULY, 2021

OPTIONAL FOUNDATION 2022

POLITICAL SCIENCE
FOUNDATION 2022
By: DR. PIYUSH CHAUBEY

BATCH STARTS 30 JUNE, 2021

PUBLIC ADMINISTRATION
FOUNDATION 2022
By: ASHUTOSH PANDEY

BATCH STARTS 21 JUNE, 2021

HISTORY
FOUNDATION 2022
By: PIYUSH KUMAR

BATCH STARTS 05 JULY, 2021

GEOGRAPHY
FOUNDATION 2022
By: PRINCE MISHRA

BATCH STARTS 14 JUNE, 2021

1B, 2nd Floor, Pusa Road Karol Bagh, New Delhi-110005,
(Adjacent to Karol Bagh Metro Gate No. 8)
info@iasscore.in /gsscoreofficial

Visit: www.iasscore.in
8448496262

Gist of Yojana

APRIL, 2021

CONTENTS

GS SCORE
An Institute for Civil Services

IAS 2022 TEST SERIES
MAINS & PRELIMS

BATCH 02

MAINS TEST SERIES 2022
GS MAINS Q&A

- COMPLETE GS & ESSAY THROUGH TEST SERIES
- 1500+ TOPICS OF GS PAPER 1, 2, 3 & 4 COVERED

BATCH STARTS 20 JUNE 2021

BATCH 04

IAS 2022
INTEGRATED TEST SERIES
for **Mains** & **Prelims**

Single source for Integrated Preparation

BATCH STARTS 04 JULY 2021

BATCH 01

IAS 2022
PRELIMS TEST SERIES
PRELIMS PRACTICE PROGRAMME

Total 65 Tests

BATCH STARTS 24 JULY 2021

1B, 2nd Floor, Pusa Road Karol Bagh, New Delhi-110005,
(Adjacent to Karol Bagh Metro Gate No. 8)
info@iasscore.in /gsscoreofficial

Visit: www.iasscore.in
8448496262

1

Jal Jeevan Mission-Har Ghar Jal

Introduction

Just as wars over oil played a major role in 20th-century history, it is being prophesied that the 21st century conflicts will be fought over the scarcity of water. Water stress is being experienced across the world with increased spells of drought, desertification, and inequitable access to water. Sustainable Development Goal-6, of ensuring access to water and sanitation for all, involves reaching to people who lack basic services and improving accessibility. It emphasizes on the people-centric strategy for water management to be sustainable.

The **Covid-19** pandemic even has re-emphasized the value of clean and accessible water in our lives.

- **Jal Jeevan Mission:** The Government of India had envisaged it way before this pandemic by launching Jal Jeevan Mission in August 2019 with the aim to provide tap-water connection to every rural household in the country by 2024.
  - Its predecessor Swachh Bharat Abhiyan had already done the groundwork with bringing sanitation to the forefront and made the country open-defecation free.
  - Now, SBM-II has taken it to the next level by making necessary interventions in biodegradable solid waste management, greywater management, and faecal sludge management.
- **Atal Bhujal Yojana:** India is the largest user of groundwater in the world which plays an important role in ensuring the food security of the country. Atal Bhujal Yojana is another important initiative that demonstrates community-led sustainable groundwater management, taken to scale.
- Pradhan Mantri Krishi Sinchayee Yojana: To enhance water use efficiency in the agriculture sector through the micro-irrigation, Pradhan Mantri Krishi Sinchayee Yojana had already been launched. Armed with the following four-pronged vision, this scheme aims to bridge the gap between the potential of Micro Irrigation potential of the country.
  - Accelerated Irrigation Benefits Programme
  - Har Khet Ko Pani
  - Per Drop More Crop
  - Watershed Development
- All of these initiatives put water in the hands of communities and are focused on decentralized recharge and reuse, thus making water everybody's business.

****

2

Taking Water to Every Home and Soul

- Under the Jal Jeevan Mission which aims to provide tap water connection to every rural household of the country by 2024, more than 3.73 Crore household tap connections were provided in one year.
  - Tashigang, a village in Lahaul and Spiti, has got its first household tap water connection in September 2020.
  - This village situated at 15,256 feet above the sea level has the rare distinction of being the highest polling booth in the world. This bears testimony to the philosophy of the Prime Minister's vision of "Sabka Sath, Sabka Vikas, Sabka Vishwas".
- Financial allocation: 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 which resulted in averting more than 300,000 deaths (diarrhoea and protein-energy malnutrition) between 2014 and October 2019 as per the study conducted by WHO.
- The "Environmental impact of the Swachh Bharat Mission on Water, Soil, and Food" study by UNICEF, found that, in terms of faecal contamination, non-ODF villages were, on average, 11.25 times more likely to have their groundwater sources contaminated (12.7 times more from contaminants traceable to humans alone).
- While, the sanitation coverage rose from 38.7% at the time of the Swachh Bharat Abhiyan's inception to 100% by October 02, 2019, the larger challenge of a holistic sanitation coverage remained.
- Allocation of more than 1.40 lakh Crore for 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.
- 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 in 8,353 Gram Panchayats in 78 districts of seven states in the country.
- 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.

Jal Shakti Abhiyan: Key Intervention Areas

- Water Conservation and rainwater harvesting
- Recharge and Reuse Structures
- Renovation of traditional water bodies/tanks
- Watershed Development
- Intensive Afforestation.

- Pradhan Mantri Krishi Sinchayee Yojana was implemented as it was found that if only agriculture sector saves 10% water by water-efficient practices, water would be available to all for the next 50 years.

3

Water Security

Context

- Water security is of paramount importance to ensure reliable access and sustainable availability of clean water. Today India is facing many challenges in the water sector.
  - Given the increasing demand for water due to population growth (the current population size of 1.3 billion which is projected to be increased to 1.6 billion by 2050), rising pollution levels and climate change, the water cycle is expected to undergo significant change all across the world.

Important facts on water availability in India

- India consists of 16 percent of the world's population but 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.
- According to the 2018 Composite Water Management Index (CWMI) 2.0, 21 major cities including Delhi, Bengaluru, Chennai, Hyderabad, and others are racing to reach zero groundwater levels by 2020.
  - The CWMI 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 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.

Measures taken to Address the Water Crisis

- Through **Swachh Bharat Abhiyan** launched in 2014, India has made considerable progress, especially in **SDG 6: Clean water and sanitation** by constructing over 11 crore toilets to become open defecation-free (ODF) in five years.
  - The Prime Minister was conferred the **"Global Goalkeeper"** award by the Bill and Melinda Gates Foundation in 2019 for this campaign.
- **Namami Gange 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 a) adopting a river basin approach to promote inter-sectoral co-ordination for comprehensive planning and management, and b) 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 through a committee constituted by the **Ministry of Water Resources, River Development, and Ganga Rejuvenation** in 2016.
- 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 focus is on 1592 water-stressed blocks in 256 districts of India to ensure five important intervention areas: Water conservation and rainwater harvesting, Renovation of traditional and other water bodies/tanks, Reuse of water and recharging of structures, Watershed development, and Intensive afforestation.
- The Government launched **Jal Jeevan Mission (JJM)** on India's 73rdIndependence Day to provide Functional Household Tap Connection at the rate of 55 liters per capita per dayto every rural household (Har Ghar Nal 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.
- 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 Nisarga Rakshaks - One volunteer for every village. They will carry out various activities towards Environmental conservation and Water Rejuvenation at the local level.
- 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 project would 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. This would be the first of its kind of project on Environmental conservation and Water Rejuvenation in India on a national scale.

Conclusion

Water is believed to be a major source of geopolitical conflict in this century. It is therefore critical to manage this natural resource well. The Government of India is working towards ensuring water security and strengthening water sector governance.

****

4

Water Future in a Climate-Risked World: The Indian Experience

- In the Union Budget 2021, the Government has included **water** in the **health component** of the country's accounts. This is a game-changer as it recognizes the role of clean water as a critical preventive health measure.
- 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.**

Water Management in India (timeline)

- **1980s:** Till the late 1980s, water management was largely confined to the issue of irrigation projects. But the droughts in late 1980s made clear that it was not enough to plan for augmenting water only through large projects.
- **1990s:** In the droughts of the late 1990s, state governments launched massive programmes to capture rainwater.
- **Mid-2000:** By the mid-2000, these efforts coalesced into the **Mahatma Gandhi Rural Employment Guarantee Act,** investing labor 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 decentralized rainwater harvesting was critical for productivity and well-being.
- **2010:** In the decade of 2010, the crisis of urban drought hit homes. It was learned that augmenting water supply was only one part of the challenge. The other challenges included long distance source, pumping and piping led to discharge loss and electricity consumption thus making available water expensive and more inequitable.

How dried Water Supply Changed the Situation?

- **Declining water levels:** As water supply dried up, people turned to ground water without recharge thus resulted in declining water levels.
- **Pollution of rivers:** Also, the 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.
  - The sewage treatment infrastructure was not designed to fit the city sanitation system and so remained underutilized. Rivers remained polluted.

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, onsite systems could be re-engineered so that waste was collected from each household, transported, and treated.

Water Management Practices

- 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 decentralized recharge and reuse. Making water everybody's business is the only way ahead.
- In order to ensure sustainability of the water supply systems, the Government's **Har Ghar Jal mission** has recognized 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.
- Water security requires to give greater control over the water structures to the local community to ensure water management.

Conclusion

In today's climate-risked world, our water future is about our water wisdom and in this we must recognize that water and culture go together.

****

5

Ushering a Social Revolution

Water is enshrined as a **human right** in resolution number **64/292 of the United Nations General Assembly**, which calls upon Governments to ensure adequate and affordable quantities of safe water for domestic use. Providing water to every household is an inescapable duty of any Government.

Context:

Until August 15, 2019, only 3.23 Crore rural households out of a total 19.18 Crore households had piped water connections. The non-availability of potable piped water has far-reaching implications on people belonging to the weaker most sections of society and especially women.

- 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.
- Women and girl child, in particular, bear the brunt and are most adversely affected. It leads to their stunted growth, which further translates through generations.
- 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.

So, there is need to provide potable water to every household to secure our human capital and to prevent stunting of our future generations.

Measures taken to Address the Water Crisis

- The Government launched **Jal Jeevan Mission (JJM)** in 2019, to provide tap water connections to every rural household. 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.
  - Goa and Telangana have emerged as the first and second States respectively, to achieve 100% coverage under Jal Jeevan Mission.
- Accordingly, a tap water connection is being provided to one and all irrespective of caste, community, religion, race, etc. 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 Ipcd. This secular and inclusive approach is primarily benefiting the people from weaker and marginalized sections of society and is proving to be a **Social Revolution.**
- The Mission requires skilled manpower like plumbers, masons, electricians, fitters, pump operators, 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.
- According to UN Report, Panchayats with greater women membership have performed better in projects like drinking water supply, sanitation, etc. Further, a suitable representation of the weaker section of the society is there in the Pani Samiti.
- Thus, this mission seeks to provide a platform for their participation as well as empowerment.
- 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 corporates, organizations, and individuals.

Conclusion

- Jal Jeevan Mission is not merely a scheme whose outcome is limited to the aggregate of tap water connections provided. It aims to mitigate the economic, social, and physical hardships that the weaker most sections of our society have to endure in absence of a supply of regular, reliable, and safe drinking water.
- It is ushering a social revolution marked by people's participation, empowerment, convergence, inclusion, and equity.

****

6

Water Governance

- India has only 4% of world's renewable water resources. The average annual precipitation of 3,880 billion cubic meters (BCM) in India is highly variable, both in time and space. The utilizable water resources are about 1.122 BCM (690 BCM, or 61%, surface water and 432 BCM, or 39%, groundwater).
- The water resources utilized 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.
- About 78% of water utilized 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.
- Following issues may arise for water governance:
  - 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.
  - Reuse and recycle.
- The **Jal Shakti Abhiyan (JSA),** first launched in 2019, is a water conservation campaign, under which officers, groundwater experts, and scientists from the Government of India work together with State and district officials in India's most water stressed districts for the targeted interventions. Community awareness and mobilization are at the core of the campaign.
- The **Jal Jivan Mission** launched in 2019 aims to provide 55 liters of water per person per day to every rural household in the country by 2024, with a massive outlay of Rs. 3.60 lakh Crore.
- The **'Per Drop More Crop'** component of **Pradhan Mantri Krishi Sinchayee Yojana (PMKSY)** promotes water use efficiency through drip and 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.
- **'Sahi Fasal' campaign** of NWM is an initiative to nudge stakeholders in agriculture towards crops that use less water but more efficiently.

Conclusion

The activities under the **National Water Mission**, which aims to optimize water use efficiency by 20%, look to conserve water, minimize wastage and ensure more equitable distribution both across and within states with a special focus on recycling of wastewater.

****

7

Jal Jeevan Mission - Har Ghar Jal

- To improve the living standards of people of the country, Jal Jeevan Mission (JJM) was announced on 15 August 2019 to provide Functional Household Tap Connection (FHTC) to every rural home by 2024, six years ahead of the Sustainable Development Goal—6 target which can become a model for other developing countries.
- The mission will give a boost to the manufacturing industry, creating job opportunities, and helping the rural economy.
- This assured tap water supply in rural homes will reduce the drudgery of women and provides them with quality time to educate themselves, teach their children, learn a new skill, and explore better livelihood options.

Focus on Service Delivery

- Rather than merely infrastructure creation, the focus has shifted to the assured supply of potable water to every home.
- For this, massive training and skilling programmes are being taken up for the capacity building. Public Health Engineering Department and Gram Panchayats and / or its sub-committees are playing the role of public utility.
- Under JJM, the priority has been given to water quality-affected habitations such as desert, drought-prone areas, SC/ST majority areas, **Sansad Adarsh Gram Yojana villages,** 112 Aspirational districts, and 61 Acute Encephalitis Syndrome (AES), Japanese Encephalitis (JE) affected districts.
- It will address the issue of water borne diseases due to contamination of the groundwater, which is a major source of drinking water in India.
- As the building of surface water-based systems takes time, the 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 available to the general public so that they can get their water samples tested at nominal charges. To enhance the community participation, at least five persons in every village, preferably women, are being trained to use Field Testing Kits (FTKs) for testing water quality at the village level.

Special Focus on Children

- As the children are most susceptible to water-borne diseases due to spending considerable amount of time in their educational spaces, 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.
- In India, 5.4 lakh schools and 4.86 lakh Anganwadi centres have started getting potable piped water supply.

Making Water Everyone's Business

- With end-to-end approach the focus of the JJM is on source sustainability, water supply, grey water treatment & reuse and operation and maintenance.
- For this, every village has to prepare a Village Action Plan co-terminus with **15th Finance Commission** period by dovetailing all the available resources under MGNREGS, JJM, SBM(G), 15th Finance Commission grants to PRIs, District Mineral Development Fund, CSR funds, community contribution, etc. to achieve long-term water security.
- The motto of Jal Jeevan Mission is 'Building Partnerships, Changing Lives'. For this, Jal Shakti Abhiyan (JSA) to make water everyone's business, was launched in 2019 in water-stressed areas. Further, Atal Bhujal Yojana has been started in 78 water stressed districts of 7States, to conserve water by involving the village community and Gram Panchayats.
- JJM focuses on the involvement of women at every step.

Features of the 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 and financial& operational efficiency

Village Water & Sanitation Committee and its role

- Also called as Pani Samiti, is a Sub-committee of Gram Panchayat.
- Consist of 10-15 member comprising of
  - up to 25% elected members of GP
  - 25% representation from weaker sections (SC/ ST) of the 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
- 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

Technological Interventions

- A robust JJM-IMIS captures physical and financial progress under JJM with a dedicated 'Dashboard' is in the public domain.
- A 'Mobile App' has been developed 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 on a real-time basis.
- Every water supply asset created has been 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 all financial transactions are undertaken through **Public Finance Management System.**

Progress

- As on May 20, 2021, the tap water supply has reached to 7.42 Crore (38.68%) rural households in the country 3.23 Crore (17%) at the time of the announcement of the JJM.
- Presently, Goa, Telangana, A & N Islands, and Puducherry have become 'Har Ghar Jal' States (100% supply) i.e., much before 2024.
- Further, 10 more states/UTs have more than 50% tap water connection.

Conclusion

- There is a paradigm shift from the 'department-based and construction-based' approach to 'service delivery' approach along with training and empowering all the stakeholders.
- The centrality of the Gram Panchayats and VWSCs/ Pani Samitis is to ensure assured tap water supply in adequate quantity of prescribed quality on a regular and long-term basis.
- Thus, Jal Prabuddh Gaon (water enlightened villages) will lead the path to make the Aatma Nirbhar Bharat (Self-Reliant India).

8

Framework for River Rejuvenation

- Ganga basin, largest and most important river basin in India, sustaining 45% of population, has been in devastating in terms of quality of water and level of flow.
- Hence to rejuvenate the River and its basin, Namami Gange was launched in 2014- 15 with assured funding of Rs 20,000 crores which is implemented by National Mission for Clean Ganga (NMCG) and backed by Ganga River Basin Management Plan.
- The river centric, basin-based approach for comprehensive rejuvenation has 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, Ganga Quest
  - 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

Governance Improvement

- NMCG has been established as an authority under EP Act, 1986 the Government of India which also created empowered institutions, and laid down fundamental principles with a comprehensive framework for river rejuvenation in the Basin.
- It integrates rivers, tributaries, wetlands, flood plains, springs, and small rivers as a single system.
- The Integrated Institutional Framework for this is as follows:
  - National Ganga Council (headed by PM)
  - Empowered Task Force
  - National Mission for Clean ganga
  - State Ganga Committee
  - District Ganga Committee (Headed by DM)

Nirmal Ganga

- A total of 156 sewerage infrastructure projects has been sanctioned to create 4856 MLD treatment capacity in the Ganga basin.
- It has 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). HAM is now also accepted by NITI Aayog and states outside the Ganga basin.

- This model has brought a paradigm shift from payment for construction to Performance Linked Payments.
- The 'One City One Operator' approach to improve governance has been also introduced.
- Major drains falling into Ganga have been intercepted and diverted to STPs.
- Annual inspection of grossly polluting industries by expert institutions, online monitoring, process improvement, Common Effluent Treatment Plant (CETP) helped in checking industrial pollution.

Aviral Ganga

- The Notification of Ecological flow for the Ganga was made in October 2018.
- It includes Demarcation and protection of floodplains; protection &conservation of wetlands and small river rejuvenation projects.
- Sustainable Agriculture is also being promoted through organic farming, eco-agriculture, and medicinal plantation, and improving water use efficiency.
- 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.
- A comprehensive programme for fisheries and Biodiversity Conservation including Gangetic Dolphin through baseline survey, habitat and species improvement, and community involvement in the biodiversity hotspot of Ganga has been launched.

Jan Ganga

- Jan Bhagidari with dedicated cadres of Ganga saviors is central to this mission. Various innovative public outreach activities such as Ganga Quest quiz, rafting expeditions, Ganga run, Ganga Utsav, etc. are conducted throughout the year that transform the programme as a Jan Andolan.

Gyan Ganga

- Centre for Ganga Management & study has been set up at IIT Kanpur
- Scientific mapping of different aspects viz. mapping of springs, microbial diversity, fisheries, biodiversity, Heli survey for aquifers help in evidence-based decisions are being done.
- The 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.

****

9

Groundwater Management: A Paradigm Shift

An Invisible Resource

- It is a public good sustaining critical ecosystem, such as lakes, wetlands, and woods but users have no knowledge about aquifers that yield the groundwater they use, and what constitutes sustainable and equitable usage of this common-pool resource.

The Indian Context

- India is the largest user of groundwater in the world, using more than 25% of the available global resources sustaining more than 60 per cent of irrigated agriculture, 85% of rural drinking water supply, and more than 50% of urban water supply and ensuring the food security of the country.
- It was a major driver in ensuring the success of the 'Green Revolution'.
- Its unsustainable extraction has resulted in significant depletion, with consequent adverse livelihood and environmental impact including health issues, lack of availability of safe drinking water, erratic precipitation patterns, etc.
- According to the 2019 report by the Central Water Commission, the utilisable water available in India is 1,122 billion cubic meters (BCM) per annum. The total requirement of the country for the years 2025 and 2050 has been assessed as 843 BCM and 1,180 BCM respectively.

Thus, even if we store every drop of available water, we will still fall short in 2050, unless we manage demand.

Defects in Earlier Schemes

- The past schemes did not focus on reducing demand through more efficient use, suffered from a top-down approach with little or no community participation, and were implemented in isolation.
- Lessons learned from success stories of community-led groundwater management, mostly in the non-government space, were also 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, combined efforts of locals turned a drought-ridden village into a thriving community that raised the water table from 70-80 feet to 20 to 25 feet. The change in cropping pattern was brought about and the standard of living improved considerably due to economic stability.

Atal Bhujal Yojana, to Institutionalize the Community-led Approach

- The goal of Atal Bhujal Yojana (Atal Jal) 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.
- It is a Central Sector Scheme with an outlay of Rs. 6,000 Crore, partly funded by the World Bank, and was launched on Good Governance Day i.e., December 25, 2019.
- 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.

Disbursement of Resources Against Measurable Indicators

- The disbursement of incentive funds (disbursement linked indicators - DLIs) to states based on performance against selected indicators is a key feature of this outcome focused scheme.
- **These indicators are:**
  - **DLI#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: o DLI#5 - Improvement in the rate of decline of groundwater levels
- This scheme is a harbinger of change in groundwater management that 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

- State-wise innovations have been emerging. Innovations are also happening as communities are involved in the preparation of water security plans with the use of a custom-built mobile app for capturing geo-tagged field data.
- Learning from the experience in the selected states, it is proposed to create a pan-India programme for the water-stressed areas of the country.
- Strengthened water-aware communities, reliable water data, and a participatory regulatory framework are the three pillars that will support sustainable groundwater use, making water available for life, for livelihoods and culture and to combat the effects of climate change.

****

10

Swachhata Movement Continues

- Swachh Bharat Mission (SBM), the world's largest behavior-change programme has resulted in achieving a 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 and that too 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.
- The Phase II of the Swachh Bharat Mission- Grameen (SBM-G) has been approved in February 2020to focus on solid and liquid waste management (SLWM), and the sustainability of ODF status.
- The **15th Finance Commission** report for 2020-21 has also provided much-needed tied grants for sanitation to rural local bodies.
- Thus, the Phase II of the SBM-G is planned to be a novel model of convergence between different verticals of financing and various schemes of the Central and State governments.
- The Department of Drinking Water and Sanitation (DDWS) is implementing this in a Mission Mode from 2020-21 to 2024-25 with impetus to the rural economy, community sanitary complexes, as well as the infrastructure forsolid and liquid waste management.

SBM Phase II: From ODF to ODF Plus

- **Objective:** To make villages across India ODF Plus villages.
- **To become an ODF Plus village, a village has to ensure that:**
  - All households have access to a functional toilet facility.
  - All schools, Anganwadi centers, 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:** decentralized sanitation interventions
  - It is required that each Gram Panchayat prepares Village Action Plans for all of its villages for the SBM (G) and the Jal Jeevan Mission. Endorsement of the Gram Sabha should be obtained and recorded.

- At the district level, a District Swachhata Plan after consolidating its Village Action Plans is required to be prepared.
- States/UTs are required to develop a Project Implementation Plan (PIP) and Annual Implementation Plan (AIP) every year consolidating the District Swachhata Plan.
- 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.

- **Capacity Building:** the role of Swachhagrahis remains important even in Phase II.

Profound Impact of SBM

- **SBM saves lives:** 307,000 diarrheal deaths avoided when India becomes ODF
- **SBM Leveraged resources:** Mobilized 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

Role of Panchayati Raj Institutions

- As per the **Constitution 73rd Amendment Act, 1992**, sanitation is included in the 11th schedule, therefore, the role of Gram Panchayat (GP) is pivotal in implementing SBM (G).
- Each Gram Panchayat is expected to develop a village Swachhata plan for each financial year and feed it as per GPDP planning principles in the designated Plan Software, as well as into the SBM (G) MIS.

Monitoring and Evaluating

- DDWS leads the monitoring and evaluation of the SBM Phase II work in coordination with the States/UTs and Districts.
- The monitoring and evaluation have two aspects: first is ensuring the status of ODF Plus villages and second is that of created assets and expenditure incurred.

****

11

Jal Shakti Abhiyan

- Water is the most essential requirement of life. Assured availability of potable water is vital for human development.
- The Department of Drinking Water & Sanitation, Ministry of Jal Shakti on July 1, 2019 launched Jal Shakti Abhiyan (JSA), in coordination with States/ UTs, as a time-bound campaign in 256 districts covering 1,562 blocks that were classified as water-stressed.
- Out of these districts, 23 are aspirational districts identified by NITI Aayog.
- In parallel, the Ministry of Housing and Urban Development identified 756 local bodies in urban areas for carrying out the activities under the Abhiyan.

Items for Box

- India is home to 18% of the global human population and 15% of the global livestock population.
- However, it has only 2% landmass and 4% of global freshwater resources.
- As per estimates in 1951, per capita annual freshwater availability was 5,177 cubic meters which came down to 1,545 cubic meters in 2011.
- It is estimated that in 2019, it is about 1,368 cubic meters which is likely to further go down to 1,293 cubic meters in 2025.
- If the present trend continues, in 2050, freshwater availability is likely to decline to 1,140 cubic meters.

Intervention Areas (Across Various Ministries)

- Under this campaign, targeted activities were undertaken under five key areas of interventions namely:
  - Water conservation and rainwater harvesting;
  - Renovation of traditional and other water bodies/ tanks;
  - Reuse and recharge structures;
  - Watershed development; and
  - Intensive afforestation.
- Special interventions: preparation of district and block-level water-conservation plans, Krishi Vigyan Kendra Meals, urban wastewater re-use, preparation of 3D village contour maps.

Funding

- There was no separate fund allocation for the campaign. The funds allocated under various regular schemes were utilized at the district level.

Outputs and Outcomes

Outcomes were assessed under four activities:

- Increase in the groundwater level
- Increase in the surface water storage capacity
- Increase in the soil moisture in farmlands
- Increase in the area covered with plantation and number of saplings planted

Post Jal Shakti Abhiyan – Way Forward It is essential to consolidate the gains of the campaign by undertaking the following activities:

- The digital inventory of all the water bodies/ resources should be completed and shared with all stake-holding departments and their headquarters.
- The list of water bodies that were renovated, rejuvenated or the ones in which encroachments were removed should be documented and recorded in the revenue records.
- Such water bodies should be linked to people's livelihood so that the people's economic interest can protect them.
- Encourage social water bodies policing (volunteer Jal Rakshaks) for the sustenance of restored water bodies using the services of college and senior secondary students, volunteers, NGOs, etc.
- Survival of plantations has to be monitored periodically so that the original number is maintained.
- Capacity building of farmers on water conservation should go on simultaneously. The main focus should involve the usage of micro-irrigation for water-guzzling plants.
- The Government building should mandatorily include rainwater harvesting structures.
- Create a dedicated JSA cell at the district-level post Abhiyan period to complete the follow-up activities under the Jal Shakti Abhiyan.

****

12

Integrated Water Management for Faster Socio-economic Development and Water Security: A Case Study of Gujarat

- Gujarat is the capital of India's dairy industry where animal husbandry is one of the major sources of income to rural families. Therefore, adequate and assured availability of clean water for cattle is a pre-requisite for productivity.
- With 6% of the total geographical area of India, it has 12.36% of total water-stressed area of the country. About 58.6% of the total area is water-stressed due lo arid, semi-arid and salinity conditions. Hence, it is severely water-stressed State, next only to Rajasthan.
- The uneven distribution of water in Gujarat creates a peculiar situation wherein 1/4th of the area has adequate water and remaining 3/4th of the State is water-scarce, especially Kachchh.
- Per capita water availability in Gujarat (2011) is 920 cubic meters per annum against country's 1,720 cubic meters whereas, the minimum requirement of water per person is at least 1,000 cubic meters.

Strategy to Meet the Demand

- In all decision-making related to water, people's participation became the non-negotiable principle.
- Rainwater harvesting and/or artificial recharge with scientific planning and monitoring based on watershed principles, using satellite data was adopted.
- Completion of **Sardar Sarovar Dam** on **Narmada river** and distribution canal network was taken up on top priority.
- Inter-basin transfer of water from reasonably water rich South and Central Gujarat to North Gujarat, Saurashtra and Kachchh was planned.
- Strengthening of existing canal system, participatory irrigation management and micro-irrigation promoted in a big way.
- Agriculture extension activities to educate to promote the concept of '**Per Drop More Crop**' and conserve water was initiated as a campaign.
- The drinking water supply sector was reorganized in the form of three organizations carrying out specific tasks:
  - Gujarat Water Infrastructure Limited (GWIL) for building bulk-water transfer infrastructure.
  - Gujarat Water Supply & Sewerage Board (GWSSB).
  - Water and Sanitation Management Organisation (WASMO).

Village Action Plans (VAPs)

- In every village, five persons, especially women were trained to test the quality of water.
- The Government made provision to form Village Water & Sanitation Committee (VWSC) or, 'Pani Samiti'.

Water transfer through Canals

- A unique approach of transferring flood water from Narmada to water scarce regions of North Gujarat and Saurashtra was taken up by constructing 332

km long 'Sujalam Sufalam' (unlined recharge) canal, on the northern side, parallel to the Narmada main canal which helped in groundwater recharge leading to reversal of the depletion in groundwater.

Agriculture Sector

- In 2005, Gujarat Green Revolution Company (GGRC) Ltd. was set up to bring in water-use efficiency in the agriculture sector by promoting drip and sprinkler irrigation systems.
- Sujalam Sufalam Jal Abhiyanwas launched in 2018 under which a number of water conservation activities were taken up.
- To ensure water security in the Saurashtra region,Saurashtra Narmada Avtaran Irrigation (SAUNI) Yojana was taken up under which surplus water from Narmada will be transferred and stored into about 115 reservoirs of Saurashtra.
- In southern and eastern Gujarat inhabited by tribals, small lift irrigation schemes have been taken up in a big way providing assured irrigation.

Conclusion

- In Gujarat, 83% of rural households have assured tap water supply. The pioneering work by WASMO (Water and Sanitation Management Organization) has gained multiple recognitions including Prime Minister's Civil Services Award in 2018; United Nations Public Service Award in 2009; and CAPAM International Innovations Award in 2010.
- The success in Gujarat inspired the formation of the Ministry of Jal Shakti in 2019 and to launch 'Jal Shakti Abhiyan' (JSA) to conserve water by 'making water everyone's business' and achieves water security to all as well as the Jal Jeevan Mission.

If water security can be achieved in drought-prone Gujarat, it is possible that this integrated and focused approach followed by the Union Government will bring water security in the country, ensuring faster socio¬ economic development and high economic growth for the benefit of all.

****

13

Access to Water is Access to Education and Opportunity for All

- Assuring water in toilets not only helps children's hygiene but also helps motivate adolescent girls and teachers not to miss school, especially during menstruation days. 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 in 2019, almost 160,000 Anganwadi Centers (AWCs) did not have access to water.
- 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 center 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 prioritize 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.
- Women were treated as beneficiaries as well as problem solvers, as cadres of self-help groups, teachers, and AWC workers took up the responsibility of disseminating key information and importance of piped water supply.
- School management committees and children themselves became champions for the cause of equitable access to water for all.
- UNICEF has been a proud partner of the Campaign in this regard.
- With political drive, public financing, partnerships with different stakeholders, and people's participation, the Government has identified a successful formula for bringing change on a large scale.
- The Jal Jeevan Mission, therefore, is not just about the provision of drinking water, but about increasing women's participation in the workplace and economy, by giving them more time to pursue their aspirations.
- It is about helping adolescent girls practice menstrual hygiene management while still having access to education.
- It is about keeping safe hygiene and sanitation practices at the centre of all the work we do to keep children safe at home and outside.

History of Sanitation Programme in India before SBM

- The first sanitation programme for rural India: 1954 as a part of the First Five Year Plan
- International Decade for Drinking Water and Sanitation (1981-90).
- Central Rural Sanitation Programme (CRSP) in 1986
- Total Sanitation Campaign" (TSC) was adopted in 1999.
- The 'Nirmal Bharat Abhiyan' (NBA), the successor of the TSC, was launched on April 1, 2012.

14

Safe, Adequate, and Sustainable Drinking 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.
- As water has the direct impact on health, countries have pledged two targets on water under the health SDG i.e.,
  - to combat water-borne diseases by 2030 (3.3)
  - to substantially reduce the number of deaths and illnesses from water pollution and contamination (3.9)

Water and Health

- Although water is lifesaving, it is also a carrier of pathogens and toxic chemicals viz. Diarrheal diseases, cholera, typhoid, polio, hepatitis A & E are water-borne diseases.
- Water is necessary for personal hygiene and allows for hand hygiene which are key factors in preventing the spread of respiratory diseases and trachoma, 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.
- 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 recognizes access to safe drinking water and sanitation as a cross-sectoral goal and emphasizes the need to eliminate water and sanitation-related diseases.

Convergence: Health and Water

- Prioritizing water schemes in villages/blocks, where water-related disease burden is high. It would require working with the health sector to identify common health-based targets and develop an implementation plan for jointly agreed target areas.
- Strengthening current operation and management of water schemes by introducing a systematic risk assessment and risk management approach.

- Developing surveillance of drinking water quality by an independent agency. The water quality surveillance system would serve for data analysis on water quality trends in a particular area; it can be also linked with the disease surveillance system for analysis of water-related diseases and using the evidence for policy action.

Conclusion

- Safe water is critical for preventing diseases and sustaining the elimination of diseases from the country.
- The nexus between water and health is clear 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.
- The need to have health-based targets for water and institute a proactive and preventive approach with the participation of the community and local government to ensure safety, availability, and sustainability of drinking water.

****

15

Centrality of Women in Water Management

- Women have played a major role in water management and hence, policies need to be designed in a manner to enhance this role even further.

Gender roles: Ownership and Management

- The collection of drinking water in most rural communities has been done by women.
- Water collection by young girls have caused absence from school and many health problems. Thus, the provision of water service at the household level would benefit women the most.
- As women have been "health care-takers of the family", the poor quality of water which causes water-borne diseases also affects women the most.
- In some locations, the water collection is the concern for 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 which 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 until men also to take up an equal role in providing drinking water, it needs to be ensured 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:
  - Mandatory 50% participation of women, especially those belonging to SCs/STs and OBCs, in the Village Water & Sanitation Committee (VWSC).
  - Separate meetings with women during the mobilization process: The 73rd/74th Amendments of the Constitution and PRI Act make women's representation mandatory and many Gram Panchayats have women Sarpanches. Each Panchayat has at least 1/3rd women and many states have 50% women representation in the Panchayat. These elected women representatives (EWRs) should be given greater powers in all water-related schemes.
  - Interaction with existing women's groups during the initial village visits: Many of these SHGs have women, mainly from economically weaker sections, and hence, involving them ensures the inclusion of the poor and vulnerable communities in the village.
  - Special recognition of VWSCs with women leaders or larger women's membership.
  - Gender sensitization of the implementation team staff is essential and women should be part of the capacity building.

- Train at least five village women for the supervision of implementation, and later for regular supply of water. Nominate and train women as Jal Doots/ Bhu Jaankar, if there is a cadre of water para-legal workers.

Conclusion

Thus, women across the country need to be engaged in rural drinking water supply schemes consciously for long-term water security in villages.

****

16

A Case Study of Goa

- Goa is gifted with many rivers viz., Terekhol, Chapora, Mandovi, Zuari, Baga, Sal, Saleri, Talpona, and Galgibag with several tributaries most of which are perennial.
- Surface water and reservoirs are the main sources of raw water besides localized spot sources across the State.
- Most of the water treatment facilities available here are more than half a century old.
- The major drinking water supply is through water treatment plants, wherein the process involved is pumping from source, aeration, coagulation, flocculation, sedimentation, filtration, pre and post disinfection, collection into clear water tanks, and pumping to Master Balancing Reservoir or Overhead tanks.
- The water-supply demand is catered by 10 Regional Water Supply Schemes covering Multi Village Schemes and Single Village Schemes with spot sources covering the remainder of the State.
- The water billing has been successfully rolled out to all consumers, with affordable water tariffs to all.
- A host of technology initiatives will help ensure the quality and quantity of the supplied water to develop a "Smart Water Utility" for the State of Goa.

Jal Jeevan Mission in Goa

- In 2019, Jal Jeevan Mission, to provide functional household tap connections – Har Ghar Jal – by 2024 was announced.
- Goa was the first state to provide 100% tap water connections to all homes on October 8, 2020, well ahead of schedule, so it was decided to go a step ahead and build a system that would rival international standards.
- The target of 100% connections was only possible because the State invoked a special provision in the Health Act, whereby the concerned Health Officer can direct the PWD authorities to provide a water connection to households, that don't have water connections.
- Jal Jeevan Mission recommends the use of sensors that monitor important safety parameters at various points to guarantee the quantity and quality of our water supply while minimizing distribution losses.
- With assistance from the National Jal Jeevan Mission, the State is hoping to adopt the concept of "Drink From Tap" with an assured supply of clean drinkable water, 24 hours a day. A host of technology Initiatives will help ensure the quality and quantity of the supplied Water to develop a "Smart Water Utility" for Goa.

Plans for the Future

- Goa has a vision to build a predictable and assured water utility so that consumers can have confidence in the availability and quality of their tap water.
- Consumers would be informed in advance about any service outages, in a targeted manner to minimize the impact and allow them to plan their lives better.

Conclusion

- Going beyond the simple delivery of water, regulatory compliance, customer service parameters, and assured service levels are the new benchmarks.
- Internet of Things (IoT) devices are low-cost gadgets that can help us monitor various parameters linked to the health of a system.
- The strategic use of IoT devices, combined with an analytics platform will allow the State to monitor the real-time status of its infrastructure.

The Government of Goa has an ambitious plan to be more proactive in these maintenance parameters and act as a model for other utilities in India and abroad.

****

17

Technological Innovation for Assured Water Supply

- NSS 76th Round reported that about 87.6 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.
- Simultaneously, 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.
- For these reasons the Jal Jeevan Mission was announced in 2019.

JJM And Technology

- A Dashboard for transparency has been created for monitoring village level implementation of the scheme.
- The information of the scheme is being stored in a central JJM-Integrated Management Information System with details of cost, infrastructure, water-source each habitation in villages.
- The use of a public fund management system (PFMS) by States/UTs is being ensured for payment in an online manner.
- The tap water connection provided to every household is being tagged with the Aadhaar number of the head of household.
- 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 JJM 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 JJM envisions 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.
- Minimization 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.

Initiatives for Creating an Ecosystem

- In collaboration with the **Ministry of Electronics and Information Technology (MeiTY),** a grand challenge has been launched. At present four indigenously developed solutions have emerged that are being taken for testing in village conditions at several locations in the country.
- For assurance of water quality 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 being strengthened with 2% funds exclusively for this purpose. The accreditation and recognition of all labs by NABL is being made compulsory to ensure the quality of testing at the laboratory.
- Further, 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.

Conclusion

- With a partnership with States/ UTs, the Jal Jeevan Mission is rolling out this vision to secure the availability of potable water at the household level and ensure the 'ease of living' of people living in rural areas.

****

18

Inside India's Inland Waterways Plan

- Five waterways were identified at the time when the Inland Waterways Authority of India (IWAI) was established in 1986 to help maintain and energize infrastructure around key inland waterways
- **These were:**
  - Ganga-Bhagirathi-Hoogly river system between Haldia (Sagar) and Allahabad (1,620 kilometres)
  - Brahmaputra between Sadiya and the Bangladesh border (891 kilometres)
  - West coast canal (Kottapuram to Kollam), the Udyogmandal canal, and the Champakara canal, a total of 205 kilometres,
  - Kakinada-Puducherry stretch between - Rajahmundry stretch of River Godavari and Wazira - Vijayawada stretch of River Krishna (1,078 kilometres),
  - 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).

Scope and Advantages

- 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.
- India is underutilizing its inland waterways potential as compared to USA, CHINA or EU.
- Water transportation is safest mode free from accidents and casualties.
- Free from contentious issues like land acquisition.
- Huge tourist potential since many pilgrimage sites are located on river banks.
- Ideal for bulk and oversized cargo.

Government Initiative

- National waterways bill was passed in 2015 declaring 106 inland waterways as national waterways.
- In 2020 shipping ministry waive off all usage charges for a period of 3 years to promote greater commercial and tourist exploration of inland waterways.

Conclusion

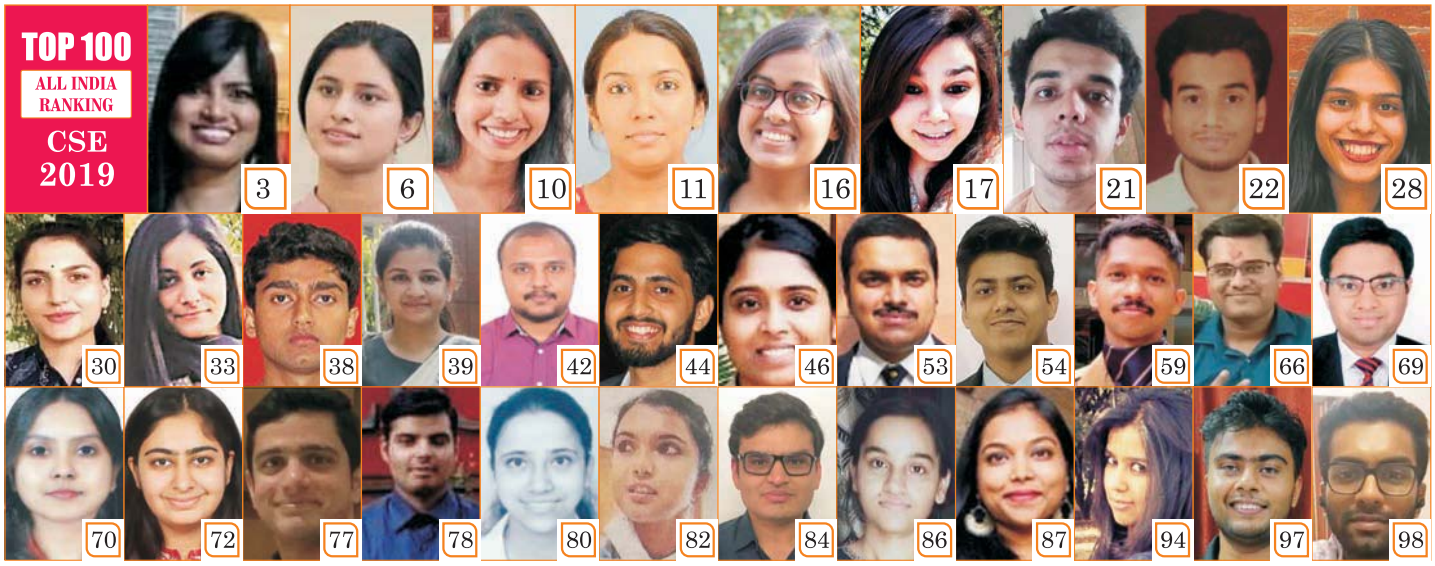
As Indian economy grows in years to come it requires creative solutions to address its energy and transportation requirements. Inland waterways offer such a roadmap and we should fully utilize its potential.

****

GS SCORE
An Institute for Civil Services

CSE RESULTS

TOP 100 ALL INDIA RANKING CSE 2019

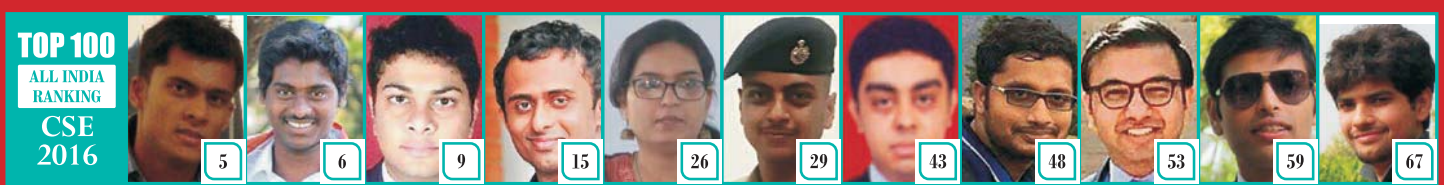


SUCCESS IS A PRACTICE WE DO!

TOP 100 ALL INDIA RANKING CSE 2018

TOP 100 ALL INDIA RANKING CSE 2017

TOP 100 ALL INDIA RANKING CSE 2016



TOP 100 ALL INDIA RANKING CSE 2015