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THE PLANET VISION

Urban Oasis in Peril: Navigating India's Urban Water Crisis

Almost two-thirds of India's districts are already threatened.....

From the Editor's Desk

आपो हि ष्ठा मयोभुवस्था न ऊर्जे दधातन |
महे रणाय चक्षसे || १ ||

"O Water, because of your presence, the atmosphere is so refreshing and imparts us with vigour and strength."

Dear readers,

This quote from the Rig Veda aptly describes water as the source of energy, happiness and prosperity. Without a doubt, water is the elixir that sustains all life on Earth. However, dwindling water sources has become the most widespread, non-discriminatory, and severe humanitarian disaster of the twenty-first century. The water crisis looming over India's cities is one of the most pressing environmental challenges facing the nation today. With rapid urbanization, inadequate infrastructure planning, and climate change impacts like prolonged droughts, many of India's major metropolitan areas are struggling to meet the basic water needs of their burgeoning populations.

In this month's cover story, we take an in-depth look at the dire water situation in several of India's largest cities like Delhi, Chennai, and Bengaluru. The facts and figures are staggering - from water sources drying up to municipalities having to ration piped water supplies. While the challenges are daunting, the good news is that solutions do exist. We will showcase some of the traditional approaches rooted in India's rich cultural heritage as well as emerging technologies to mitigate the impending crisis.

As India continues to urbanize rapidly, it is imperative that water security for its cities is given utmost priority. This edition aims to spark a meaningful dialogue on this critical issue. We hope this coverage sensitizes readers to the gravity of the situation and underscores the need for concerted efforts from all stakeholders. In this edition, we have also introduced two new sections- **'Green Days Diary'**- a calendar of important environmental dates to remember and act on, and **'The Planet Pacts'**- which decodes a key international environmental agreement every month.

"When the well is dry, we learn the worth of water."

- Benjamin Franklin

Happy Learning.
Team VisionIAS

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INDEX

Urban Oasis in Peril: Navigating India's Urban Water Crisis

India requires a comprehensive water management strategy to address both immediate water scarcity and long-term resilience, ensuring sustainable urban water access.

The country's Silicon Valley, which was once called the city of lakes and celebrated for its lush greenery and abundant water bodies, now stands at a crossroads, grappling with decimated lakes and a deepening water management crisis. Bengaluru, India's third-most populated city, is currently experiencing the worst potable water crisis in its almost 500-year history. The crisis sweeping across 7,000 villages, 1,100 wards, and 220 talukas serves as a sobering wake-up call about the perils of unchecked urbanization. As the city prepares for the scorching summer, the combination of shrinking green spaces, disappearing water bodies, and a dropping groundwater table presents a gloomy scenario. More alarmingly, this is not just the case for Bengaluru. Cities across India have been facing acute water shortages due to a mix of diverse, complex and compounding reasons.

> India's third-most populous city 'Bengaluru' is facing the worst potable water crisis in its nearly 500-year-old history

At its heart, the water crisis troubling India's cities can be attributed to unplanned urbanisation—cities expanding in a haphazard manner, with little thought given to where the water will come from. On top of that, current water resources are being mismanaged due to inefficient policies and procedures that are unable to keep up with the increasing demand. These factors, exacerbated by ongoing climatic changes, swirl together to create the perfect storm of a water crisis in our urban landscapes. Let's explore each of these contributing forces to understand how they shape the challenges we face!

From Blue to Grey

In the 1800s, Bengaluru boasted more than 1,400 water bodies. However, by 2016, only about 194 of them remained. Urban water bodies have been a victim of unplanned urbanisation in India, because of which they face several threats such as unchecked encroachment, residential

and industrial sewage disposal, and unplanned tourism. Water bodies in India are fast disappearing triggering drought situations and water shortage. Moreover, India's reliance on the monsoon season intensifies its water woes, with climate change looming as a formidable foe.

Fire breaks out in the foam covering Bellandur Lake (Bengaluru)

Climate change: The water adversary

Climate change and concretisation of land in urban areas add fuel to the flames by disrupting traditional precipitation patterns, leading to more intense rainfall events in some regions and prolonged droughts in others. For example, Bengaluru is experiencing a water crisis due to low rainfall in the Cauvery basin, which supplies 60% of the city's water. The erratic rainfall patterns strain water availability, exacerbating the already dire crisis. But that's not all, we also need to look beneath surface to uncover cities' unhealthy relation with groundwater.

Groundwater overdrawn

Groundwater levels in seven of the country's 10 most populous cities have dropped dramatically during the last two decades. Many urban regions in India confront water scarcity as a result of excessive groundwater extraction. Supplying nearly half of India's urban water, depletion of groundwater spells trouble. As per some estimates, almost two-thirds – 63%- of India's districts are already threatened by falling groundwater levels. Insufficient groundwater reserves were one of the main reasons behind the water crisis in Chennai in 2019. With declining water resources, urban centres- the hubs of diverse populations and economic activities—are often finding it difficult to fulfil the ever-growing water demand.

India's Urban Water Equity Conundrum

India faces an uphill battle to quench the thirst of its urban areas with 18% of the world's population and only 4% of its water resources. According to UN-Habitat, 43.2% of India's population will live in urban areas by the middle of 2035 from the current 36%. Socioeconomic disparities in these cities often result in unequal access to water supply and sanitation services. According to some experts, Delhi water crisis in 2019 happened because the Delhi Jal Board (DJB) was unable to meet the water and wastewater needs of the nation's capital and provided its citizens with an erratic and unequally distributed water supply.

> Almost two-thirds – 63%- of India's districts are already threatened by falling groundwater levels.

Networks under Pressure

Many cities lack adequate water supply and distribution networks, treatment plants, and storage facilities. The existing infrastructure in urban cities is often outdated and unable to cope with the increased demand. The quality of water generated at filtration plants may be excellent, but it deteriorates as it travels via distribution networks.

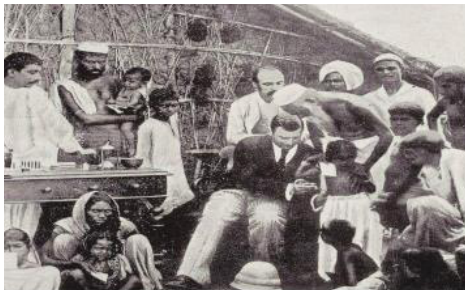
It is clear that water crises usually occur when access to clean and safe water is insufficient to meet the demands for drinking, sanitation, and other vital uses. The ripple effects of such a situation are profound. In cities, where people rely heavily on consistent access to clean water, the impact is even more severe.

From Drought to Disease

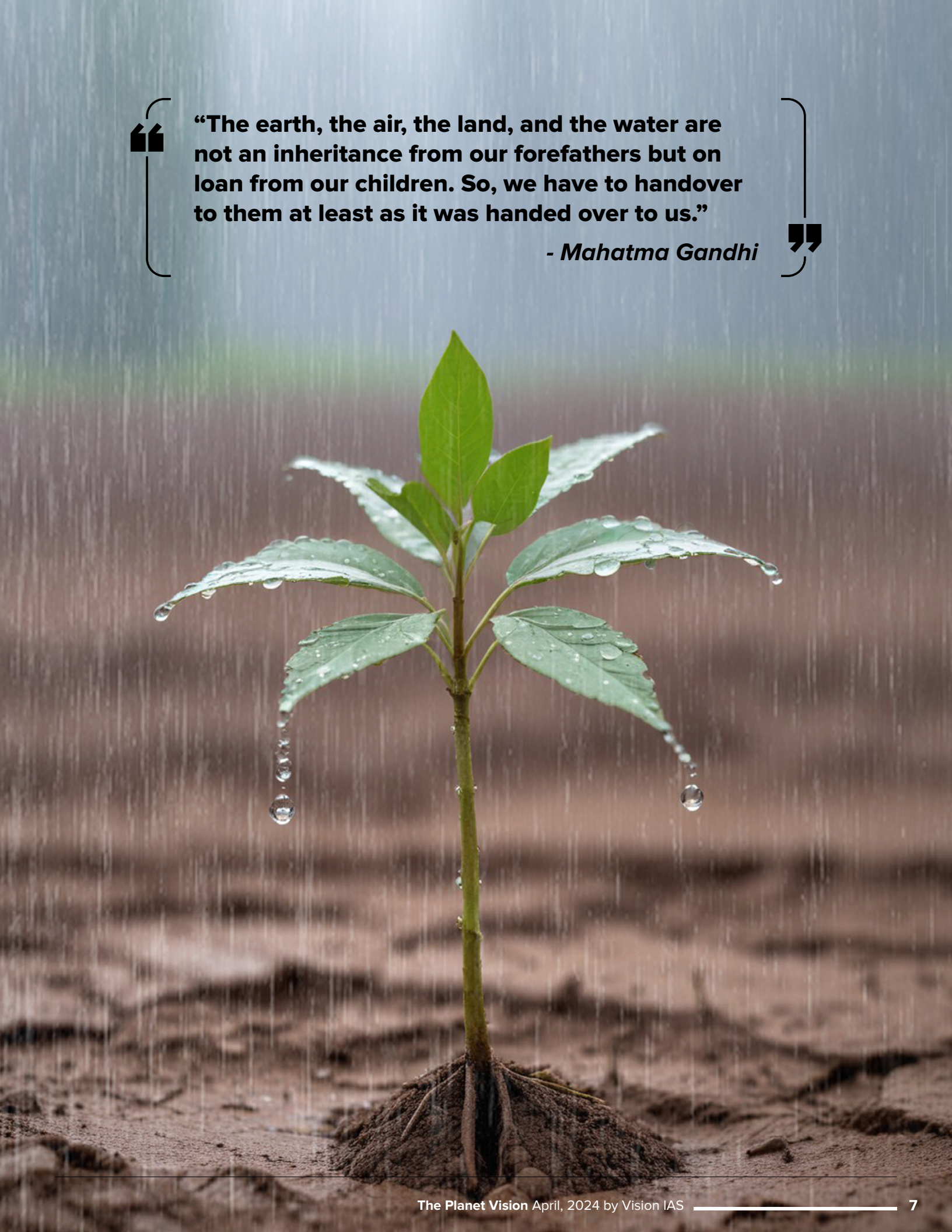
Water crisis is a key hindrance in achieving sustainable Development Goals (SDGs) particularly SDG 6 which calls for clean water and sanitation by 2030. When Chennai faced a devastating drought, its city's water network ran dry during the summer of 2019. This crisis had widespread effects, including the closure of public toilets and workplaces asking employees to work from home due to inadequate water for sanitation. The price gouging by private water tankers worsened the situation for low-income communities, leading to extortion and exploitation.

Overcrowded housing conditions, lack of availability of treated water, and lack of adequate sanitation facilities can often lead to water borne illnesses. Urban slums are particularly prone to such outbreaks. Kochi, in 2024, witnessed a rise waterborne disease due to a shortage of clean and fresh water. A spike in diarrhoea, typhoid, hepatitis-A and hepatitis-E cases were reported in the city.

The impact of water crisis does not affect everyone equally. Women are disproportionately affected by water shortages. As primary caretakers, they bear the brunt of household management in times of crisis, spending more time fetching water, which can lead to physical health burdens. Additionally, this increased exposure to public spaces for water collection heightens the risk of domestic, sexual, and physical violence against women.



Introduction of Anti Cholera education in Kolkata, 1894


“The earth, the air, the land, and the water are not an inheritance from our forefathers but on loan from our children. So, we have to handover to them at least as it was handed over to us.”
- Mahatma Gandhi

As pointed out by a UN report, the urban water Crisis may rise further in the future as India's water demand will be twice the available supply by 2030. Without a doubt, the role of the government, at all levels, in the management of the crisis is becoming increasingly prominent.

Flowing Forward

India is home to 18% of the world's population, but we have just 4% of the freshwater resources of the world. Creating water-secure communities is at the core of the Government of India's efforts in the water sector. Jal Shakti Abhiyan-I (JSA-I), is a unique initiative launched in 2019 in 256 water-stressed districts. It takes a holistic approach by focusing on water conservation and rainwater harvesting, renovation of traditional and other water bodies, in addition to watershed development and intensive afforestation. Under the scheme, Jal Shakti Kendras are set up in all districts as 'Knowledge Centres' responsible for guiding people to adopt water conservation techniques.

Encouraged by this, the "Jal Shakti Abhiyan: Catch the Rain" campaign, with the theme "Catch the Rain, where it falls, when it falls," was launched on World Water Day (22nd March) in 2021. It has become an annual feature, with a key component of generating awareness among citizens about the importance of water conservation.

In its efforts to streamline the management of water resources, the Government of India launched the Atal Mission for Rejuvenation and Urban Transformation (AMRUT) in selected 500 cities and towns. The mission focuses on the development of basic urban infrastructure in the Mission cities in the sectors of water supply, sewerage & septage management, stormwater drainage, green spaces & parks and non-motorized urban transport. However, mismanagement, unsustainable water use, and limited wastewater recycling still plague India's cities. Addressing these challenges demands an immediate embrace of innovative remedies.

Preserving the Past, Protecting the Future

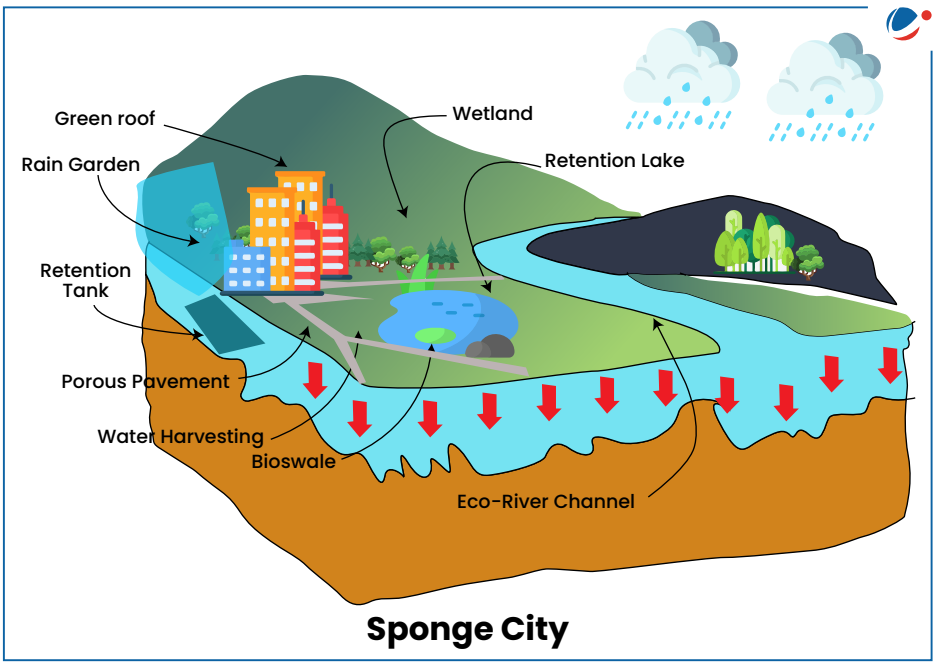
> Jal Shakti Kendras are set up in all districts as 'Knowledge Centres' responsible for guiding people to adopt water conservation techniques

Nature Based Solutions can be used to promote the implementation of green-blue infrastructure and the restoration of wetlands. By creating 'sponge cities'- that prioritize natural areas such as trees, lakes and parks- communities can harness the innate resilience of nature to manage water resources more effectively and recharge groundwater while mitigating the impacts of extreme weather events.

While the Government of India is consistently working towards improving access to water, participation of local people and institutions is also the need of the hour. Atal Bhujal Yojana was launched with a focus on community participation and convergence of ongoing schemes for sustainable groundwater management. Amrit Dharohar initiative was also launched to promote the unique conservation values of the Ramsar Sites in the country while generating employment opportunities and supporting local livelihoods.

Private sector can also be leveraged for environmental initiatives. Companies like Tata Steel demonstrate proactive measures such as commissioning the creation of Dimna Lake in Jamshedpur. Furthermore, there can be employed prioritise water conservation through practices like conducting water audits and implementing real-time, online monitoring to reduce freshwater consumption.

Utilising AI and cutting-edge technology also offer promising avenues for addressing the urban water crisis. Artificial Intelligence (AI) and Deep Learning (DL) techniques, along with the Internet of Things (IoT) framework, can help optimize water distribution, enhance efficiency, and curb water wastage. Delhi Jal Board (DJB), with the help of the Japan International Cooperation Agency (JICA), implemented a Pilot Project which used smart meters, field sensors, and Supervisory Control and



Sponge City

Dimna Lake Constructed in 1944, by Tata Steel to deal with the water scarcity in Jamshedpur

Data Acquisition (SCADA) Systems for real-time monitoring of the hydraulic health of water distribution network in Pitampura Area.

Further, regulatory policies should ensure the adoption of sustainable urban water management practices. Notably, in 2003, Tamil Nadu made rainwater harvesting compulsory in houses. These efforts can be supported by the revival of traditional water harvesting systems with the involvement of local people to ensure the long-term sustainability of water resources.

> Utilising AI and cutting-edge technology also offer promising avenues for addressing the urban water crisis

Today, India, the world's fifth-largest economy, home to 53 cities with million-plus population is facing threat of rising urban water crisis. The survival of our cities and the well-being of future generations are dependent on our collective determination to confront this existential crisis. The time to act is now

Chand Baoli, Rajasthan, one of the world's oldest, largest and most attractive stepwells

The water crisis in Indian cities serves as a wake-up call for all to embrace an overhaul in how we see and manage this valuable resource. By cultivating a culture of water stewardship and adopting creative solutions, we can pave the road for water-secure communities in which every resident has access to clean and plentiful water sources.

Snapshot

Urban Blue Space: Sustaining Modern Civilisation

Encroachment of the Water body

Can you identify what is common between Sukhna Lake, Hussain Sagar Lake, and Bhoj wetlands? These are us, the urban water bodies, that play a significant role in sustaining cities through different services provided by them. We (including wetlands) are important societal assets and have been popularly referred to as **'cradles of human civilization'** and **'kidneys of landscape'.**

Role of Urban Water Bodies

Bhoj Wetland, a Ramsar site in Madhya Pradesh Source: PIB

Birds hunting their prey

Water body as a feeding Ground Source: Wetland International

We are the Providers

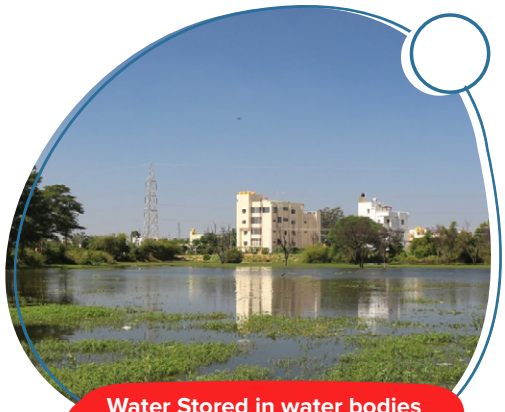
- We provide nutritious food in the form of fish, molluscs and crustaceans.
- We are the reservoir of the genetic resources and biomedical Material.
- We also ensure water for drinking.

We hold cultural significance

- We are significant from religious, historical and archaeological value.
- When the humans need leisure, we act as a popular recreational centre for different activities including hiking, fishing, bird watching, photography etc.

We act as a good Supporter for the ecosystem as well

- We act as a feeding and breeding grounds for Migratory birds.
- We also have the power to Accumulate organic matter which acts as a carbon sink.
- Not only this, we also specialise in storage recycling, processing and acquisition of nutrients.



Water Stored in water bodies helps in recharging groundwater.
Source: Mongabay

We can regulate certain things for humans

- We regulate Micro-climate; mitigate the urban heat island effect by providing evaporative cooling and shading.
- We also regulate water quantity and groundwater recharge.
- We also help in Regulating floods and the impacts of storms.
- We have the super power of retention of soils and prevention of structural changes (such as erosion, bank slumping and so on)

If water body could speak then she should have said– Aah! Human being you are not just killing me but you are also killing your future too.

But what have humans done to us?

- They have Encroached us due to rising pressure from Urbanisation.
- We have been treated with lack of dignity with rising pollution and dumping sites.
- We have been overexploited with reckless extraction of water due to high demand for drinking water, irrigation, industrial use, and recreational activities.

But not all humans are the same, some have tried to save us

- Many Lakes have been included under the list of Ramsar Wetlands.
- Some of us have been restored under Atal Mission for Rejuvenation and Urban Transformation (AMRUT).
- We are also part of the National Plan for Conservation of Aquatic Ecosystems (NPCA) and Amrit Dharohar Scheme

Restoration of urban water body is being done under the guidance of Earthwatch Institute
Source: Earthwatch Institute

How can Urban Dwellers save and benefit from us simultaneously?

- First and foremost, step is to prevent pollution of us.
- Zero tolerance approach should be adopted toward encroachment.
- Priority should be to Restore degraded versions of urban water bodies. Human communities should Promote afforestation.

The Unseen Burden: Women, Water, and the City

A long queue of women waiting to collect the freshwater
Source: YourStory

Have you ever tried to estimate how much time goes into collecting water per day? It's not 15, 30 or 60 min. An average Indian woman spends 1.5 hours every day on this task as per the National Sample Survey Organisation (NSSO) report of 2019. That's 10.5 hours a week which shows how Indian women spend a significant chunk of time dedicated to a seemingly ordinary chore. But this isn't just any chore. It's a backbreaking burden that disproportionately falls on women, often considered a traditional duty. This exposes a critical truth: the water crisis isn't just about availability; it's deeply linked to gender.

> An average Indian woman spends 1.5 hours every day on this task as per the National Sample Survey Organisation (NSSO) report of 2019.

How water crisis become gendered?

Particularly for women, water scarcity is a personal issue. The water is considered feminine because water collection falls under the purview of women. Comparable to how men are referred to as the "breadwinners" of their households, women are primarily referred to as the "caretakers." This caregiving includes ensuring that a family has sufficient resources to survive while taking care of cooking, sanitation and clean water. A report published in 2016 on the progress of SDG in Mumbai reveals that even amongst households with access to piped water on premises, frequency of access can be a problem, with 10.7% of slum households having access to water for less than 2 hours. As women shoulder the responsibility of collecting this precious resource, they are often trapped in a constant struggle for survival.

Women filling water from tankers
Source: Forbes India

While being unfairly burdened with responsibility for collection in many households, lack of clean water also disproportionately affects women and girls. This limited access has a domino effect on sanitation. Women in urban slums, often lacking private toilets, resort to dangerous open defecation. This makes the dream of clean water and sanitation, as envisioned by the UN's Sustainable Development Goal 6, seem distant. The narrative of water in urban India demands a rewrite – a story where women are empowered by equitable water distribution, not burdened by its scarcity.

It is clear that the water crisis is not an isolated issue; it's intricately linked to gender equity and social development. So, the critical missing piece in water management efforts is the underutilization of women's knowledge and leadership. This isn't a new revelation. The 1992 UN Conference on Environment and Development declared women "central" to water management. Yet, in India, these very women, the household water managers and farmers are systematically excluded from decision-making. Water conservation meetings and committees usually consist of male leaders who fail to understand the ground problems related to water crises. This not only undermines water management effectiveness but also hinders economic growth and development.

> Frequency of access can be a problem, with 10.7% of slum households having access to water for less than 2 hours

Women as changemakers

The solution lies in actively engaging and empowering women. When women participate in water user associations and public water management bodies, they bring valuable perspectives and knowledge to the table. This collaborative approach fosters successful water management and promotes sustainable resource development. Moreover, by empowering women to become water warriors, we not only address the immediate needs of families but also unlock the potential of a powerful change engine. Women, as a child's primary caregiver, significantly influence their perception of water. By educating both daughters and sons on water conservation practices, they can cultivate a generation of responsible water users.

Notably, the Government of India has been working to link women, particularly rural women, to water conservation and management efforts. The theme of the 5th Edition of Jal Shakti Abhiyan, Catch the Rain Campaign (2024) was kept as 'Nari Shakti Se Jal Shakti'. It was aimed at highlighting the key role played by women in water conservation and sustainable management of water resources. Moreover, Atal Bhujal Yojna ensures the representation of at least 33% of women members in the Gram Panchayat for the preparation of the water budget and water security plans.

76.45 % of Rural households in India now have tap water connections thanks to Jal Jeevan Mission

These projects underline the notion that women, as catalysts and change agents, can lead the way to a more secure water future. By recognising the unique challenges faced by women and harnessing their leadership, we can turn the tide on the water crisis.

The water crisis in India is deeply intertwined with gender, with women disproportionately burdened by the task of water collection. Empowering women as leaders in water management is crucial for addressing this issue and achieving sustainable development goals.

Timeless Strategies: Harnessing Traditional Wisdom for Water Conservation

Agrasen ki Bawari in Delhi's centre

Indian ancient texts and mythology are filled with stories about water. The tale of Bhagirath, king of Survanshi, is one example. The only one who could grant Bhagirath's ancestors nirvana after they were reduced to ashes by sage Kapil's curse was the river Ganga, so he wished she would descend from heaven and meet them on earth.

Helical Bawari

Finally, after a long time, Bhagirath succeeded in making Ganga happy. "I am prepared to descend to Earth at your command, but who can withstand the wrath of my mighty tides and flows?" he heard in the heavens. I may go to Patal Lok after sweeping the entire planet. Only Lord Shiva possesses the power and bravery to channel her, Ganga said when asked about a solution. These kinds of stories depict the importance of water and its conservation in India.

Rich tradition of Water conservation in Ancient India

Floods and droughts were commonplace in India, according to history. Perhaps this is the reason why the country's various regions have developed their own distinct traditional approaches to water management and conservation, which in turn reflect the cultural and geographical characteristics of each region. The fundamental idea behind all these methods is to save water wherever and whenever possible.

> Preserving and managing water resources has long been an integral part of ancient Indian science

Preserving and managing water resources has long been an integral part of ancient Indian science, according to archaeological evidence. The Indus Valley Civilisation's urban centres exhibited excellent water collection, storage, and conveyance systems, according to archaeological digs. A prime illustration of Water Engineering is the town of Dholavira, which is situated on a slope between two stormwater channels.

Jhalara

The use of water harvesting systems for irrigation is mentioned in Chanakya's Arthashashtra. Emperor Chandragupta Maurya ordered Pushyagupta Vaishya to build Sudarshan Lake in Junagarh, Gujarat. Later emperors like Ashoka and Rudradman renovated it. Near Allahabad, at Sringaverapura, was a complex water-harvesting system that stored Ganga floodwaters using the land's natural slope. Over the Cauvery River, Chola King Karikala constructed the Grand Anicut, also known as Kallanai, to redirect water for agricultural use, the structure is operational even today.

Bamboo-Drip-Irrigation

Water Conservation in Medieval India

Even before the climate change debate got started, Indians were building on centuries of tradition to collect, hold, and store water for future dry seasons. Jhalaras, rectangular stepwells with tiers on three or four sides, are typical in Jodhpur. Talabs are widely used in Bundelkhand to store water for domestic use. One of the many ancient systems of water storage in Rajasthani cities, baolis are distinctive stepwells.

Chola King Karikala's Grand Anicut

South Bihar is home to ancient floodwater collection systems called Ahar Pynes. The native Kuruma people of Wayanad rely on a unique kind of well-known as the panam keni to collect and store water. They make wooden cylinders, and soak toddy palm stems in water for an extended period of time until the inner core rots and only the tough outer layer is left. The aristocracy constructed baolis for public use as water sources for civic, strategic, or charitable purposes. In the northeast mostly people used bamboo drip irrigation.

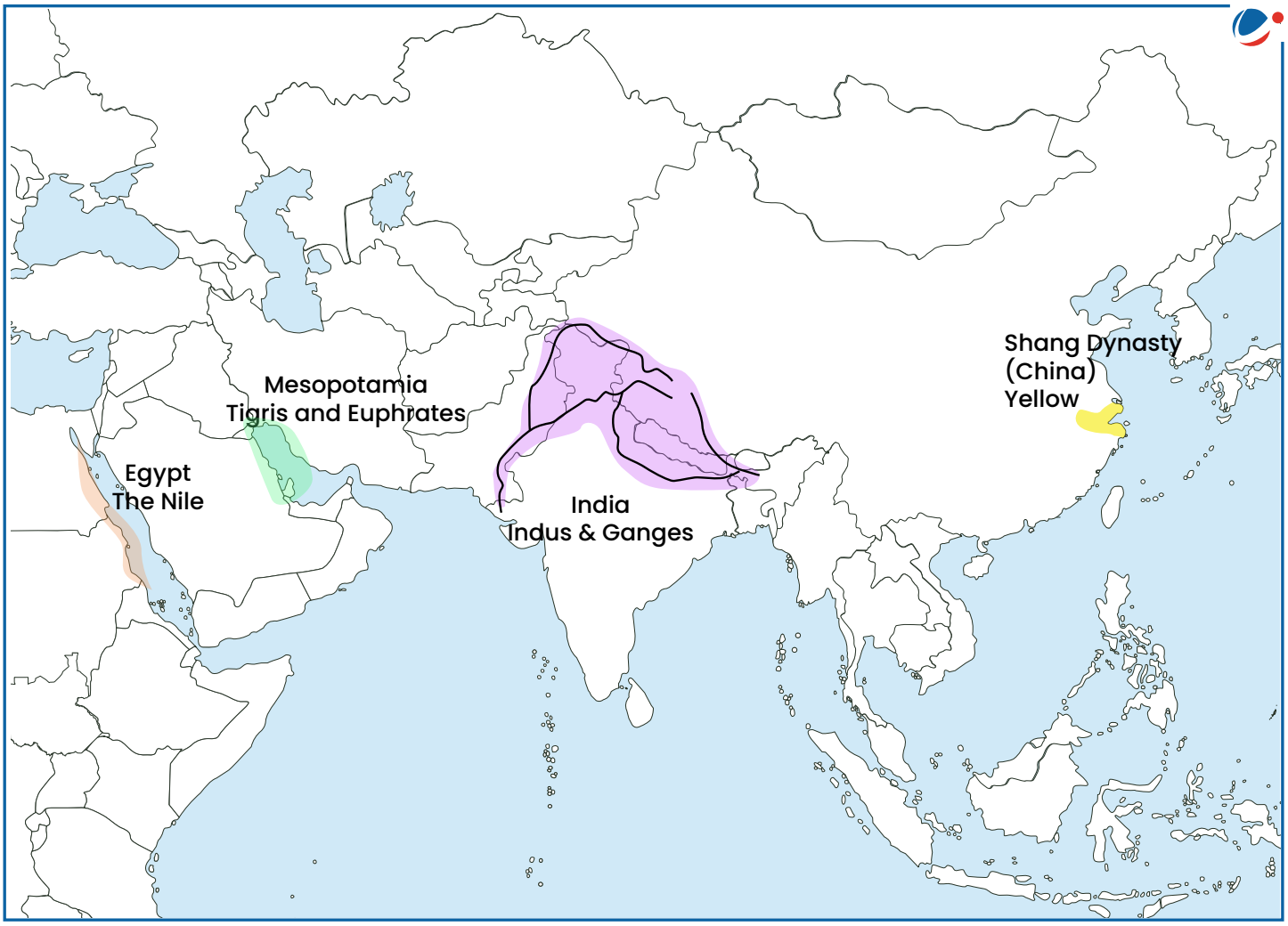
> South Bihar is home to ancient floodwater collection systems called Ahar Pynes.

Lesson from history to present water conservation efforts

Our ancestors were ingenious and wise enough to make water harvesting and management part of native culture and community life. These practices were considered sacred by the common man and good local self-governance and social responsibility by communities. This water wisdom at all levels of society ensured adequate water for all, laying the groundwork for overall development and prosperity. Let us revive and expand this ancient wisdom for our people to fight to water scarcity and climate change.

By embracing our heritage and combining it with modern practices, we can create a sustainable water management paradigm that not only quenches our thirst but also nurtures our ecosystems and strengthens our communities.

Rivers: The arteries of civilizations



Early Civilization of the world and rivers associated

According to the Greek historian Herodotus, the Nile River gave the ancient Egyptians their land. Water has always played an important role in determining where people choose to settle, from the first written accounts of human societies to today's global map. Whether it's the Harappan civilization in India's Indus Valley or Mesopotamia's rise and fall between the Tigris and Euphrates rivers, history demonstrates that human settlements' fates are inextricably linked to their water systems.

Let us demonstrate it with a question. Can anyone think of one or two large Indian cities that are not located on a river or lake? Most Indian cities are situated on rivers for example Delhi is on the Yamuna, Hyderabad is on the Musi, and Varanasi is on the Ganges, we can name many other cities on rivers or lakes but it is very difficult to name cities that are not on any water bodies.

Cities Spring to Life by rivers

For thousands of years prior to the beginning of agriculture, humans survived primarily through hunting and gathering. The "Neolithic Revolution" followed, marking the beginning of human domestication of animals and the cultivation of crops. People were able to settle down semi-permanently. We might think why only semi-permanent?

> The Neolithic Revolution followed, marking the beginning of human domestication of animals and the cultivation of crops.

At first, the people have to relocate after a few years after the depletion of the soil. It was only after the advent of techniques like irrigation about 5000 years ago, the people could rely on a steady and long-term supply of food. It made the permanent settlement possible and with

Boats on the side of the river

the food surplus possible due to these techniques, it was no longer necessary for everyone to farm. This allowed the development of other specialized trades and by extension cities.

Not only for drinking water and agriculture, but river-supported cities in many other ways as well. Firstly, rivers have facilitated transportation and trade, enabling the growth of early civilizations which was visible in the Harapan civilization as both Mohenjo-Daro and Harappa were on the Indus River. Additionally, rivers have provided a diverse range of livelihoods by offering valuable sources of food in the form of fish. Furthermore, they were used to transport military and ideas as visible in the spread of the Ashokan empire. They also hold cultural significance as well which led to the development of cities like Haridwar, Nashik, etc.

Cities destruction due to river wrath

From ancient times to the present, the fall and destruction of cities due to rivers are visible. Flooding has been considered one of the primary contributing factors to Mohenjo-Daro's collapse. There is evidence of flood defences, such as huge brick embankments built to keep the city level above water, but these weren't enough. Chennai has witnessed this phenomenon in recent years due to the Cooum River flooding. Recently, it has become very common where some cities are experiencing flooding and on the other hand some cities are experiencing water scarcity.

By 2050, 70 percent of the world's population will be living in cities. This phenomenon will yield consequences for the quality and quantity of surface waters, especially rivers. A river and a city are a perfect pair. Still, towns have an old habit of ignoring their rivers, they start growing in the course of the river. This, along with numerous other factors such as changes in river courses, climate change, and overdependence, has disrupted the delicate equilibrium between cities and rivers.

> By 2050, 70 percent of the world's population will be living in cities.

Balancing the river and cities

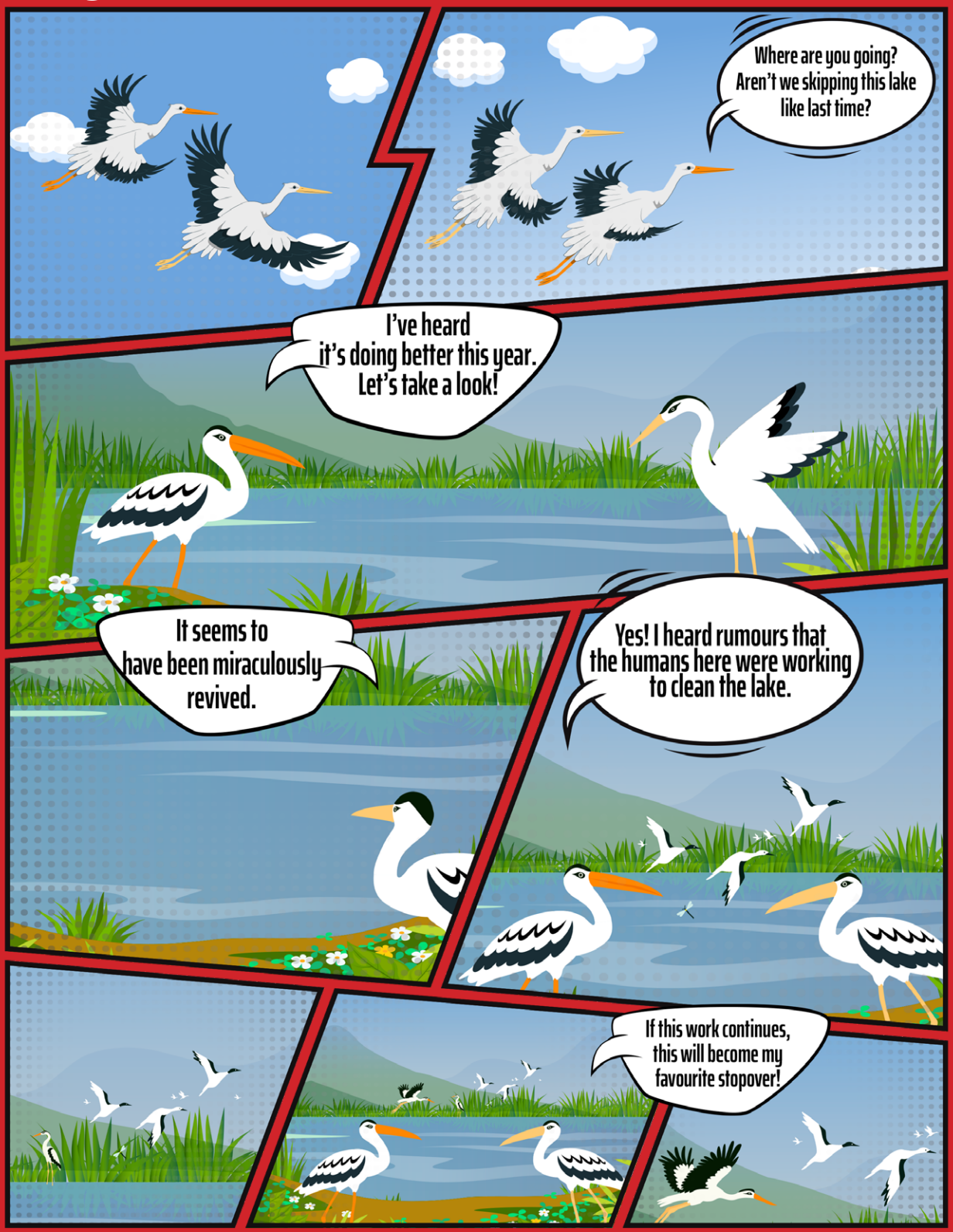
Cities across time have stretched to secure water. The Romans built aqueducts, the Mayans constructed underground storage chambers, and Hohokam farmers dug more than 500 miles of canals in what is now the U.S. Southwest, and in the Dholavira there was a focus on the system of reservoirs.

Every place is different when it comes to preparing for the challenges associated with the management of rivers. The government should focus on recycling water and regulating polluting industries along sustainable development along the riverfront suitable for particular areas.

The intrinsic connection between rivers and civilization is a testament to the profound respect our ancestors held for these natural wonders.

Comic Strip

Flight of Hope:Tale of the Transformed Lake



After a long absence of 20 years, migratory species like the Eurasian Spoon Bill, Godwit, Northern Shoveler, Northern Pintail, and Black Winged Stilt were seen at Varthur Lake in Bengaluru, Karnataka. A biodiversity-first approach was used to restore the lake. If this rejuvenation strategy is replicated, Bengaluru can once again be home to beautiful lakes that attract migrating birds.

Briefings

India

Supreme Court seeks to balance preservation efforts for Great Indian Bustard with India's renewable energy efforts

The Supreme Court has constituted an expert committee to identify the scope of installing overhead and underground power lines in areas considered 'Priority' for the conservation of the Great Indian Bustard (GIB). The committee must submit a report to the court through the government by July 31, 2024.

With fewer than 150 Great Indian Bustards left in the wild, the species faces a significant threat due to collisions with power lines in the Kutch and Thar desert WWF
Source: WWF India

The decision was taken during a hearing of an application for modification by the Union Ministry of Environment, Forest & Climate Change, Ministry of Power, and Ministry of New and Renewable Energy against an order issued in April 2021. The order had imposed several restrictions on setting up overhead transmission lines in certain areas of Rajasthan for the conservation of the GIB. Renewable energy generation in the area had been hindered as a result.

The Chief Justice of India (CJI)-headed bench emphasised balancing the preservation of the GIB with sustainable development, especially in meeting India's international commitments for promoting renewable energy sources. The court stressed the importance of leveraging scientific expertise and engaging stakeholders to ensure conservation efforts are evidence-based and inclusive. Moreover, the bench also held that Article 14 (Right to Equality) and Article 21 (Right to Life and Personal Liberty), are important sources of the right to a clean environment and the right against adverse effects of climate change

Plastic Waste Management Amendment Rules, 2024 Notified

Ministry of Environment, Forest and Climate Change (MoEFCC) has introduced the Plastic Waste Management Amendment Rules, 2024 (PWM Rules 2024) to address India's growing plastic waste crisis. Earlier, the Plastic Waste Management Amendment Rules, 2021 had banned certain identified single-use plastic items, with low utility and high littering potential, with effect from 1st July 2022. The PWM Rules 2024 introduced key improvements, such as enhanced assessment, centralized registration, stricter single-use plastic elimination, expanded Extended Producers' Responsibility, improved data collection, and clarification of stakeholder definitions.

Plastic Waste Management Amendment Rules, 2021 had banned identified single-use plastic items.

Local bodies will be now responsible for assessing annual plastic waste generation and estimating future generations for the next five years. Now, the Producers, Importers and Brand Owners who introduce any plastic packaging in the market shall be responsible for the collection of such plastic packaging.

A centralised online portal simplifies registration for producers, importers, brand owners, and manufacturers of commodities made from compostable plastic or biodegradable plastic. The amendments also clarified stakeholder definitions, provided a precise definition for "biodegradable plastics," mandate FSSAI certification for certain compostable plastics, and outlined specific labelling requirements for different plastic types.

India set to establish International Big Cat Alliance headquarters

The Union Cabinet has approved the establishment of the International Big Cat Alliance (IBCA) with headquarters in India. It has also sanctioned a one-time budget of Rs.150 crore for five years from 2023-24 to 2027-28. The alliance was launched in April 2023, commemorating the 50th anniversary of Project Tiger. It has been conceived as a multi-country and multi-agency coalition. The coalition's participants includes diverse members with around 96 big cat range countries, non-range countries interested in big cat conservation, conservation partners, scientific organizations, and corporates.

Protecting big cats and the ecosystems in which they live is a top priority for the International Big Cat Alliance

The alliance's goal is to secure collaboration in the conservation of seven big cats: lion, tiger, leopard, cheetah, snow leopard, jaguar, and puma. Five of these cats, all except jaguar and puma, are found in India. Protecting big cats and their habitats will help in maintaining ecological balance and mitigating climate change.

Government notified methodology for Calculation of Green Credits (GC) for Tree Plantation Activity

On the recommendation of the Indian Council of Forestry Research and Education (ICFRE), the Ministry of Environment, Forest and Climate Change has notified methodologies for calculating green credits generated through tree plantation. The methodologies have been notified under the Green Credit Rules, 2023. The rules have put in place a mechanism that encourages voluntary environmental positive actions resulting in the issuance of green credits. Tree plantation is one of the eight activities under the Green Credit Program (GCP), launched in October 2023. The program aims to increase green cover by encouraging tree plantation on degraded land.

Green Credit System can help India to meet its climate change and other environmental goals.

According to the methodology, one grown tree will amount to one GC, subject to a minimum density of 1100 trees per hectare. The Forest Department of every State and Union territory are responsible for identifying degraded land parcels under their administration that can be utilised for increasing green cover. These identified land parcels must be free from all encumbrances and measure 5 hectares or above.

India's largest solar battery project unveiled by SECI

Battery Energy Storage System (BESS) in Chhattisgarh
Source: PIB

In a significant step towards clean energy, the Ministry of New and Renewable Energy has commissioned the country's largest Battery Energy Storage System (BESS) in Rajnandgaon, Chhattisgarh. A BESS is a system that stores electrical energy by converting it into chemical energy stored in batteries. This stored energy can then be released back to the grid when needed. The 40MW/120MWh BESS, working in tandem with a 153MW solar PV plant, aims to address two key challenges: meeting Chhattisgarh's peak energy demand and fulfilling its renewable energy purchase obligations.

The project leverages the BESS to store solar energy generated during peak sunlight hours for use during periods of high demand, showcasing a sustainable approach to energy development. This innovative project is expected to significantly reduce CO2 emissions annually. Additionally, long-term power purchase agreements will ensure its economic viability.

Nagpur Launches Zero Carbon Buildings Action Plan

Nagpur has taken a significant step towards becoming a sustainable city by launching India's first Zero Carbon Buildings Action Plan (ZCBAP) in March 2024. A net-zero building, also known as a zero net energy (ZNE) building, is designed to be highly energy efficient and use renewable energy sources to meet its operational energy needs. This significantly reduces the building's reliance on conventional fossil fuels and its overall carbon footprint.

Nagpur becomes the first Indian state to launch ZCBAP [Representative Image]

The plan is a collaborative effort led by the Nagpur Municipal Corporation (NMC) and the Nagpur Smart and Sustainable City Development Corporation Limited (NSSCDCL). It is noteworthy that Nagpur received international support for this initiative from organizations like the World Resources Institute, the Global Environment Facility, the United Nations Environment Programme, and ICLEI South Asia. This forward-thinking action plan aligns with India's nationally determined contributions (NDCs) under the Paris Agreement and its ambitious goal of achieving net-zero emissions by 2070.

Global

European Court of Human Rights landmark ruling on Climate Change

The European Court of Human Rights (ECtHR) has empowered citizens to hold their governments accountable for climate action with a landmark ruling in favour of elderly Swiss women. These women successfully argued that the government's insufficient efforts to combat climate change put them at risk during heat waves. They cited the reports by the Intergovernmental Panel on Climate Change (IPCC) the United Nations body for assessing the science related to climate change. The Swiss government is now obliged to update its climate change policies. This decision, based on a case brought by over 2,000 women climate activists, has the potential to significantly impact European nations and set a precedent for climate litigation based on human rights violations.

This groundbreaking ruling champions environmental protection efforts worldwide. Their celebration of the ECtHR decision reflects the growing global movement demanding stronger climate action from governments.

European Court of Human Rights upheld Human rights in the face of escalating climate change
Source: ECHR

This ruling empowers citizens, much like those in the US, who can leverage legal channels to fight for environmental protections to hold their governments accountable for inaction on climate change.

Only 7 countries met WHO PM2.5 Guidelines: IQAir World Air Quality Report

The 6th Annual World Air Quality Report for 2023 by IQAir reveals significant air pollution challenges globally. Only seven countries, including Australia, Estonia, Finland, Grenada, Iceland, Mauritius, and New Zealand, meet the World Health Organization's (WHO) annual PM2.5 guideline.

Bangladesh, Pakistan, India, Tajikistan, and Burkina Faso rank as the most polluted countries, exceeding the guideline by up to 15 times. Central and South Asia house the world's ten most polluted cities, with Begusarai, India, being the most polluted metropolitan area. These findings underscore the need for more comprehensive air quality monitoring networks to address this significant public health issue. Improved monitoring will enable governments to implement targeted policies to reduce air pollution and protect public health.

2023 IQAir World Air Quality Report reviews the status of air quality around the world
Source: IQAir World Air Quality

UNESCO Adds 18 New Global Geoparks

UNESCO's announcement of 18 new Global Geoparks brings the total to 213 sites across 48 countries, providing a diverse range of places for tourists interested in geology, culture, and sustainability. These geoparks are more than just geological marvels; they also display the natural, cultural, and intangible heritage of their particular areas.

UNESCO Global Geopark Network
Source: United Nations

Out of the 18 new Global Geoparks, 6 are from China. The others are located in Brazil, Belgium the Netherlands, Croatia, Denmark, Finland, France, Greece, Hungary, Poland, Portugal, and Spain. One of the most popular geoparks on the list is Meteora Pyli Geopark in Greece, which is well known for its dramatic rock formations and the historical significance of the perched monasteries, making it not only visually striking but also culturally captivating.

Financing Agrochemical Reduction and Management Programme Launched

Seven countries, including India, Ecuador, Kenya, Laos, Philippines, Uruguay, and Vietnam, have partnered to combat pesticide and plastic pollution in agriculture through the $379 million Financing Agrochemical Reduction and Management Programme (FARM). The initiative, led by the UN Environment Programme and funded by the Global Environment Facility, aims to reduce the environmental impact of harmful agrochemicals and promote sustainable farming practices.

FARM programs seek to tackle pesticide and plastic pollution
Source: UNEP

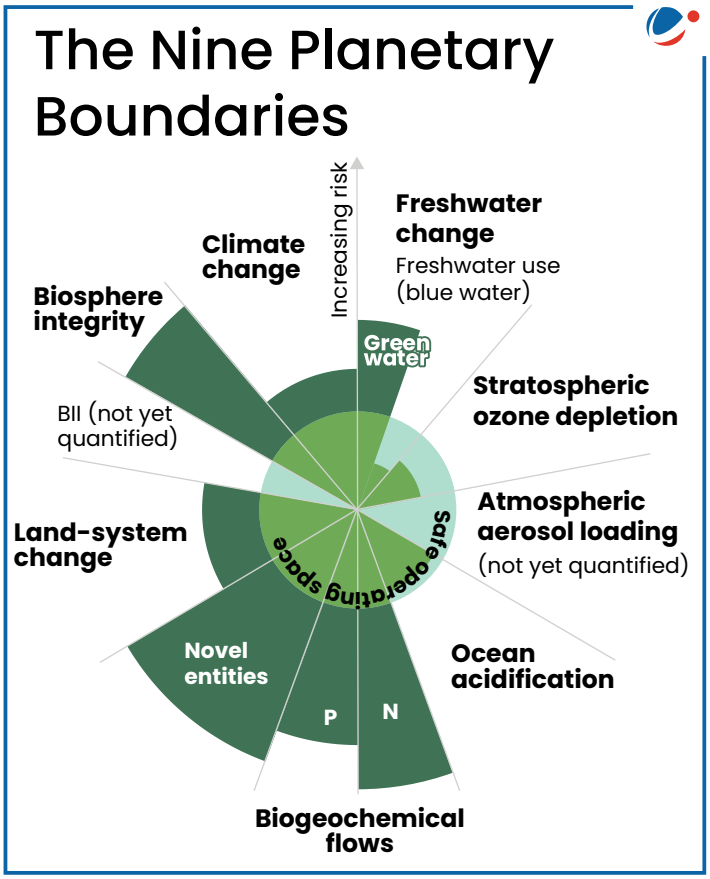
FARM aims to shift resources towards low-chemical and non-chemical farming methods, support regulations to phase out toxic agrochemicals, improve access to sustainable pest control solutions, and facilitate trade in environmentally-friendly produce. Over five years, the program aims to prevent over 51,000 tons of hazardous pesticides and 20,000 tons of plastic waste.

Tyler Prize Winner Announced

Johan Rockström, a leading environmental scientist, has been awarded the prestigious Tyler Prize by USC Dornsife for his groundbreaking work on the "Planetary Boundaries" framework. In simple words, the Planetary Boundaries are the systems that keep our planet habitable. Damage to these systems could trigger issues such as climate

change, species extinction, and pollution, making it more difficult for all of us to survive on Earth.

Rockström's research identified nine crucial Earth system processes that underpin human life. He then defined the environmental limits, or "planetary boundaries," within which these systems can safely operate. By exceeding these boundaries, we risk triggering large-scale, irreversible environmental changes. His work has significantly influenced policy-making and public responses to climate change, including the United Nations Sustainable Development Goals (SDGs). The official award ceremony will take place on May 17, 2024, in Potsdam, Germany.



United Nations (UN) Launches 'Weather Kids' Campaign

The UN launched the 'Weather Kids' campaign in collaboration with the World Meteorological Organization and the UN Development Programme on March 23. This initiative features children worldwide presenting fictional yet scientifically accurate weather forecasts to raise awareness about climate change. Airing in over 80 countries ahead of World Meteorological Day, the campaign highlights the dire consequences of rising temperatures, including threats to children, food security, and the global economy.

The children's plea emphasizes the significance of climate action for their future. Adults are urged to pledge action through voting, sustainable financial decisions, and educating themselves on climate solutions. WMO Secretary-General Celeste Saulo underscores the urgency of addressing the climate crisis, with extreme weather events escalating. UNDP Administrator Achim Steiner emphasizes the importance of immediate, substantial action to combat climate change, supported by global celebrities and UNDP Goodwill Ambassadors.

United Nations 'Weather Kids' campaign
Source: World Meteorological Organisation

Every drop matters: Water Conservation is the need of the hour

Water's preservation begins with a single drop, each individual's effort pooled into an ocean of conservation. [Representative Image]

Do you know that only about 1%, or roughly 1,170 cubic kilometres (280 trillion gallons), of the world's water, is fresh and readily available for drinking and everyday use? This makes freshwater a highly rare and precious resource, so every drop counts! It's easy to take this essential resource for granted, but even small changes in our daily routines can make a big difference. For example, by simply turning off the faucet while brushing your teeth in the morning and before bedtime, you can save approximately 30 litres of water each time. Think about it – that's like saving 6 bathtubs full of water every month, just from this one small change! Imagine the impact if everyone did the same.

Why does individual action matter?

Growing pollution and global warming are negatively impacting the availability of fresh and clean water. With less clean water available, everyone needs to do their part to conserve. Every drop saved by individuals adds up to a collective impact, ensuring a sustainable water supply for ourselves and future generations. Conserving water isn't just about personal needs; it's about showing compassion for others. What we waste today could be a lifeline for someone struggling to access clean water, a basic human right that remains out of reach for many.

> Only about 1%, or roughly 1,170 cubic kilometres (280 trillion gallons), of the world's water is fresh and readily available for drinking and everyday use

Now is the time to preserve water since it will ensure a safe supply for future generations. Don't delay – take action today!

Long soaking baths are indeed relaxing, but if water conservation is your priority, a short shower or a filled bucket uses significantly less water than a bathtub.

Skip the running faucet while brushing your teeth. A simple mug filled with water is all you need for a quick rinse.

For those with limited outdoor space, trade the hose for a watering can when caring for your balcony.

Collect rainwater in buckets placed strategically outdoors. This free water source is perfect for watering plants and even some household chores.

Collect and reuse condensate water from ACs and ROs for tasks like laundry. This readily available water is a great way to reduce your reliance on tap water.

If it's time for a toilet upgrade, consider a low-flow model. These toilets use less water per flush, saving you money and water in the long run.

Avoid running the faucet when mopping floors. Instead, use a bucket filled with cleaning solution to clean your floors efficiently.

Ditch the hose and opt for a bucket wash for your car. You can use a water-efficient car wash solution and microfiber cloths to get a sparkling clean without wasting gallons of water.

Turn off the faucet while washing dishes and use a bowl to catch the rinse water.

If allowed in your area, you can use greywater [disposed of wastewater from showers, baths, and washing machines (not toilets!)] for watering plants or flushing toilets (depending on the system).

Water-Saving Hacks for Everyday Life

Do you also want to save water at home?
Here is how you can be a water warrior yourself and save water, every single day:

Remember, every drop counts! By using these tips, you're not just saving water, you're becoming a true Water Warrior!

6 Water Warriors of India: Lighthouses of Hope

In the heart of India, where the land stretches thirsty under a relentless sun, a new kind of warrior rises. These warriors fight with an unwavering determination to save the lifeblood of our land – water, earning them the title of 'Water Warriors'. These warriors are working to revive our water resources to provide water for everyone. Each one is a lighthouse of hope in the fight against a dry future. Let's hope the stories of these water warriors can inspire us to safeguard water sources for future generations.

Dr. Rajender Singh
Rajasthan

With his determination, Dr. Rajender Singh, popularly known as the "Water-man of India", changed the desertification fate of his district- Alwar, located in Rajasthan. Singh took the initiative to alleviate his village's water crisis, which was caused by depleting groundwater owing to deforestation and mining. He restored the traditional rainwater gathering structures called johads in the village. These ancient earthen dams capture monsoon rains, storing water for dry periods and replenishing the underground aquifers. Singh led the restoration of a staggering 3,000 johads, working alongside local communities. The impact? A 33% increase in forest cover, thanks to the improved water retention, and a dramatic 6-meter rise in the groundwater table, bringing life back to parched lands.

Aruna Das stepped up to address the issue of flooding and water management issues in her village in Assam. She formed Women Water User Groups (WWUGs), empowering the women of her community to take charge of their destinies. Together, they tackled the challenges of safe drinking water, dam-induced floods, and winter water scarcity head-on. Aruna demands the construction of an embankment to safeguard her people. Her efforts didn't go unnoticed; she emerged as a prominent leader, rallying her village towards a brighter future. Her actions towards water conservation stand tall, a testament to the power of grassroots activism and unwavering determination.

Aruna Das
Assam

Anand Malligavad
Karnataka

Anand Malligavad's water conservation efforts in Bengaluru made him the 'Lakeman' of India. With a mechanical engineer's intellect and a visionary's heart, he set out to restore Bengaluru's ailing lakes, borrowing inspiration from the old Chola dynasty reservoirs. He utilized ancient knowledge and modern skills to review lakes' complex ecosystems, creating innovative restoration techniques like dam fortification, silt dredging, and native plant reintroduction. He revived over 80 lakes while overcoming challenges including encroachment and bureaucratic red tapism. It provided clean water to communities, a luxury once delivered by expensive tankers. Malligavad, a true water warrior, is on a mission to replicate his magic across other Indian states, proving that even in an age of technology, the wisdom of the ancients still holds the key to a sustainable future.

Gayatri Sharma
Rajasthan

Gayatri Sharma, a student started to literate her Bavdi village, Rajasthan people about water as she saw women battling the heat, walking miles with empty pots for water. That's when Gayatri decided to fight back and launched a one-of-a-kind program – a water literacy revolution! She educates villagers about rainwater tanks and other nifty structures, turning them into water warriors themselves. Young people, inspired by Gayatri's zeal, joined her mission. Together, they build rainwater harvesting structures and the rejuvenation of green pastures and biodiversity. The UN, recognising her unwavering dedication to water conservation felicitated her in 2023.

Ramveer Tanwar, a.k.a. the 'Pond Man' of India, alarmed by the shrinking water sources in his hometown of Dadha, Uttar Pradesh, decided to leave his job and fully engage in the work of preserving ponds and lakes. In 2018, Ramveer decided to turn his passion into action and founded an NGO- Say Earth. Say Earth trains locals in the art of pond restoration, passing on the knowledge and skills needed to keep these vital water sources healthy. Through his consistent efforts, 80 water bodies were restored ensuring cleaner water, a thriving ecosystem teeming with life, and empowered communities taking charge of their water future. With every restored pond, Ramveer isn't just creating a reservoir, he's building a network of water warriors, ready to combat drought and secure a brighter future for generations to come.

Ramveer Tanwar
Uttar Pradesh

Ganga
Madhya Pradesh

Babita Rajput
Madhya Pradesh

Agrotha village in Chhatarpur district of Bundelkhand region narrate the courageous water conservation story of Ganga and Babita Rajput. Ganga and her village women worked together to clean, remove silt, and build a check dam to address the issue of water despite initial resistance. Their efforts brought life to Baba Talaab; a 12-acre pond built by Chandela Kings but forgotten by villagers. Ganga's relentless fight for water conservation didn't go unnoticed. Her dedication earned her a prestigious honour from President Draupadi Murmu. But Ganga isn't alone in this fight. A short distance away, another water warrior emerges. Babita Rajput also leads 100 women on a mission to reconnect a dried-up pond to a nearby canal. By bridging this gap, they'll ensure that the life-giving rainwater finds its way back to the parched land, replenishing the pond and whispering promises of a greener future.

Snapshot

Nature's Canvas: Magnificence of Cherry

- Cherry blossoms, the symbol of spring's beauty in Japan, are in danger. Climate change is disrupting their natural bloom time, throwing off the delicate balance with pollinators.
- The planning of yearly cultural festivals has also been impacted, which has a detrimental effect on both the culture and economy.

Beyond Beauty: Unveiling the Significance

- In 2021, Fukushima's cherry blossoms peaked 10 days earlier.
- This disrupted the Sakura festival timing and the flow of tourists leading to a decline in revenue.
- Likewise, the Annual Shillong Cherry Blossom Festival in India has also lost its economy owing to irregular blossoming patterns.

Do you know?

Both Japan and India have cherry trees, but the varieties differ significantly. Japan's blossoms are from the Prunus serrulata species, known for delicate branches and pale pink flowers, while India's blossoms come from various species, including Prunus cerasoides.

Differences in blooming time

Japan's cherry blossoms bloom in spring, March-May, while India's blossoms have a wider window, November-March, due to climate variations across the country.

Sikkim & Meghalaya	: November - March
Nagaland	: 2 bursts - January- April and September - November
Kashmir	: March and April

India's Enchanting Blooms

Unlike Japan's focus on the delicate elegance of cherry blossoms, India boasts a stunning range of trees that bloom throughout the year.

Bioremediation: The TERI Way

Pre-bioremediation: a site in Mehsana, Gujarat
Source: TERI

Post-bioremediation: the same site after 2 months

Picture this - a massive oil tanker split open in the vast open sea, gushing forth a thick black tide of crude oil that spreads outward like a deadly stain. Waves quickly turn into an oily graveyard, killing every creature unlucky enough to be caught in the path of the toxic slick.

Seabirds thrash helplessly, their once vibrant plumage now an oil soaked, lifeless blanket weighing them down into the toxic sludge. Schools of fish rise gasping to the surface, glazed eyes bulging from their poisoned bodies before slipping forever beneath the ruined waters.

As the catastrophic spill plays out in slow-motion terror on TV screens around the world, it seems all hope is lost. But wait... What once looked like scenes from an apocalyptic Hollywood movie are now being rewound and remedied thanks to ingenious Indian biotechnology innovations - the Oilzapper and Oilivorous-S.

Oilzapper and Oilivorous-S: The Spill Savior

Developed by The Energy and Resources Institute (TERI) after seven years of research supported by the Department of Biotechnology (DBT), these bacteria-based solutions are proving to be powerful weapons against the devastating impacts of oil spills and sludge contamination.

What makes Oilzapper and Oilivorous-S truly remarkable is how their innovative “bio-remediation” approaches harness nature’s own mechanisms for rectifying industrial contaminations. Bioremediation is a process that uses living or dead biological systems to remove pollutants from the environment. From potential eco-apocalypse to environmental renewal, these microbial solutions are rewriting the storyline on oil spill cleanups across India.

> What makes Oilzapper and Oilivorous-S truly remarkable is how their innovative “bio-remediation” approaches harness nature’s own mechanisms for rectifying industrial contaminations

The Oilzapper is a bioremediation cocktail containing five different hydrocarbon-degrading bacterial strains immobilized and mixed with a carrier material (powdered corncob). When deployed, these micro-munchers feed on and biodegrade oil hydrocarbons and hazardous oily refinery sludges, converting them into harmless carbon dioxide and water through nature’s own cleanup processes.

For oil and sludge with higher sulfur content, TERI has developed Oilivorous-S, which is similar to Oilzapper but includes an additional bacterial strain to make it even more effective against these tougher contaminants. The Oilivorous-S was jointly developed by TERI’s microbial biotechnology laboratory and the R&D Center of the Indian Oil Corporation Limited (IOCL).

The benefits of these microbial solutions have been immense across India’s oil industry. The nation’s 16 refineries generate around 20,000 tonnes of toxic petroleum sludge annually that is costly to dispose of safely

in polymer-lined pits. But just 200 tonnes of Oilzapper can biodegrade that entire amount! Their application has already successfully treated over 26,000 tonnes of oily sludge and reclaimed more than 5,000 hectares of oil-contaminated cropland.

> Their application has already successfully treated over 26,000 tonnes of oily sludge and reclaimed more than 5,000 hectares of oil-contaminated cropland

Oilzapper and Oilivorous-S have completely cleared oil slicks in lakes and waterways across northeast India within two years. For offshore spills, they provide powerful bio-solutions to prevent environmental calamities by swiftly biodegrading the oil before it can wreak widespread damage. Even a 20% level of contamination can be remediated in just two months.

A Game-Changer for the Oil Industry

The innovative technologies have earned TERI numerous prestigious awards including the All-India Biotech Association Award, the DBT's Biotech Product & Process Award, the Jawaharlal Nehru Memorial National Gold Medal, and the Petroleum Ministry's National Award for Creativity and Innovation in R&D.

Application of Oilzapper on an oil-spill site in Assam
Source: TERI

Major oil companies like BPCL, IOCL, ONGC, OIL, HPCL and Reliance have all adopted Oilzapper, while TERI and IOCL jointly market Oilivorous-S. The microbial solutions are 30% more cost-effective than conventional physico-chemical treatments. Their ability to work in-situ avoids risky contaminated waste transportation, while completely destroying pollutants rather than just transferring them between air, land and water.

Ice Stupas: Ladakh's Saviour

Ice Stupa
Source: Council on Energy, Environment and Water

Do you remember the character of Phunshuk Wangdu from 3 Idiots, who solved difficult situations with his unconventional thinking and innovation? Well, this character was not fictional or imaginary! The inspiration for this character comes from the engineer Sonam Wangchuk, who won the Rolex Awards in 2016.

Sonam Wangchuk, Creator of Ice Stupa in Ladakh

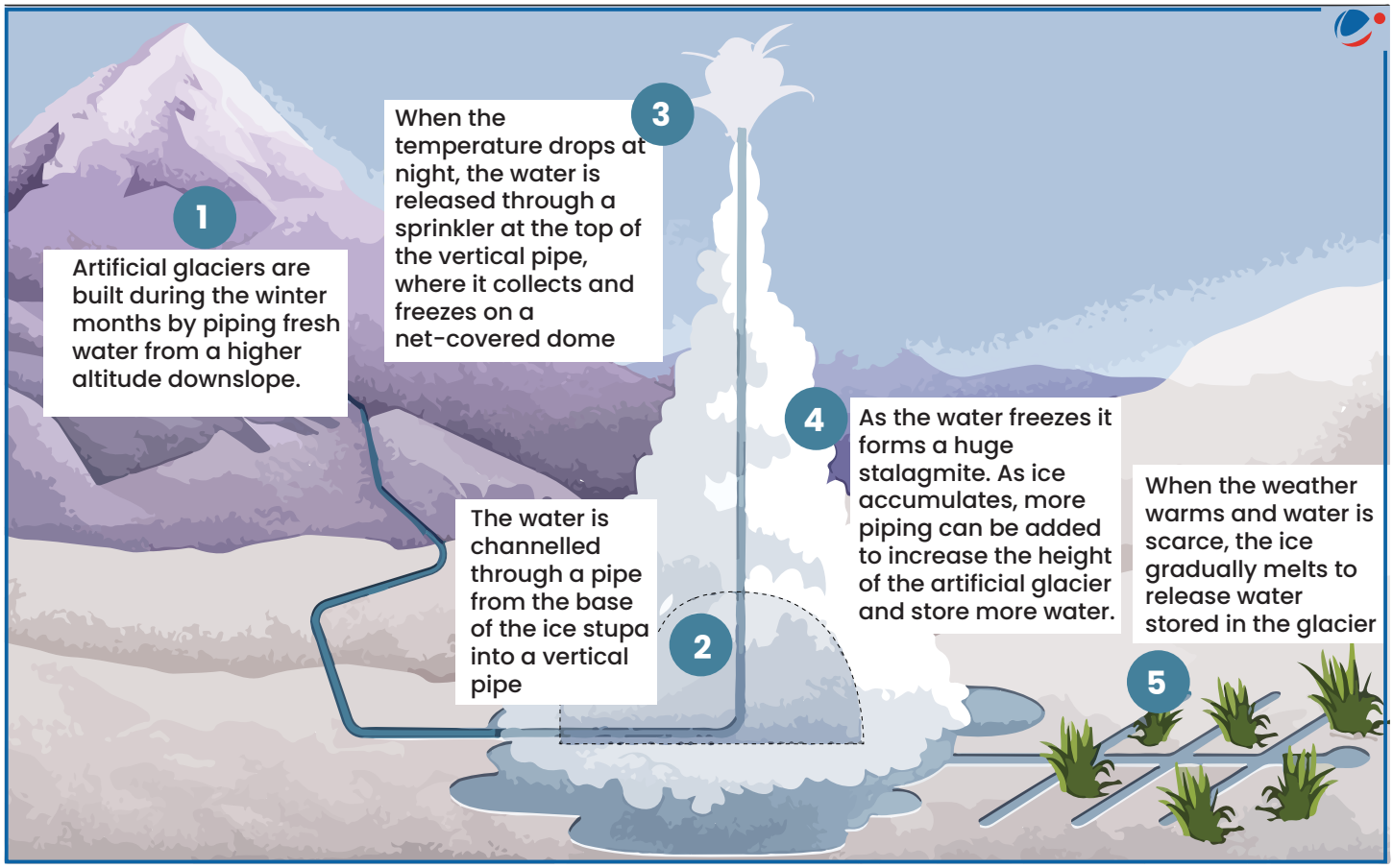
Inventor Sonam Wangchuk created "Ice Stupas" to counteract climate change's drying effects on Ladakh's water resources. Ladakh as the high-altitude desert region relies on melting snow and glaciers for its water supply. Rising temperatures and unpredictable snowfall patterns have led to water scarcity, especially during summer months. The Ice Stupas act as a supplementary water source by storing winter meltwater and releasing it slowly throughout the dry season.

What are Ice Stupas?

Ice stupas are a form of artificial glacier. The idea of storing water by grafting artificial glaciers is not new and was first introduced in the 1980s by Chewang Norphel. He developed a reservoir system to divert glacial water into man-made lakes. However, this system melted too quickly, causing water to run out before summer rains arrived.

But Sonam Wangchuk, a mechanical engineer and founder of the alternative school Students' Educational and Cultural Movement of Ladakh (SECMOL), aimed to improve the process. In 2013, Wangchuk discovered that the ice in Norphel's dams melted too quickly due to direct sunlight exposure. To create frozen stalagmites,

> "To create frozen stalagmites, Wangchuk created an irrigation system using a long pipeline buried underground and a narrower pipe, forming a large cone of ice resembling traditional Buddhist prayer monuments in Ladakh."



Making of Ice-stupa

Wangchuk created an irrigation system using a long pipeline buried underground and a narrower pipe, forming a large cone of ice resembling traditional Buddhist prayer monuments in Ladakh. He theorized that reducing the surface area exposed to sun and warm wind would make the artificial glaciers less high altitude and make them last longer, resulting in the creation of Ice Stupas, which solve the water scarcity problem of Ladakhi farmers in summer.

How does it work?

Ice Stupas are constructed in Ladakh during winter months using gravity to transport water from mountain streams via pipes. These pipes take the water to a lower point where it can fall freely through the cold Ladakhi nights where temperatures can drop to -30°C. The cold air then turns the water into ice before it hits the ground. As the water freezes, ice crystals accumulate layer by layer, forming a cone-shaped structure resembling Buddhist stupas. This conical design slows the melting process compared to flat sheets of ice. These ice stupas then act as reservoirs of water when they slowly melt in the summer, providing water for crops during Ladakh's scarce natural sources.

The beauty of Ice Stupas is their simplicity so a child can also make them. Moreover, it relies on natural forces (gravity and freezing temperatures) and requires no pumps, electricity, or fuel, making it an eco-friendly solution.

How Ice Stupas are Empowering Ladakh's Communities?

Ice stupas in Ladakh have been beneficial for both the environment and local communities. They provide an alternative water source, reducing reliance on receding glaciers and ensuring a reliable supply during dry periods. They also store winter meltwater, combating water scarcity and promoting sustainable water management practices.

For the communities, ice stupas improve crop cultivation, increase yields, and boost food security. Their construction and maintenance also creates job opportunities, boosting the local economy. The community-driven initiative of building and maintaining ice stupas fosters ownership and collaboration among residents, empowering them to address water challenges.

Seeing the success, the Ministry of Tribal Affairs also awarded SECMOL-LADAKH (Action Research project). The project involves establishing Ice stupas in 50 villages.

Ice Stupas of Ladakh in 2019-20 season

The 1st, 2nd and 3rd images are of biggest Ice Stupas from the villages of Igoo, Tarchit and Phyang. The last image is a stack of Ice Stupas constructed in Gangles Valley during an Ice Valley prototype project to save and later supply water to downstream villages and, eventually, Leh city.
Source: PIB

Flowing Forward: Harnessing Technology to Tackle the Water Crisis

Integration of technological solutions can unlock greater efficiency, resilience, and sustainability in the water domain.

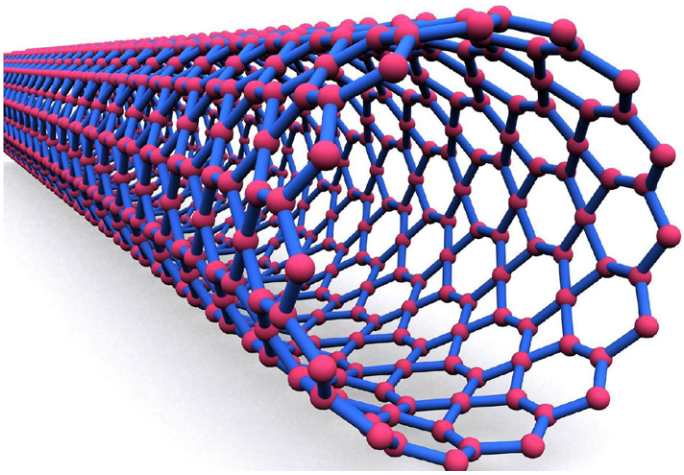
Water is the source of all life, yet access to this vital resource is becoming increasingly scarce. According to UNICEF, globally, over 2.2 billion people do not have access to safely managed drinking water services, and 4.2 billion people lack access to safely managed sanitation. And the problem is only expected to worsen in the coming decades due to a storm of challenges - from population growth and urbanization to climate change and pollution.

Amidst this bleak picture, however, there is ray of hope. Advances in technology are providing innovative new tools and approaches to tackle the global water crisis head-on. Let's explore some of the key ways that technology can be leveraged to address water scarcity and contamination around the world.

Water Purification

One promising new technology is acoustic nanotube filtration. It utilizes ultrasonic vibrations to rapidly push water through carbon nanotube membranes, which enables water molecules to pass while retaining contaminants. It can remove even the smallest contaminants like viruses and heavy metals.

It was first initiated by NASA for wastewater treatment on the International Space Station. It was specifically designed to recycle water in space. But now, it has far-reaching

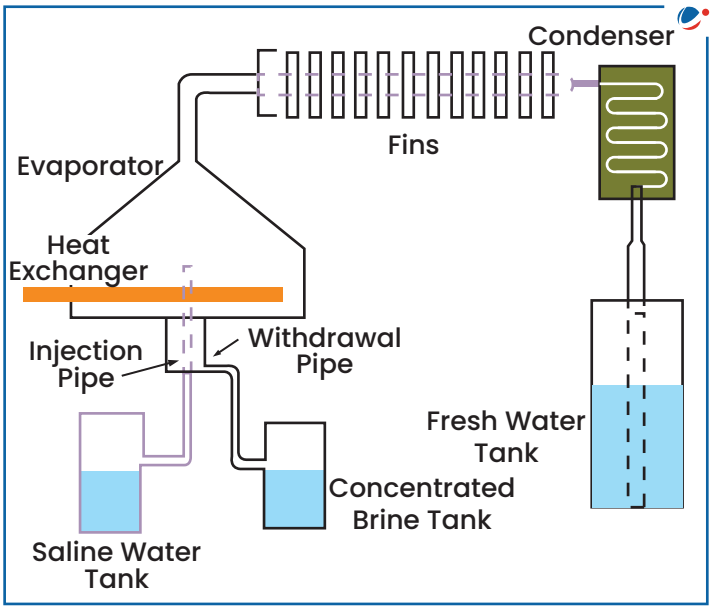


applications on Earth as a solution to the clean water crisis as well. Some other technological advancement related to water purification includes Photocatalytic purification, Automatic Variable filtration, etc.

Desalination

In the desalination process, salt is removed from saltwater to produce freshwater. It is highly popular, especially in West Asia. In this regard, recently, Low Temperature Thermal Desalination (LTTD) technology was demonstrated by the National Institute of Ocean Technology (NIOT) under

Union Ministry of Earth Sciences in the Union Territory of Lakshadweep.

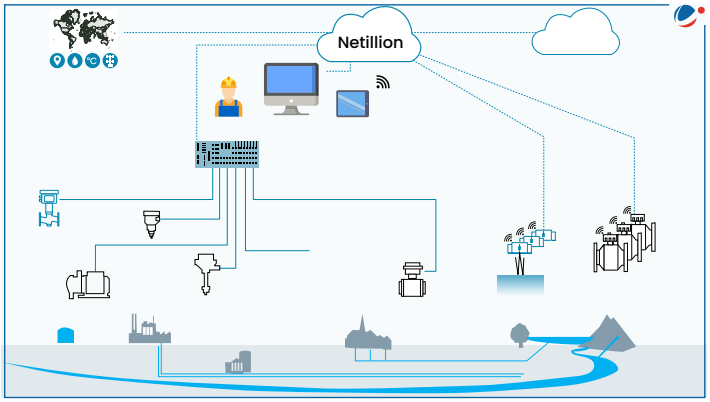


Low Temperature Thermal Desalination (LTTD) technology

LTTD is an indigenous and robust technology that exploits the difference in temperature (nearly 15°C) in ocean water at the surface and at depths of about 600 feet, for conversion of sea water to potable water. It is a promising technological intervention which can play a key role in addressing freshwater scarcity in water-stressed regions across the globe.

Smart Water Infrastructure

"Smart" water technologies like advanced metering, sensor networks, and data analytics can provide real-time monitoring of water supply and demand, detect leaks, and optimize water distribution. This kind of "intelligent" water infrastructure can help utilities, industries, and communities better understand their water use patterns and take targeted actions to reduce consumption. Mobile apps and other digital tools are also empowering citizens to track their own water usage and adopt water-saving behaviors.



Smart Water Infrastructure

Central Water Commission (CWC) is collaborating with Google in the fields of Artificial Intelligence (AI), machine learning, geospatial mapping, and analysis of hydrological observation data. Digital tools like those from Internet of Things (IoT) devices, wireless sensor networks, and ICT, in addition to AI and Big Data Analytics, are also being proposed for monitoring surface water quality.

Wastewater Treatment

Membrane Bioreactor (MBR) technology is an advanced wastewater treatment technology with specifically-designed chamber to support a biologically active environment, where bacteria, protozoa, etc., can grow and consume some (or all) the substances within the raw wastewater.

It can enable safe recycling of wastewater for non-potable uses like irrigation, industrial processes, and toilet flushing. This not only alleviates pressure on freshwater sources, but also reduces the energy and costs associated with treating wastewater.

Many cities in India like Delhi, Mumbai, Panipat, among others have successfully implemented MBR technology. It has also been adopted by the Jawaharlal Nehru National Urban Renewal Mission (JNNURM) as suitable technology for Indian conditions.

Similarly, bio-augmentation, bio-stimulation, etc., can also be utilized for more efficient and effective treatment of municipal, industrial and other wastewater.

Agricultural Efficiency

New irrigation technologies like drip systems, soil moisture sensors, and precision sprinklers can significantly reduce agricultural water use without compromising crop yields. Similarly, advancements in seed breeding, precision farming, and hydroponics are also helping to grow more food with less water. Combining these agricultural innovations with digital tools for real-time monitoring and optimization can drive major improvements in water productivity.

Technology is a powerful weapon in the fight for water security, but it's not a silver bullet. Sustainable water management requires a multi-pronged approach. Educating communities on water conservation, investing in repairing aging infrastructure, and promoting water-efficient agriculture are all crucial pieces of the puzzle.

Achieving water security requires collective action, concerted efforts, and a commitment to harnessing the transformative power of technology for the greater good of humanity and the planet. By harnessing innovation and promoting responsible water use, we can ensure a future where clean water is a right, not a privilege, for all citizens of India and the world.

Global:
Quick Hits

USA

A recent study found that 86% of the nearly 10 million litter pieces collected from Great Lakes beaches since 2003 are partially or fully made of plastic.

Mexico

Mexico City is advancing towards a Day Zero scenario, where water is only available for essential services. Prolonged drought and high temperatures are exacerbating the issue.

Peru

Peru's government has declared an emergency decree to combat dengue, a mosquito-borne disease that has tripled deaths this year, largely due to climate change.

Argentina

Argentina's corn crop is expected to be cut by $1.3 billion due to a rare leafhopper insect plague.

UA

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Belgium

Belgium has become the first European country to acknowledge 'ecocide' -serious damage or destruction of the environment- as both a national and international crime. It adopted a new penal code that criminalises 'ecocide'.

Tanzani

Six new species o
including one fro
genus, were iden
Tanzania's Easter
Mountains, a glob
recognised biodi
hotspot.

India

India has experienced a 6% decrease in tree cover since 2000, with 2.33 million hectares lost, according to the Global Forest Watch monitoring project.

AE

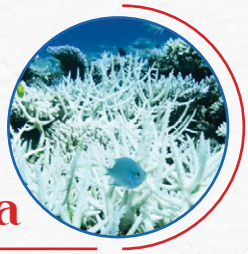
nced severe flooding after
ars' worth of rain in 24
are debating whether it
y climate change or
d seeding initiatives.

Taiwan

Taiwan experienced a magnitude 7.4 earthquake, the strongest in 25 years as per United States Geological Survey. It was followed by dozens of strong aftershocks.

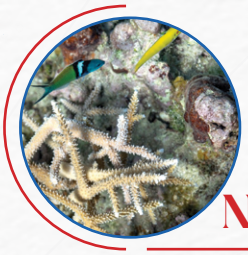
Vietnam

Vietnam experiences crop losses due to the seepage of saltwater into the Mekong Delta region, also known as "Vietnam's rice bowl."



Australia

Australia's Great Barrier Reef is experiencing one of its worst coral bleaching events. Experts believe the bleaching event was triggered by warming waters brought on by climate change.



New Zealand

New Zealand scientists have discovered 100 new marine species, including a unique star-shaped creatures, molluscs, fish, shrimp, and predatory squid, showcasing the vast diversity of our oceans.

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INDIAN OCEAN

N OCEAN

Tarun Bharat Sangh: Transforming Lives of Millions

Tarun Bharat Sangh (TBS) is a renowned community-led NGO, working towards the restoration of landscapes in the arid and semi-arid regions of India since 1975. Under the leadership of Waterman Rajendra Singh, TBS has been actively involved in making water everyone's concern.

Among other things, TBS works in different spheres such as water conservation and efficient water use. It has also played a pivotal role in the rejuvenation of the small rivers that have reached the critical stage of degradation such as Jahajwali River, Bhagani Tildeh River etc. For the revival of the river, 10,000 Johads (small earthen dams) were built by the villagers at strategic places in Rajasthan. Additionally, as the underground aquifers were recharged, rivers began to flow again and food supplies were secured helping those villages to become thriving communities again. Now the project is being replicated across India.

It is also interesting to highlight that with the help of the community, it is promoting micro irrigation systems like drip and sprinkler irrigation, which can save 50-70% of water compared to flood irrigation. It uses different means for this such as workshops, training sessions, and community meetings. Due to their efforts, more than 5000 farmers in Rajasthan's Alwar, Karauli, Dholpur, and Kota districts, as well as Haryana's Nuh district, have installed sprinkler systems.

They are making an effort to provide a comprehensive solution to the whole crisis. For instance, they are promoting afforestation in the different regions as a long-term sustainable measure.

Restoration work done by the Tarun Bharat Sangh NGO
Source: Tarun Bharat Sangh

Swachh Sujal Shakti Samman: Honouring Water Champions

To recognise the transformational role played by women, the Ministry of Jal Shakti has instituted the Swachh Sujal Shakti Samman. The Awards aims to bring women achievers from the grassroots to the forefront and connect them with national leadership, who can share their journey and thereby motivate others

Women understand the value of water at a deeper level and if water conservation is handed over to them, they will ensure exponential positive outcomes. Such awards will act as a nudge for other women of the country to come forward and

> ''We recognize the efforts of women in the Self-Help Groups and community-based organizations who have played a vital role in spreading awareness about the importance of water conservation, water management and sanitation''
>
> *The President of India*
> *Smt. Droupadi Murmu*

actively take part in bringing an affirmative social change into the society.

The awards celebrate women's leadership by felicitating women who have contributed extraordinarily under various flagship programs such as Swachh Bharat Mission – Grameen (SBM - G), Jal Jeevan Mission (JJM) and National Water Mission (NWM). For instance, Women representatives, Sarpanches, Swachhagrahis, Jal Vahini, Water Warriors, etc., from village/GP/Block/ District/State/UT are being honoured for their exemplary contributions.

President of India, Smt. Droupadi Murmu presenting the "Swachh Sujal Shakti Samman 2023"
Source: PIB

In 2023, awards were distributed on the occasion of International Women's Day. Women like Babita Gupta from Bihar and Munni Devi of Jharkhand were honoured at the occasion. Babita Gupta of Bihar was awarded for converting plastic waste into decorative products. These women would have never thought that their small step towards society would make them the new Champion of the social cause.

Corporate Water Stewardship: Connecting Drops of Water

When a water crisis arrives, it almost impacts everyone, be it the public or the private sector; rich or poor, although, the degree might vary. To prevent such a situation before it occurs, private sector companies have initiated the Corporate Water Stewardship (CWS) Program. CWS is an approach that allows companies to identify and manage water-related business risks. It allows them to understand and mitigate their adverse impacts on ecosystems and communities, and contribute to more sustainable management of shared freshwater resources.

CWS has emerged as a strategic approach for companies to mitigate water risks (Representative Image)

CWS is rooted in the concept that robust and effective public water governance is critical to the long-term business viability of water-intensive industries and that companies can play a role in achieving this end.

The private sector is increasingly reporting water as a material risk. Water risks like scarcity, floods, and droughts can cause operational and supplier disruptions, higher operational costs, brand damage, and heightened regulatory uncertainty. These risks pose threats not only to businesses themselves but the people who rely on them for employment and services. It is being supported by international and national organizations such as the Water Resource Institute (WRI).

Water stewardship is a set of practices – to be used by businesses, utilities, communities, and others – that promotes and fosters the sustainable and equitable management of freshwater resources. Water stewardship practices range from water-use-efficiency at an organization's operations, to engagement with suppliers, to long-term multi-stakeholder river basin projects, and beyond.

The Water Stewardship Journey

A typical progression from beginning to mature corporate water stewardship practice

CONTEXT

- Understand water stress
- Assess your value chain

STRATEGY

- Develop a company water plan
- Set meaningful targets
- Integrate water & climate strategies

ENGAGEMENT

- Drive collective action
- Facilitate robust public policy
- Engage communities Engage value chain actor

OPERATIONS

- Provide WASH services
- Measure & monitor performence
- Drive efficiency & reduce pollution

Water (Prevention and Control of Pollution) Amendment Act, 2024: Revolutionizing Water Governance

Thick foam of pollutant covers the Yamuna River in New Delhi

India introduced several environmental acts in the 1970s following the Stockholm Declaration of 1972. This declaration required states to approve legislative mandates to protect and improve the environment, including Water, Air and Forest. As a result, the Water (Prevention and Control of Pollution) Act, 1974, was enacted. It sought to address the growing concerns over water pollution and its detrimental effects on public health and the environment.

The Water Act laid down the groundwork for two vital entities- the Central Board for the Prevention and Control of Water Pollution and State Boards for the same purpose. Additionally, it provides for Joint Boards, uniting neighbouring states in a shared mission to safeguard their water resources.

> The Water Act laid down the groundwork for two vital entities- the Central Board for the Prevention and Control of Water Pollution and State Boards

Despite the existing legislative framework, India continues to grapple with alarming levels of water pollution and mismanagement of water resources. A need has been felt among environmentalists to address certain shortcomings and adapt the regulatory frameworks to contemporary needs. In a watershed moment, a new amendment has been enacted- the 'Water (Prevention and Control of Pollution) Amendment Act, 2024'. At first, the law will apply to Himachal Pradesh, Rajasthan, and union territories. Other states can hop on board simply by-passing resolutions to expand the law's reach to their own areas.

Revamping Water Pollution Control: New Changes in India's Water Act:

In the past, industries or treatment plants needed approval from the State Pollution Control Board (SPCB) before operating, especially if they might release pollutants into our waterways. However, the Amendment unveils a new chapter. The central government, in tandem with the Central Pollution Control Board (CPCB), gains the authority to exempt select industrial categories from seeking consent. Moreover, it empowers the central government to

issue guidelines governing the grant, refusal, or revocation of consent issued by the SPCB.

Drains Pouring into the River

As the guardian of the environment, SPCBs could issue directions to immediately restrain any activity which is leading to discharge of noxious or polluting matter in water bodies under the 1974 Act. The Act also prohibited violation of standards as laid down by SPCB regarding polluting matter in water bodies or on land, barring some exemptions. Violation of these provisions is punishable with an imprisonment term between one and a half years and six years, and a fine. The Amendment removes the punishment and instead, imposes a penalty between Rs 10,000 and Rs 15 lakh. It's a story of boosting environmental protection that can be achieved through fostering harmony between industry and nature.

> Penalties imposed by adjudicating officer will be credited to Environment Protection Fund

The new amendment also allows the central government to appoint adjudication officers to determine penalties under the Act. What's commendable is that any Penalties imposed by adjudicating officer will be credited to the Environment Protection Fund established under the Environment (Protection) Act, 1986. This aligns financial penalties with environmental conservation efforts.

Grasping the Importance of New Revisions

By decriminalising and rationalising minor offences, the amendment fosters ease of living and business operations without the fear of imprisonment for minor defaults. Exemptions for establishing industries reduce duplication of surveillance and unnecessary burdens on regulatory agencies, facilitating smoother business operations while maintaining environmental standards.

Streamlining the appointment of chairpersons of state boards with uniform qualifications and procedures ensures transparency in the selection process. Overall, the amendment seeks to strike a balance between economic growth and environmental sustainability, crucial for long-term prosperity.

Economic Growth or Environmental Sustainability: Do We Have to Choose? (Representative Image)

Concerns raised

There was active discussion in the Lok Sabha with several from the Opposition parties raising concerns that the amendments weakened the laws that protected rivers and water bodies from industrial pollution. According to environmental lawyers, although fines have increased, they are not high enough to deter polluters who have resources at their disposal.

These amendments mean that the pollute and pay principle has effectively become the pay and pollute principle. And that is why imprisonment must be a possibility at least for extreme and egregious cases.

The Act seeks to remove most of the state's existing powers to run SPCBs. Several political leaders have interpreted this provision as a central effort to infiltrate into a space that, so far, is held by state governments, stating that doing so is against the principle of federalism.

The Water (Prevention and Control of Pollution) Amendment Act, 2024, represents a significant milestone in India's journey towards sustainable water resource management and pollution control. Harnessing the wisdom of environmentalists, industry leaders, and community organizations through stakeholder consultations can help address concerns. Only through a collaborative and sustained effort can we truly harness the transformative potential of this landmark legislation and safeguard the precious water resources that underpin our nation's prosperity and well-being.

Geo Heritage Site: The Secret Keeper of Earth History

Lonar Lake is a lake created due to a meteorite Impact.
Source: Buldana District

Have we ever wondered what secrets lie beneath the earth's surface? Specifically, if we talk about India, it is the bedrock of some unexplored geological marvels. Our nation has unique geological features that provide insight into our planet's fascinating history. Landscapes across the Indian subcontinent bear evidence of a wide range of geological events, from life's evolution to mass extinction cycles preserved in fossil records. Meteorite impacts, volcanic eruptions that laid the groundwork for the Deccan Traps, continent collisions that gave birth to the Himalayas, Lakshadweep's coral atolls, the birth of rivers and how they shaped fertile river valleys, massive deltas, and the world's largest mangrove forests.

To preserve and understand the evolution of the earth there are geo-heritage sites across the world. Geo-heritage sites refer to sites that offer insights into the evolution of the earth and can be used for research, reference, and awareness. Some rocks, minerals, soils, and landscape had their genesis billions of years ago and are based on the uniqueness of geological formation and aesthetic appeal. The Geological Survey of India (GSI) has identified several Geo-heritage sites in India. Recently, GSI designated two sites as Geo-Heritage Sites: Pandavula Gutta and Ramgarh Crater. Let us understand and discover these natural wonders.

> Geo-heritage refers to sites that offer insights into the evolution of the earth.

Pandavula Gutta: Series of Ancient Caves

Pandavula Gutta caves are older than the mighty Himalayas. Consider how many secrets these caves have preserved over millions of years. Pandavula Gutta's walls and ceilings

Pandavula Gutta caves

are adorned with incredible Palaeolithic cave paintings, which add to its unique charm. These paintings, created by our prehistoric ancestors, provide us with a unique insight into their lives and cultures. We can see breath taking depictions of wild animals such as mighty bison, majestic antelopes, ferocious tigers, and stealthy leopards. But that's not all; the caves also contain fascinating geometric shapes like swastikas, circles, and squares, as well as drawings of weapons such as bows, arrows, swords, and lances. It's like stepping back in time to see our ancestors' lives, beliefs, and artistic expressions.

Ramgarh Crater: The massive crater

Now, let's travel to Rajasthan's desert landscapes to see the Ramgarh Crater, a remarkable site formed by a massive meteorite impact millions of years ago. This massive crater, with a diameter of over 3 kilometres and a height of over 200 meters, is one of only three confirmed meteorite impact craters in India, the others being Lonar in Maharashtra and Dhala in Madhya Pradesh. Imagine how much force it must have taken for a space rock to leave such a large dent on the earth's surface.

Ramgarh Crater

The presence of coesite, a rare mineral formed under extremely high pressure, confirms that this crater was caused by a meteorite strike. At the centre of the crater is an ancient Shiva temple known as Bhand Devara Temple, which serves as a reminder of the enduring link between nature and humanity. The crater's lake, known as Pushkar Talab, is a protected wetland under Wetland (Conservation & Management) rules, 2017 that supports a variety of plant and animal species.

Preserving Geological Marvels

Geo-Heritage Sites are not only fascinating natural wonders, but also valuable sources of knowledge about our planet's history, human civilisation, and the diversity of life on Earth. Recognising and protecting these sites ensures that future generations can learn from and appreciate India's incredible geological, paleontological, and archaeological treasures. Let us cherish and preserve these natural marvels for future generations.

6th session of the United Nations Environment Assembly (UNEA-6)

Proceedings of the 6th session of the United Nations Environment Assembly (UNEA-6)
Source: UNEP

The United Nations Environment Assembly is the world's highest decision-making body on environmental issues

The sixth session of the United Nations Environment Assembly (UNEA-6) was held in Nairobi, Kenya, at the headquarters of the United Nations Environment Programme (UNEP) from February 26 to March 1, 2024. The assembly came to a close with the adoption of fifteen resolutions intended to foster coordinated action on the triple planetary crises. The theme of this session focused on multinational initiatives that are inclusive, sustainable, and effective in addressing pollution, biodiversity loss, and climate change. The (UNEA-6) Assembly provided a platform for world governments, civil society organizations, the scientific community, and the commercial sector to influence global environmental policy because it was supported by solid evidence, political will, and social involvement.

> The United Nations Environment Assembly is the world's highest decision-making body on environmental issues

26 Feb – 1 Mar, 2024

UNEA-6

- Impactful environmental outcomes
- 6,000 participants participated
- 1st Multilateral Environmental Agreements Day celebrated

UNEA is the world's highest decision-making body on environmental issues. It establishes priorities for global environmental policy and international environmental legislation. It offers a singular venue for daring decisions and innovative ideas to map out a daring plan of collective environmental action because it is the only worldwide membership forum for the environment on earth. UNEA-6 aided in the accomplishment of the sustainable development objectives by achieving this.

Key Moments of UNEA – 6

UNEA-6 was centred around the idea that mankind had to act quickly to address the triple planetary crises since the earth was about to tip over. Everyone from young activists to heads of state and government echoed that thought. With a Ministerial Declaration, the countries have committed to step up efforts to solve the triple global crisis—pollution, biodiversity loss, and climate change.

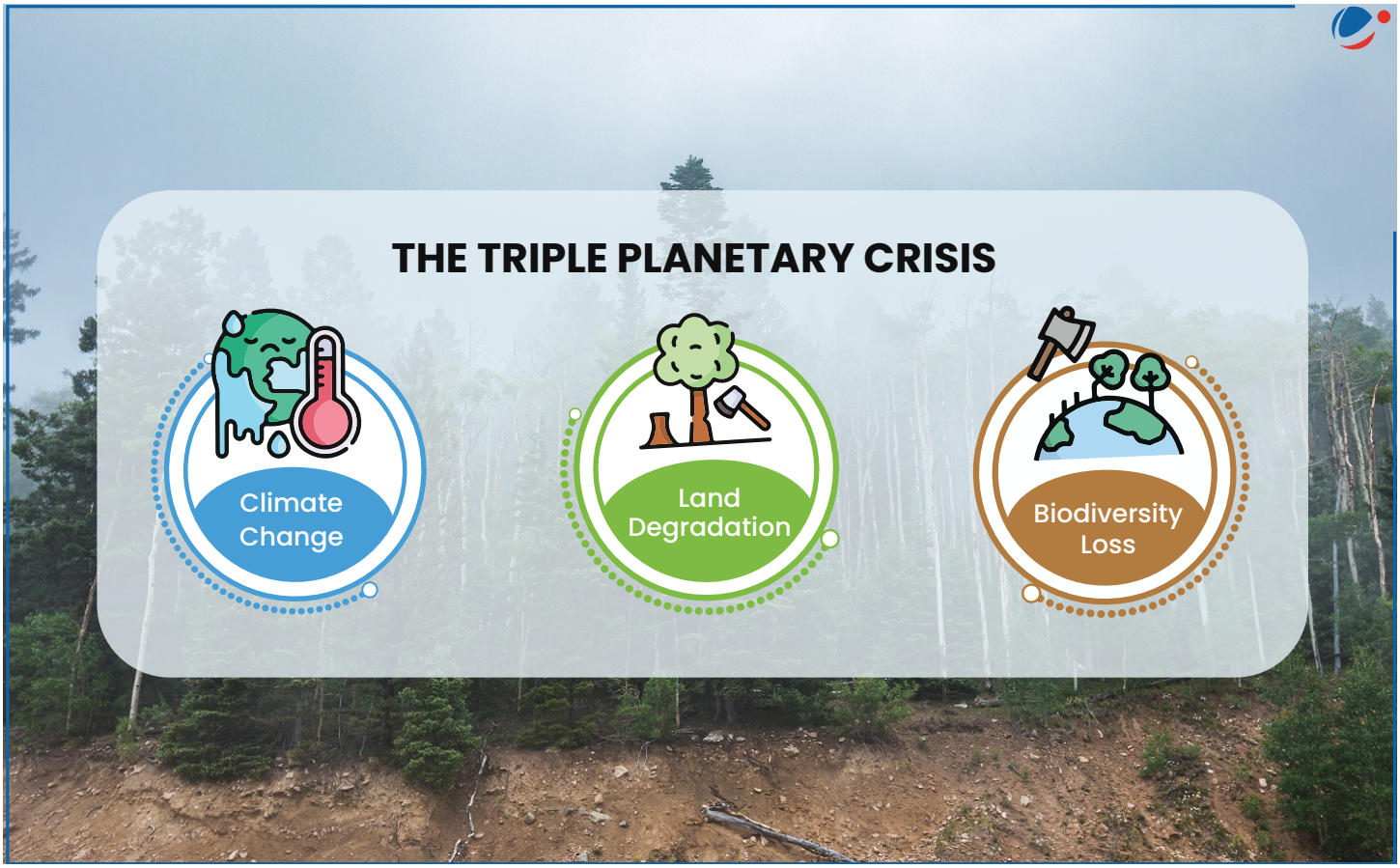
Along with this, fifteen resolutions were passed on critical topics such as managing freshwater resources, preventing desertification, controlling air pollution, preserving the seas, and fostering international collaboration. Discussions were also held about the sustainable mining of energy transition minerals. UNEA also conducted its first-ever day dedicated to Multilateral Environmental Agreements (MEAs). How various multilateral agreements should strengthen their ties with UNEA and UNEP and collaborate more closely was a key concern. MEAs have stood pivotal in achieving many accomplishments, from the conservation of endangered species to the repair of the ozone layer, and the decrease in chemical pollution, some of which date back fifty years.

During UNEA-6, the leading global authority on the environment, released several important reports outlining compelling environmental issues. The Global Waste Management Outlook provided an update on global waste generation and the cost of waste and its management since 2018. The Global Resources Outlook advocates for significant policy changes to limit resource use, boost the economy, enhance well-being, and minimize environmental impacts while promoting sustainable living. These reports urged decision-makers to reduce waste, implement policy reforms, and reduce greenhouse gas emissions from heavy vehicles to ensure Earth's survival.

> UNEA-6 was centred around the idea that mankind had to act quickly to address the triple planetary crises since the earth is about to tip over

Future Call

These multinational organisations are crucial when it comes to solving environmental issues. More credibility is needed to give these organisations the necessary strength. By making the majority of commitments legally binding, we may also transform these ideas into actual developments and actions on the ground rather than just policies and agendas.



Protecting an Icon: India's First Dolphin Research Centre

A Gangetic Dolphin swimming
Soource: Money Control

The Ganges River dolphin, once revered in Indian folklore as the 'Ganga puputaka', is facing an uncertain future due to its declining population. The dolphin, a symbol of India's aquatic biodiversity, has a deep-rooted connection to the Ganga River and finds reference even in the ancient Rig Veda. In a significant stride towards preserving this iconic species, India has established its first-ever National Dolphin Research Centre (NDRC) in Patna, Bihar. This state-of-the-art facility promises to unravel the enigmatic secrets surrounding the elusive Gangetic dolphin.

Pioneering Initiative: NDRC

The proposal to establish the NDRC came from RK Sinha, an esteemed expert on Gangetic River dolphins

The NDRC sets a precedent as the first of its kind not just in India but across the entire Asian continent. Perched on a 4,400-square-meter area close to the Ganga in Bihar, the centre is housed on Patna University's grounds which is a fantastic spot for scientists to get up close and personal with dolphins in the wild.

> The proposal to establish the NDRC came from RK Sinha, an esteemed expert on Gangetic River dolphins

The centre will allow scientists to decipher their changing behavioural patterns, where subtle nuances in movement and communication, survival skills and food habits can help reveal deeper insights. Furthermore, the centre will play a pivotal role in training fishermen on techniques to avoid inadvertently harming the dolphins during fishing activities. This will foster a harmonious coexistence between humans and nature.

Elusive Susu: India's National Aquatic Animal

The Ganges River dolphin, also known as the Susu, was first documented in 1801. These almost-blind dolphins once graced the Ganges-Brahmaputra-Meghna and Karnathuli-Sangu River systems in Bangladesh, India, and Nepal. Interestingly, they rely on 'echolocation', a process

that produces ultrasonic noises reflected off fish and other prey, to navigate their freshwater environment. It's common to see a mother and calf together, either roaming in small groups or on their own.

They are adapted to freshwater environments and have two distinct subspecies. The Platanista gangetica minor is found in Pakistan along the Indus River system, while the Platanista gangetica gangetica is found in Eastern India, Nepal, and Bangladesh along the Ganges, Meghna, Karnaphuli, Brahmaputra, and Hooghly River systems. Concerningly, these river dolphins have been facing severe threats from various human activities in recent times.

Face to face with the catastrophes R.K. Sinha's initial encounter with poaching of the dolphin at Patna 1993
Source: DownToEarth

Endangered Gangetic Dolphin Faces Multiple Perils

One of the most prominent threats is encounters with fishing vessels and gear, often resulting in injuries or deaths. Further, rampant pollution from industrial, agricultural, and domestic sources, is disrupting the delicate equilibrium of their habitat.

One of the most prominent threats is encounters with fishing vessels and gear, often resulting in injuries or deaths.

> One of the most prominent threats is encounters with fishing vessels and gear, often resulting in injuries or deaths.

While deliberate poaching through harpooning has declined in most areas, the illegal killing of dolphins persists, particularly in Bihar. Irrigation practices and the construction of dams and barrages have been known to disrupt the dolphins' migration routes and prey availability, leading to population fragmentation and loss of genetic diversity. If left unaddressed, this multitude of threats could push the already vulnerable Gangetic dolphin population towards extinction in their limited riverine habitats.

Protective Measures

The dolphin is protected under various laws and agreements, including Schedule I of the India's Wildlife Protection Act 1972 which accords them the highest form of protection. They are also covered under Appendix I of the Convention on International Trade in Endangered Species of Wild Fauna and Flora or CITES. Thus, their international trade is permitted only in exceptional circumstances.

The Convention on the Conservation of Migratory Species of Wild Animals lists the species under its Appendix II. This appendix covers Migratory species conserved through international agreements for their conservation and management. In a bid to raise awareness, October 5th, is celebrated as the "National River Dolphin Day" in India, commemorating the day the Gangetic Dolphin was declared the National Aquatic Animal of India in 2009.

A Gangetic Dolphin surfacing in the Ganga at Patna showing snout and melon.
Source: Roundglasssustain

A Vital Role

The Gangetic Dolphin is a vital indicator species in the Indian river ecosystem, reflecting the health of the environment and maintaining the balance of life beneath the surface. It is a charismatic megafauna and a flagship species championing river conservation. The establishment of the NDRC is a monumental step towards conserving the Gangetic Dolphin and its habitat and raising awareness about the importance of this unique species and the need to protect river ecosystems. With cutting-edge research and unwavering commitment, the NDRC promises to ensure its survival for generations to come.

Green Days Diary

21st March

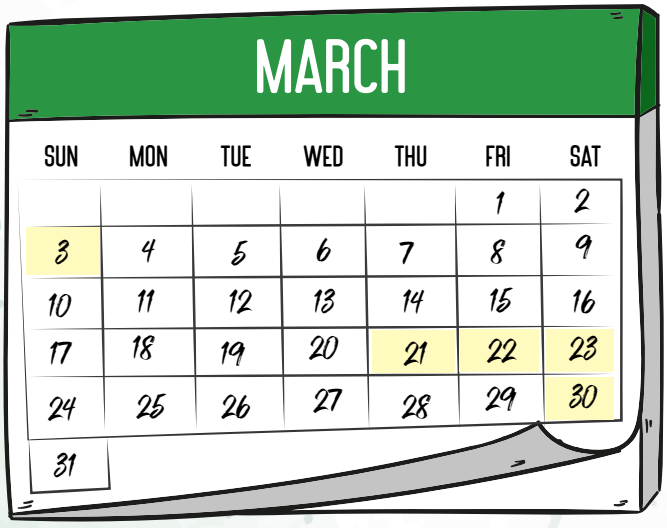
International Day of Forests

22nd March

World Water Day

23rd March

World Meteorological Day



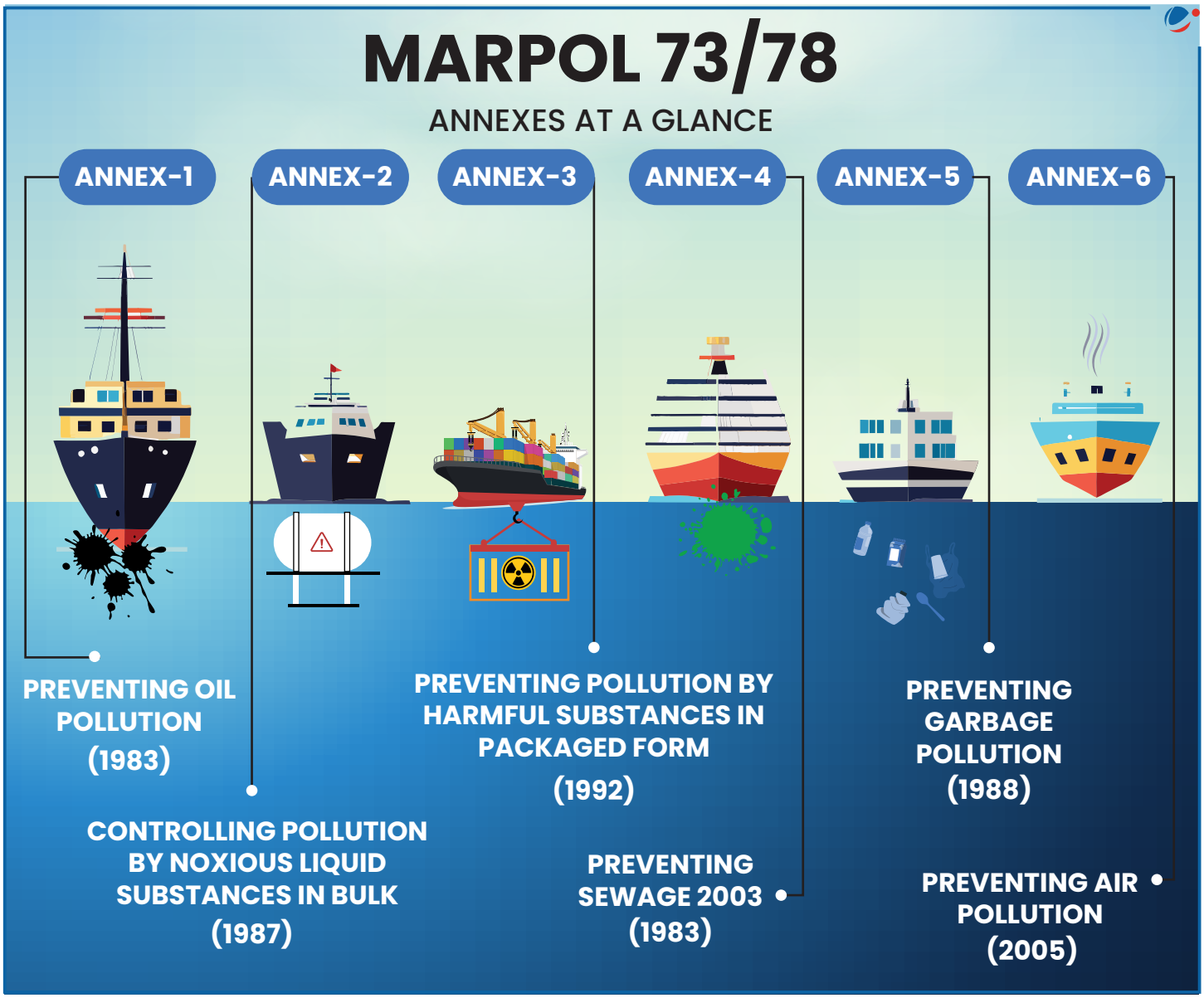
3rd March

World Wildlife Day

30th March

International Day of Zero Waste

MARPOL Convention



Annex adopted in MARPOL

The International Convention for the Prevention of Pollution from Ships (MARPOL) is a significant international agreement adopted in 1973 by the International Maritime Organisation (IMO) to tackle operational and accidental marine pollution by ships. MARPOL has been progressively strengthened through the adoption of six technical Annexes, each addressing a specific aspect of pollution control.

India has also signed this Convention in 2022. The Indian government has fully enforced all MARPOL standards regarding carbon emissions on Indian ships. Currently, the laws primarily focus on reducing carbon emissions by improving energy efficiency and attaining a yearly decrease in carbon intensity.

By progressively adopting these regulations, MARPOL has established a comprehensive framework for ship-based pollution control. It covers a wide range of pollutants and actions, significantly contributing to the protection of the marine environment.

Quiz Zone

1. **Ramgarh Crater, which was recently designated as a Geo-Heritage Sites, is located in**
   (a) Madhya Pradesh
   (b) Rajasthan
   (c) Sikkim
   (d) Karnataka

2. **Identify the continent that is associated with the Great Barrier Reef.**
   (a) Australia
   (b) Asia
   (c) North America
   (d) Europe

3. **In which of the following country the headquarter of the International Big Cat Alliance will be established?**
   (a) Bhutan
   (b) India
   (c) Nepal
   (d) Myanmar

4. **Recently, which city has launched the Zero Carbon Buildings Action Plan?**
   (a) Ranchi
   (b) Delhi
   (c) Nagpur
   (d) Lucknow

5. **Name the environmentalist who has been honoured with the Tyler Prize**
   (a) Johan Rockström
   (b) Rajendra Singh
   (c) Jadav Payeng
   (d) Mike Pandey

6. **World Water Day is celebrated on**
   (a) 16th February
   (b) 22nd April
   (c) 5th March
   (d) 22nd March

7. **The famous traditional water harvesting system 'johads' are mainly seen in-**
   (a) Odisha
   (b) Rajasthan
   (c) West Bengal
   (d) Tamil Nadu

8. **The sixth session of the United Nations Environment Assembly (UNEA-6) was recently held in**
   (a) Bogota, Colombia
   (b) Copenhagen, Denmark
   (c) Helsinki, Finland
   (d) Nairobi, Kenya

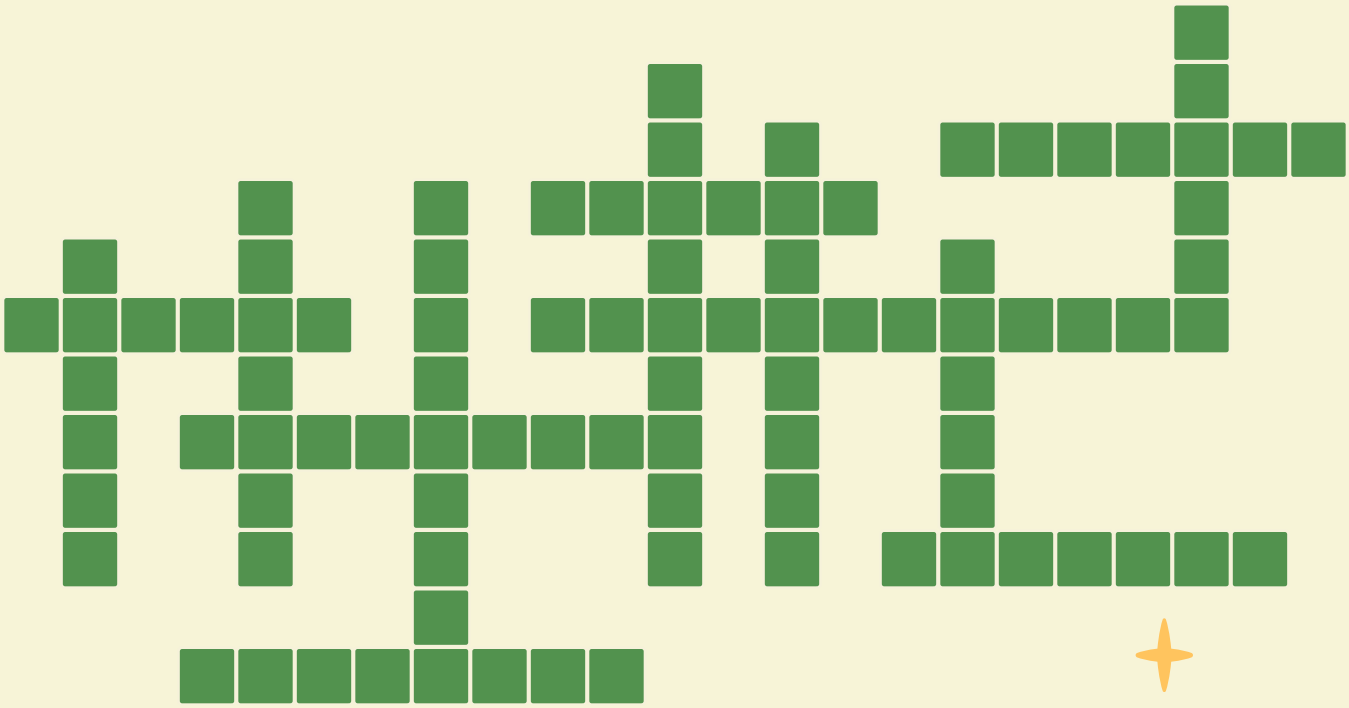
9. **MARPOL Convention deals with which of the following subjects?**
   (a) Conservation of Biodiversity
   (b) Export of hazardous material
   (c) Land degradation
   (d) Pollution from Ships

10. **Identify the personality who is associated with building the famous 'Ice Stupas' or Artificial glaciers in India.**
    (a) Rajendra Singh
    (b) Ramveer Tanwar
    (c) Sonam Wangchuk
    (d) Gayatri Sharma

Answers

1- B, 2- A, 3- B, 4- C, 5- A, 6- D, 7- B, 8- D, 9- D, 10- C

Crossword



Across

4. A rare mineral formed under extremely high pressure
7. Member of Big cat family which is not found in India
10. Convention adopted by the International Maritime Organisation (IMO) to tackle operational and accidental marine pollution by ships
11. Process in which salt from saltwater is extracted to obtain freshwater
12. A bioremediation cocktail used for cleaning oil spills
13. Distinctive stepwell built for water conservation in Rajasthan
14. The Territories presenting a unique geological heritage of international value

Down

1. East Asian country that experienced a magnitude 7.4 earthquake
2. Most polluted city of India as per the 6th Annual World Air Quality Report
3. Another name for the Grand Anicut constructed by the Chola King Karikala on river Cauvery
5. Destruction of the environment by humans
6. An Indus Valley Site, renowned for excellent water collection, storage, and conveyance systems
8. The high-altitude desert region in India
9. Japan's festival of cherry blossoms

Answers
Across: 4. Coesit, 7. Jaguar, 10. MARPOL, 11. Desalination, 12. Oilzapper, 13. Bawaris, 14. Geoparks,
Down: 1. Taiwan, 2. Begusarai, 3. Kallanai, 5. Ecocide, 6. Dholavira, 8. Ladakh; 9. Sakura,

LIVE / ONLINE
Classes also Available

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Foundation Course
GENERAL STUDIES

PRELIMS CUM MAINS
2025, 2026 & 2027

17 MAY, 1 PM | 4 JUNE, 9 AM

GTB Nagar Metro | **21 MAY, 5:30 PM**

AHMEDABAD 20 JUNE	BENGALURU 15 MAY	BHOPAL 21 MAY
CHANDIGARH 5 APRIL	HYDERABAD 10 MAY	JAIPUR 7 MAY
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ABOUT 'THE PLANET VISION'

'The Planet Vision' aims to educate and inspire individuals about the importance of individual actions for a sustainable future. It presents uplifting narratives, highlighting local conservation efforts and community initiatives.

We also provide regular updates on the latest environmental technology and groundbreaking projects, aiming to raise awareness of the environment, nature, and the planet. The goal is to encourage eco-friendly behaviours and promote sustainable practices.

ABOUT AJAYVISION EDUCATION PRIVATE LIMITED

Ajayvision Education Private Limited, popular under the brand name VisionIAS, is an established leading EdTech company in India. The Infinity Vision, Galaxy Classes, and StudentEdge are several other wings that make up the larger organisation.

Since its incorporation in May 2013, VisionIAS has had a huge impact on the education industry nationwide. VisionIAS creates innovative web-based platforms and mobile apps using AI and ML technologies to give students a unique learning experience.

Moreover, the organization actively engages in CSR initiatives, extending quality education to rural households, thus expanding educational access. **Rajni Devi Global Village School (RDGV School)** and Paras India are key parts of this ecosystem.

OUR OTHER INITIATIVES

A Venture of VISIONIAS INFINITY VISION IIT-JEE | NEET | FOUNDATION | OLYMPIAD

StudentEdge A newspaper specially crafted for school going children

An Initiative of VISIONIAS Galaxy Achieve Your Goal

PARAS INDIA NGO for Empowerment

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New Delhi-110005

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