

AIR SPOTLIGHT

Discussion on --- India Water Week-2022: Water Security for Sustainable Development and Equity

Context

- Ministry of Water Resources, River Development, and Ganga Rejuvenation is organizing the **7th edition of India Water Week (IWW)** from 1st to 5th November.

About India Water Week

- Every year India Water Week is organized **in an effort to raise awareness and conserve and use water resources in an integrated manner**. Indian Water Week platform is used to elicit ideas and opinions from global-level decisions makers, politicians, researchers, and entrepreneurs.

2022 Theme

- The theme of the 7th India Water Week is **“Water Security for Sustainable Development and Equity”**.

Partner Countries

- Denmark, Singapore and Finland are the partner countries for the India Water Week 2022.

Mandate

- The event will bring together experts, planners, and stakeholders from across the globe. The event will address the issues of sustainability of water resources development and management in line with the sustainable development goals.
- The multi-disciplinary international conference will concentrate on long-term planning and management by introducing principles of sustainability and equity evolved over the years by National and International Water experts and Organisations.
- The event will host conferences with seminars, panel discussions, exhibitions, and cultural programs. Exhibitions on technologies and solutions will be available for the areas under deliberation.

Water Security

- Water security is the reliable availability of an acceptable quantity and quality of water for health, livelihoods, and production, coupled with an acceptable level of water-related risks.
- A society with a high level of water security makes the most of water's benefits for humans and ecosystems and limits the risk of destructive impacts associated with water. These include too much water (flood), too little water (drought and water scarcity), or poor quality (polluted) water. Water security is framed as a situation where water-related risks are managed and water-related opportunities are captured.

Water Security and Sustainable Development

- Water challenges are increasingly impacting every region around the world facing the effects of climate change, urbanization, as well as natural disasters. Confronted with the ongoing water-related challenges, addressing water security can be a practical approach to deal with the complex and interconnected challenges and enhance sustainability, development, and human welfare.
- Policy-makers and water managers seek to achieve a variety of water security outcomes related to economic, environmental, and social equity concerns. These outcomes can include increasing economic welfare, enhancing social equity, moving towards long-term sustainability, and reducing water-related risks.
- Water security is critical for meeting the United Nations [Sustainable Development Goals](#) (SDGs) because most SDGs cannot be met without access to adequate and safe water.
- Sustainable Development Goal 6 (SDG 6 or Global Goal 6)** is about **"clean water and sanitation for all"**. It is one of 17 Sustainable Development Goals established by the United Nations General Assembly in 2015. The goal has eight targets to be achieved by 2030:

"Outcome-Oriented Targets"

The six "outcome-oriented targets" include:

1. Safe and affordable drinking water;
2. End open defecation and provide access to sanitation, and hygiene,
3. Improve water quality, wastewater treatment and safe reuse,
4. Increase water-use efficiency and ensure freshwater supplies,
5. Implement IWRM, protect and
6. Restore water-related ecosystems.

"Means Of Achieving" Targets

The two "means of achieving" targets are

1. To expand water and sanitation support to developing countries, and
2. To support local engagement in water and sanitation management

SDG 6 is closely linked with other Sustainable Development Goals (SDGs). For example, progress in SDG 6 will improve health SDG3 and improve school attendance, both of which contribute to alleviating poverty.

Table: Examples of the contribution of improved Water Security on Sustainable Development Goals

Sustainable Development Goal	Water security's enabling, reinforcing, or indivisible effect on the goal	Water security's constraining, counteracting, or cancelling effect on the Goal
SDG1 (no poverty)	<p>Less impacts on food prices</p> <p>No water tariffs</p> <p>Support against rural poverty</p> <p>Rainwater harvesting increases resilience</p> <p>Hydropower for promoting industrialization and electricity availability</p> <p>The water-related health effects most prominent in low-income communities</p> <p>Less hydrological extremes, less economic losses for individuals</p> <p>Water and sanitation strongly reduce poverty and increase employment</p>	<p>Groundwater protection buffers can reduce the land value as it is not used for crop production</p> <p>Hydropower causing significant losses for fish production</p> <p>Poor people consider bottled water as a safest drinking water source, i.e., water is not affordable for the poor</p> <p>Progressive irrigation requires upfront investments with a high-risk trade-off.</p>
SDG2 (zero hunger)	<p>Sustainable water resources (including green water) for food production and reducing malnutrition; right to food</p> <p>Hydropower and water infrastructure to support efficient irrigation and food production</p> <p>Soil fertility and contamination-free crops closed nutrient cycles</p> <p>Pollution-free water and effective irrigation support greater yields</p> <p>Supporting fisheries and thus livelihood satisfaction and diets</p> <p>Wastewater treatment and nutrient recovery for food production</p>	<p>Hydropower: negative impacts on freshwater ecosystems, fisheries, and sedimentation</p> <p>Competition of water among interest groups could reduce water available for irrigation</p> <p>Protecting aquatic environments decreases the land area for fisheries</p> <p>Supporting hydropower causes competition in agriculture</p>
SDG3 (good health and well-being)	<p>Clean water decreases in waterborne and soil-transmitted infections and child stunting and mortality</p> <p>Clean water for ending the cycle of disease transmission</p> <p>The health of farmers</p> <p>Water access and sanitation support clinics to be more efficient and inviting. Water for taking medication</p>	<p>Health improves in cities, reduces elsewhere</p> <p>Increased irrigation provision at the smallholder level as an adaptation measure could increase the incidence of malaria in nearby communities</p>

<i>Sustainable Development Goal</i>	<i>Water security's enabling, reinforcing, or indivisible effect on the goal</i>	<i>Water security's constraining, counteracting, or cancelling effect on the Goal</i>
	<p>No need for boiling water, thus less indoor air quality problems</p> <p>Access to water supports menstrual hygiene and thus health</p> <p>Secure water infrastructure for human health and for coping with diseases</p> <p>Pesticide containers no longer used for collecting water</p>	
SDG4 (quality education)	<p>Water infrastructure: children go to school instead of getting water</p> <p>Education for water knowledge</p> <p>By improving child health, water security supports education for everyone</p> <p>Good sanitation increases the likelihood of children staying at school</p>	
SDG5 (gender equality)	<p>Clean water particularly improves girls schooling</p> <p>Savings related to improved water security directly benefits women</p> <p>Rainwater harvesting, women are free from long-distance water fetching</p> <p>Improved gender relations</p>	
SDG7 (affordable and clean energy)	<p>Wastewater treatment for energy production</p> <p>Hydropower for emission-free energy production</p> <p>Improved water resources management for biofuel production</p> <p>Artificial lakes for energy production</p> <p>Fast-moving groundwater for hydropower production</p>	<p>Water security leads to a decrease in water-intensive crop-based bioenergy</p> <p>Limited water resources and strong allocation to food production</p> <p>More energy is needed for irrigation</p>
SDG8 (decent work and economic growth)	<p>Enhancing employment</p> <p>Enhancing productivity and trade, and farmers' economy</p> <p>No tariffs</p> <p>Decreased impacts of water scarcity and quality on the global economy</p> <p>Water for biofuel production, supporting economy</p> <p>Time from water collection to other work</p> <p>Circular economy, closed nutrient cycles, water reuse, and sludge for nutrients for creating savings</p>	<p>Water resources produce food waste and thus economic losses</p> <p>Increased costs for deforestation-related runoff and nutrient discharge</p> <p>Reduced income for fishermen</p>
SDG9 (industry, innovation, and infrastructure)	<p>Reinforce loop with resilient infrastructure</p> <p>Water-efficient innovations for production</p>	<p>Households need water storage facilities; pipes operate with low pressure</p>
SDG10 (reduced inequalities)	<p>Savings benefit women and children</p> <p>Virtual water trade to ease the spatial heterogeneity of water resources</p> <p>Equal access to resources</p> <p>Improved sanitation is pivotal for increasing equality</p>	<p>The minimum standard of service can limit opportunities for more diverse development, especially for the old, poor, and disabled</p> <p>Improved water security attempts often exclude rural areas and have problems because of inequitable access</p>
SDG11 (sustainable cities and communities)	<p>Resources for sustainable urbanization</p> <p>Less extreme floods and droughts, i.e., less damage to infrastructure and income loss, better preparedness</p> <p>Good water security promotes active community participation</p> <p>Increasing the safety of buildings</p>	<p>Displacement and impoverishment of human settlement patterns</p> <p>Electricity costs for pumps</p> <p>Water bottles create plastic waste</p>

<i>Sustainable Development Goal</i>	<i>Water security's enabling, reinforcing, or indivisible effect on the goal</i>	<i>Water security's constraining, counteracting, or cancelling effect on the Goal</i>
SDG12 (responsible consumption and production)	Municipal wastewater for net energy production Constant water resources available, no need for pumping (electricity use) Improved water security leads to improved treatment of severe wasting	Vast water resources do not motivate efficiency and could increase consumption
SDG13 (climate action)	Hydropower for emission-free energy production Groundwater resources as a natural buffer against climate variability Children less vulnerable to climate change (both physical and mental problems) No need for boiling water, less greenhouse gas emissions	Water resources for food production and food waste with high CO ₂ emissions Large-scale reservoirs have negative implications for climate-compatible development
SDG14 (life below water)	Fewer impacts on hydrological cycle, the well-being of fisheries Improved water quality impacts all life); protecting against eutrophication and biodiversity loss; protecting against resources scarcity	Water for irrigation with chemical fertilizers causes adverse impacts on aquatic habitats Hydropower impacting fisheries and increased sedimentation
SDG15 (life on land)	Ecosystem-based adaptation for better water quality and larger resources. Improved resilience Less ground water-use and depletion Water provision is highly important for soil functionality, biodiversity, and ecosystem services River restoration for improving biodiversity, e.g., ensuring pollination and pest regulation Water-efficient agriculture contributes to afforestation Good groundwater management supports protecting aquatic ecosystems Improved natural hazard regulation	Hydropower can destroy ecosystems by changing hydrological, biological, and nutrient cycling Hydropower development modifies water flow and sediment transport Water is a pollutant and nutrient conveyor Water increases soil erosion and nutrient losses Sustainable water use with the cost of increased cropland expansion into pasture and forest
SDG16 (peace, justice, and strong institution)	Less downstream pressure for fishermen or ecosystems (NN, Lower risk for water crisis and related geopolitical tensions	Hydropower can cause massive relocation of people and regional conflicts and with poor coordination, can create direct competition of water
SDG17 (partnership for the goals)	Local improvements create pressure for progress in the neighboring areas	

Water Insecurity prevailing in India

Water insecurity is a growing threat to humanity. Factors contributing to water insecurity include water scarcity, water pollution, reduced water quality due to climate change impacts, poverty, destructive forces of water, and others (for example natural disasters, terrorism, and armed conflict).

- **Lack of Resources:** India has 18 percent of the world's population, but only 4 percent of its water resources, making it among the most water-stressed in the world.
- **Water-deprived population:** A 2019 NITI Aayog report said that India is suffering from the worst water crisis in its history, and almost 600 million of its population is water-deprived.
- **Groundwater levels:** Groundwater levels in India declined by over 60 percent between 2007 and 2017, and of the extracted water, almost 90 percent is used in agriculture.
- **Lack of conservation:** 70 percent of India's farming is rain-fed. Yet, 65 percent of its total rainfall ends up in the sea.

- **Pollution:** Water pollution is another source of water stress, leading to collateral losses in healthcare. Cities are home to 36 percent of India's population but account for 70 percent of water pollution, according to a report by the Central Pollution Control Board.
- **Per capita availability:** On a per capita basis, water availability has been declining — from 1,816 cubic meters in 2001 and 1,546 in 2011 to 1,367 cubic meters in 2021.
- **Water Inequality:** In India, water is a source of huge inequality. Often, when a water source is impaired, the many people who had found employment through it get negatively impacted. Employment in fishing, sand mining, and water-carrying services gets impacted. The restoration of the water supply often leads to privileged cornering access to it. Large queues at water tankers outside slums is a common visual in our cities. Almost all our high-rise buildings supplement water by buying tankers.
- **Women's issue:** Fetching water in India has been perceived as a woman's job for centuries. Women, especially in rural areas, walk miles to collect water from the nearest source. Their marginalization is compounded by the indignity and insecurity of not having a private spot to fulfill their toilet needs. Addressing women's water, sanitation, and hygiene requirements is a critical driver in attaining gender equity and unlocking the potential of half of the world's population.
- **Crisis in Rural India** - Indiscriminate use of water for irrigation and the absence of conservation efforts have leftover 10% of water bodies in rural areas redundant.

Way Ahead

Recommendations of the Standing Committee on groundwater:

- Creation of a database on natural and artificial recharge of water.
- Study of Dark Blocks (over-exploited assessment units) should be initiated.

Recommendations regarding groundwater withdrawal for agriculture:

- On-farm water management techniques and adoption of improved irrigation methods,
- Implementation of 'a master plan for artificial recharge to groundwater, and
- Revamping agricultural power pricing structure.
- Water should be brought under the concurrent list of the constitution.
- A master plan for artificial recharge to groundwater needs to be created.
- Synergy between MGNREGS and groundwater management.
- Census of water bodies and installation of water meters on tube wells needs to be undertaken.
- Ministry of Water Resources in coordination with the Central Pollution Control Board should devise an effective mechanism to identify critically polluted areas located in dark blocks.
- Enforcement of No Objection Certificates by Central Ground Water Authority

Central Ground Water Authority guidelines for ground water extraction:

- Introduction of the concept of Water Conservation Fee.
- Encouraging use of recycled and treated sewage water by industries.
- Provision of action against polluting industries, and measures to be adopted to ensure prevention of ground water contamination in premises of polluting industries/ projects.
- Mandatory requirement of digital flow meters, piezometers and digital water level recorders.
- Mandatory water audit by specified industries abstracting ground water.
- Mandatory roof top rain water harvesting except for specified industries.
- Monthly water level data shall be submitted to CGWA through the web portal.

Model Bill for the Conservation, Protection, Regulation and Management of Groundwater features:

- Right to water for life.
- Common pool resource: Groundwater would not be a free resource; even paid use will be allowed in a sustainable manner
- ensuring equitable availability to all.

- Principle of subsidiarity: More say to end-users of water, Panchayats and local bodies.
- Top priority in the use of groundwater ought to be in meeting drinking, sanitation, food security, sustenance agriculture, needs of women and only after that for industry.
- There would also be groundwater security boards and groundwater protection zones that would be overseen by State bodies.

Draft National Water Framework Bill 2016:

- It aims to decentralise water management and give more power to panchayats to decide how water can be better used.
- It promises to give every person the right to a minimum amount of safe water.
- Further the state is obliged to protect and conserve water.
- A graded pricing system for domestic water supply should be introduced.
- It asks governments to strive for rejuvenation of river systems by ensuring Aviral Dhara, Nirmal Dhara, and Swachh Kinara.

How India can manage its water resources:

- Usage of efficient irrigation methods.
- Implementation of an urban water policy to harvest rainwater in Indian cities and regulate groundwater usage.
- Increasing the water recycling capacity.
- Performance around groundwater augmentation can significantly improve with the strengthening of groundwater regulations
- And strict implementation on the ground. Steps such as improvement of monitoring network and continuous monitoring of
- Groundwater level and groundwater quality, strict implementation of rainwater harvesting and continuous operation and
- Maintenance of the same will also help states manage their groundwater better.

Good initiatives taken by certain states:

1. Community Managed Water Supply Programme (Gujarat)
 2. Bhagirath Krishak Abhiyan (Madhya Pradesh)
 3. Data for groundwater management (Andhra Pradesh)
- Reviving ancient system of maintaining and managing water bodies by local communities themselves such as Jhalaras in Rajasthan.
 - Pricing of Irrigation Water as advocated by the Vaidyanathan Committee.
 - Water Literacy Movement.
 - Surplus water from one year can be stored locally in an unconfined aquifer, withdrawn in subsequent years by the 'banker' and transferred to supplement the water resources of the 'client' when needed.
 - Water treatment: Using Green remediation techniques such as Phytoextraction and Chemical and biological treatment for
 - Industrial discharge along with the establishment of common effluent treatment facilities for smaller industries.

Wrapping up

- Over the years, 'Water Security' has gained international attention since the International Hydrology Programme (IHP) placed an emphasis on 'water security' during its 8th phase, being implemented between 2014-2021, in line with the eight-year Medium-term Strategy of UNESCO (2014-2021). For instance, 'Water Security for Peace and Development' was the main theme of **9th World Water Forum** held in Senegal in 2021.
- In the 2021-22 Budget, India also allocated Rs 2,87,000 crore to the Ministry of Jal Shakti to launch the Jal Jeevan Mission (Urban) to ensure universal water supply to all 4,378 towns. The government is also committed to providing **safe tap drinking water to every rural household by 2024.**
- It is important to make central and state policies dealing with the water crisis, with in-depth gender and feminist lenses. More emphasis should be given to gender inequality rather than gender sensitization.
- The government cannot manage the water crisis alone; it will take the **combined efforts of civil society, the private sector** – including its foundations – **and the public at large** to meet the challenge.

- It is important to reimagine the assessment protocol for water as a resource and bring it on par with all other economic resources. Management requires a measure to work with, and water also needs to be treated as a life-form resource rather than just a human-centric one. We need to re-structure the Centre-state and local bodies' relationship with water as a subject and **allow for single-window decision-making.**
- **Huge investments in water harvesting** are needed to build and protect water availability and to harvest a reasonable part of the monsoon flows. We also need a massive restoration drive to clean up our existing water bodies, be it village tanks or baolis.
- Equally important is a **National Literacy Mission around water** to create multilevel **hydro-literacy in schools and civil society.**
- Corporates need to educate their staff to create an **all-pervasive ISR (individual social responsibility) structure.**
- It is important to recognize the changing patterns of water availability due to climate change, especially modeling future scenarios to study the impact of receding glaciers that will cause our rivers to dry up and altered rainfall patterns affecting cropping patterns and impacting food security.
- It would be fruitful to relook at ancient farming practices that seemed more sustainable. Many of the northeastern states are using traditional ways of irrigating and recycling the run-off water to use in fields before it rejoins the river. **In Tamil Nadu, a centuries-old tradition called 'Eri' is used in irrigating paddy fields from lake water.**

<https://newsonair.gov.in/Spotlight.aspx#>

<https://www.sciencedirect.com/science/article/pii/S2590332221000531>

<https://www.worldbank.org/en/country/india/brief/world-water-day-2022-how-india-is-addressing-its-water-needs#:~:text=The%20country%20has%2018%20percent,think%20tank%2C%20the%20NITI%20Aayog.>

<https://theprint.in/opinion/india-faces-a-severe-water-crisis-modi-govt-cant-tackle-it-alone-heres-what-we-can-do/853979/>

<https://www.downtoearth.org.in/blog/water/india-s-water-crisis-it-is-most-acute-for-women-78472>

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<https://www.downtoearth.org.in/blog/urbanisation/how-do-india-s-policies-and-guidelines-look-at-urban-lakes--68662>

NEWS IN BRIEF: PRELIMS SPECIAL

Miyawaki forest and Maze garden

Context

- Miyawaki forest and Maze garden are the New attractions at the Statue of Unity.

Details

- The Maze Garden at Kevadia has been built in the shape of 'Yantra' that emanates positive energy.
- Sprawling in three acres with a pathway of 2,100 metres, this is the largest maze garden in the country. Note: Longleat Maze in the United Kingdom (UK) is the longest hedge maze in the world.
- 1,80,000 saplings have been planted near this Maze Garden. These include Orange Gemin, Madhu Kamini, Glory Bovar and Mehndi.
- This location was originally a dumping site for debris which has now turned into a verdant landscape.
- The Miyawaki Forest will be another tourist attraction for people visiting Ekta Nagar.

What is a maze garden?

- It is an outdoor garden maze in which the "walls" or dividers between passages are made of upright hedges. It evolved from the knot gardens of Renaissance Europe-first constructed during the mid-16th century.

Miyawaki method

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- The Miyawaki method was designed by Japanese botanist Akira Miyawaki in the 1980s.
- **It is a technique to create micro forests over small plots of land.**
 - Planting three to four saplings per square meter, using native varieties adapted to local conditions.
 - It Works effectively irrespective of soil and climate conditions.
 - Plants require eight to nine months of care before reaching a point where the micro forest becomes self-sustaining.
- The method requires **planting a wide variety of plants in a fairly dense manner so that the plot of land has different layers of a forest such as shrubs, trees, and canopies** – on small plots of land, turning them into tiny forests.
- Through this method, mini forests grow 10 times faster and become 30 times denser and 100 times more bio-diverse than those planted through conventional methods.
- Significance
 - Help lower temperatures.
 - Reduce air and noise pollution.
 - Attracts local birds and insects.
 - Create carbon sinks up to 30 times or more Carbon-dioxide absorption as compared to conventional forests.
- However, such forests **lack some qualities of natural forests, such as medicinal properties and the ability to bring rain.**

<https://newsonair.gov.in/News?title=Miyawaki-forest-and-Maze-garden%3a-New-attractions-at-Statue-of-Unity&id=450085>

Fit India Freedom Run 3.0

Context

- To commemorate the celebration of the Fit India Freedom Run 3.0, Coast Guard District Headquarters No.6 (AP) conducted a walkathon from CGDHQ-6 to Scindia Junction and back on 30 Oct 22.

Details

- Fit India Freedom Run 3.0 campaign started on 2nd October, 2022 to mark Gandhi Jayanti. It culminated with the unity run on 31st October 2022 at Kevadia, Gujarat.
- The campaign's objective is to encourage fitness and help us all to get freedom from obesity, laziness, stress, anxiety, diseases etc.
- The Fit India Freedom Run is yet another endeavour to strengthen the Fit Indian Movement and involve citizens to embrace fitness as a way of life.

Fit India Movement

- FIT INDIA Movement was launched in 2019 with a view to make fitness an integral part of our daily lives. The mission of the Movement is to bring about behavioural changes and move towards a more physically active lifestyle.

<https://newsonair.gov.in/News?title=Coast-Guard-conducts-walkathon-Fit-India-Freedom-Run-3.0&id=450089>

World Day for Audiovisual Heritage

Context

- World Day for Audiovisual Heritage (WDAH) is celebrated on October 27 every year to highlight and promote the importance of recorded images, motion pictures and sounds.

Background

- In 1980, on the recommendation for the safeguarding and preservation of Moving Images was adopted in the 21st General Conference of the United Nations Educational, Scientific and Cultural Organization, UNESCO at Belgrade, Serbia. This adoption occurred as a result of the efforts of the International Federation of Film Archives (FIAP) since the late 1970s.

WDAH

- The WDAH celebration is part of the United Nations (UN) 2030 Agenda for Sustainable Development, Goal 16, Target 16.10. It states, “Ensure public access to information and protect fundamental freedoms, in accordance with national legislation and international agreements.”

Significance

- Recorded images, motion pictures and sounds give us insights into people’s lives, cultures, languages, communities, and global flora and fauna. Such documents are vital as a source of knowledge for humanity and help preserve cultural and social diversity.
- Conservation of these documents ensures present and future generations get access to them and helps preserve our collective memories. **“Enlisting documentary heritage to promote inclusive, just, and peaceful societies”** is the theme for world day for audiovisual heritage this year.

<https://newsonair.gov.in/News?title=World-Day-for-Audiovisual-Heritage-being-celebrated-today&id=449956>

Annakoota

Context

- The festival of Annakoota is being celebrated in parts of Eastern Uttar Pradesh.

Details

- Govardhan Puja also known as Annakut or Annakoot (meaning a “mountain of food) is a Hindu festival in which devotees worship Govardhan Hill and prepare and offer a large variety of vegetarian food to Krishna as a mark of gratitude.
- Annakut Puja is observed to honor the victory of Lord Krishna over Lord Indra where Lord Krishna saved the people of Gokul from the wrath of Lord Indra with the help of Govardhan Parvat.
- Annakut preparation majorly comprise of dishes made from cereals such as wheat, rice, green leafy vegetables, gram flour curry among others.

<https://newsonair.gov.in/News?title=Annakoota-being-celebrated-in-Eastern-Uttar-Pradesh&id=449925>



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