

News Links on Water Sector

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CENTRAL WATER COMMISSION

GOVERNMENT OF INDIA

DEPARTMENT OF WATER RESOURCES, RIVER DEVELOPMENT &
GANGA REJUVENATION

MINISTRY OF JAL SHAKTI

Serving the Nation Since 1945

Ensuring Water Security

Date: 16/09/2024

8th India Water Week was inaugurated by the President Droupadi Murmu on 17th of September. The event was conceptualised and organised in 2012 by the Ministry of Jal Shakti Gol. The theme for the current year is “inclusive water development and management”. India ranks 133rd in the world for the amount of water available per person per day. With 16 to 17% world population, it has just 4% water resources. Water conflicts within the various States and with other countries have been going on with no visible solution.

- 1.Partnership and cooperation for inclusive Water Development and Management.
- 2.Public Private Partnership (PPA) for efficient water management in urban and rural areas.
- 3.Need for cooperation and coordination for water security keeping in view the climate change scenario.
- 4.Synergising cooperation across boundaries from water conflict to cooperation.

The distribution of water resources in India is erratic resulting in simultaneous flood and drought. With its growing population and insufficient water resources effective measures like rain water harvesting, recycle and reuse is a must. The agriculture scientists have to devise water efficient crops on regular basis. Adequate storage schemes on various river basins besides the North South water corridor will mitigate the visible future water crises in India.



Source: <https://www.greaterkashmir.com/opinion/ensuring-water-security/>

Austria's Water Treasure - Protecting and using our groundwater sustainably

Date: 16/09/2024

Successful water management requires a comprehensive understanding of both current and future groundwater resources. The study "Austria's Water Treasure" offers an extensive, up-to-date overview of data crucial for the quantitative management of groundwater resources across the entire country of Austria. It includes information on:

- Current and future available groundwater resources
- Water demand across various economic sectors, both current and future
- The intensity of current and future groundwater utilization

"Knowing about available water resources and demand are key for sustainable water management. This is exactly what that impressively wide-ranging study provides. But even in a country abundant of water like Austria we are facing challenges caused by climate change. The study considers different scenarios for changes of groundwater recharge due to climate change and potential variations in groundwater demand. It presents both the current and projected ranges of available groundwater resources until 2050 through:

- a "favourable" Water Treasure Scenario
- an "unfavourable" Water Treasure Scenario

According to the "favourable" Water Treasure Scenario, in some regions of Austria, the intensity of water use is expected to increase by 2050. While the number of areas with very high use intensity will rise, available groundwater resources will not be exceeded. In contrast, under the "unfavourable" Water Treasure Scenario, some regions of Austria may see until 2050 water use intensity exceed 75% of available groundwater resources, and in certain areas, demand could surpass available groundwater resources.



Source: https://environment.ec.europa.eu/news/monitoring-austrias-groundwater-2024-09-16_en

2026 UN Water Conference

Date: 16/09/2024

The 2026 UN Water Conference to Accelerate the Implementation of SDG 6 will focus on actions to accelerate SDG 6 achievement and reaffirm internationally agreed water-related goals and targets, including those in the 2030 Agenda for Sustainable Development. The Conference will result in an outcome document, focusing on areas of accelerated and collective action to support SDG 6 (clean water and sanitation).

The Governments of Senegal and the United Arab Emirates (UAE) will host the Conference. The event will bring together governments, the UN system, intergovernmental bodies, non-governmental organizations (NGOs), civil society organizations (CSOs), Indigenous Peoples and local communities, academia, the private sector, and other stakeholders.

The Conference will consider challenges to achieving SDG 6 as well as opportunities and innovative ways and means to support SDG 6 implementation and accelerate progress. Participants will exchange views and develop initiatives and actions to accelerate SDG 6 progress, including cooperation at all relevant levels to enhance means of implementation and partnerships. The Conference will consider gender perspectives and empowerment of women and girls in ensuring safe drinking water and sanitation for all.

The Conference will also offer an opportunity to share best practices in accelerating SDG implementation and invite Member States and other stakeholders to announce voluntary commitments in support of the Conference objectives. The Conference outcome document will serve as an input to the UN High-level Political Forum on Sustainable Development (HLPF).



Source: <https://sdg.iisd.org/events/2026-un-water-conference/>

Except north India, monsoon replenished reserves in 141 dams in India

Date: 16/09/2024

As of July 2, the southwest monsoon has covered the entire country, resulting in consistent and continuous rainfall across the majority of geographical areas. By September 12, the country recorded 836.7 mm rain, an 8 percent surplus for this time of the season. A look at the reservoir and river basin status based on the latest weekly report by the Central Water Commission (CWC): All-India reservoir status: **North:** Ten reservoirs across Himachal Pradesh, Punjab and Rajasthan offer a collective live water storage of 19.836 BCM. This week, the available water stock was 13.468 BCM, which is 68 per cent of the total stocks. During the same period last year, the available stock was 81 per cent of the total live water stock whereas the decadal average is 82 per cent. This monsoon season (till September 11), both Himachal Pradesh (535.9mm) and Punjab (304.5mm) have recorded 21 per cent and 24 per cent rainfall below normal, respectively. More significantly, these states have not received normal rainfall throughout the season. And there seem no chances for the situation to improve either.

East: There are 23 reservoirs across Assam, Jharkhand, Odisha, West Bengal, Tripura, Nagaland and Bihar which together have a live storage capacity of 20.798 BCM. The available water reserve collectively here stood at 15.797 BCM, which was 76 per cent of the total reserves. Whereas 58 per cent water stocks existed last September with a decadal average of 69 per cent. Even though rainfall received during this season over both Nagaland and Bihar showed a negative departure of 28 per cent (till September 11), each, this has not affected the region's reservoir stocks, thanks to good rainfall over remaining states.



Source: <https://indianexpress.com/article/cities/delhi/except-north-india-monsoon-replenished-reserves-in-141-dams-in-india-9571232/>

Rezatec launches geospatial AI platform for enhanced dam monitoring

Date: 16/09/2024

Rezatec has introduced an upgraded version of its Dam Monitoring solution, powered by a new geospatial AI platform. The platform integrates satellite data, AI-driven analysis, and advanced visualization tools to provide comprehensive risk assessments for dam safety. The new solution allows for centralized management of dam records by digitizing and storing all relevant data in one place. It enhances monitoring capabilities by using satellite data to track ground movement, seepage, vegetation changes, and downstream hazards. This enables dam operators to identify potential issues before they escalate. “As dam operators and regulators seek to improve their risk-informed decision making, it’s vital that they consider every aspect of data to identify and prioritize risks and develop mitigation measures,”

The Dam Monitoring platform is built around four core modules:

- **Compliance:** Centralizes all dam records, applying analytics and visualizations to rainfall, instrumentation, and survey data. This streamlines record management and regulatory reporting.
- **Ground Motion & Seepage:** Uses satellite data and AI to detect unusual ground movement, seepage, and vegetation changes. Millimetric alerts provide early warnings, improving risk-informed decision making.
- **Downstream Hazard:** Identifies changes in flood zones to adjust hazard ratings and supports emergency action planning.
- **Risk Management:** A unique matrix that assesses the likelihood and consequences of various failure modes, enabling dynamic risk management.



Source: <https://www.waterpowermagazine.com/news/rezatec-launches-geospatial-ai-platform-for-enhanced-dam-monitoring/>

Convergence with government plans can increase credit flow for micro-irrigation systems: RBI DG

Date: 16/09/2024

The Reserve Bank of India (RBI) deputy governor Swaminathan J has said convergence with centrally sponsored programmes such as "per drop more crop" can increase the flow of institutional credit to install micro-irrigation systems. Currently, the area under micro-irrigation in India is just 12.54 million hectares, which is about 9 percent of the net sown area⁷ indicating a large scope for expansion.

"Technology adoption in agriculture offers immense potential to boost productivity and sustainability. Expanding irrigation infrastructure, promoting micro-irrigation systems and encouraging farm mechanisation can significantly increase farm income and improve efficiency," he said. Swaminathan was delivering the keynote address at the International Research Conference hosted by the College of Agricultural Banking (CAB), Pune on September 11. He also said traditional lending practices have certain limitations in catering to the needs of the farm sector. Agriculture is inherently seasonal, and returns are often delayed or reduced. Innovative financial solutions — ones that are flexible and tailored to the needs of farmers — are necessary. Institutional credit to agriculture reached an all-time high of Rs 25.10 lakh crore in 2023-24, reflecting the importance of financing in driving agricultural growth. Approximately 7.4 crore active Kisan Credit Cards have emerged as vital tools for providing timely and flexible credit, especially for short-term needs, the deputy governor said.



Source: <https://www.moneycontrol.com/news/business/convergence-with-government-plans-can-increase-credit-flow-for-micro-irrigation-systems-rbi-dg-12822849.html>

A Jharkhand farmer uses AI and technology to modernise farming

Date: 16/09/2024

Mahato has adopted mulching technology to grow vegetables on his farms, where drip irrigation is essential. He covers the top layer of soil, which has many benefits: It saves water, protects the soil from erosion during heavy rains and increases soil fertility. He has also linked drip irrigation to AI, automating the entire irrigation system. Talking about the system, Mahto says, "There is a tower installed here and I have an app on my mobile. Whatever direction I give through the app is communicated via the tower's network."

He further explains, "The Sunder ban farm is divided into four plots, each with its own water valve. The soil moisture monitoring system informs me through the app about the moisture or dryness in each plot. If there is a water shortage in the second plot, I can automatically turn on the valve for that plot and irrigation starts. In fact, I can start and stop the motor through my mobile. "The automatic irrigation system installed in Sundarban is from Cultyvate, a Bengaluru-based company that offers various services to farmers. The company claims that using its irrigation system can increase yield by 20% and reduce water uses for irrigation by 50%.

Anant Bahadur, principal scientist at the Vegetable Production Division at the Indian Vegetable Research Institute, Varanasi, says that adopting AI has many benefits. He tells Mongabay India, "There are three big advantages. First, one can detect diseases in advance and control them. The second advantage is that with the help of sensors or AI, crops can receive precisely the amount of water they need. The underground sensors can make 100% accurate predictions. The third advantage is that accurate information about soil nutrients is available. The use of AI has increased in developed countries and is rising here too. In the coming years, everything will be done through sensors and AI."



Source: <https://india.mongabay.com/2024/09/ai-and-tech-solutions-aid-jharkhand-farmer-with-irrigation-and-pests/>

Dam structure safety installation and repair using advanced geosynthetic technology

Date: 17/09/2024

GEOWEB geocell technology is a versatile geosynthetic system that can be used to create long-term solutions for many of the common dam and spillway problem areas. Geocells function as the support structure for unpaved roadways, capable of supporting maintenance and repair vehicles. They also function as surface erosion control solutions, preventing the formation of rills or the collapse of unstable soils due to water flow, wave action, and storm events. GEOWEB geocells can be placed on the upstream face of a dam structure to mitigate the effects of wave action on the dam, supporting existing riprap areas, or replacing them entirely with vegetation, gravel or concrete. The flexibility of the GEOWEB system allows for the use of mixed infill materials, such as topsoil above normal water levels for grass growth and small aggregate below the water level for erosion prevention. Comprised of high-density polyethylene (HDPE), GEOWEB geocells are formulated for long-term durability to resist weathering, chemical attack, and ultraviolet radiation, and are therefore suitable for use in applications where the material will be subjected to cyclic wetting and drying, permanently submerged, or full sun exposure. The material is not prone to degradation or corrosion due to environmental factors, and can be placed on the downstream face of, or within, a spillway structure. The system is also compatible with concrete infill to accommodate extremely high flow velocities. For comparison, Table 1 summarizes allowable velocities and shear stresses for various channel lining alternatives.



Source: <https://geosyntheticmagazine.com/2024/09/17/dam-structure-safety-installation-and-repair-using-advanced-geosynthetic-technology/>

India sends notice to Pakistan for review of Indus Water Treaty, cites changes in circumstances

Date: 18/09/2024

India has formally called for a review of the Indus Water Treaty (IWT) with Pakistan, citing "fundamental and unforeseen" changes in circumstances. The notice was issued to Pakistan on August 30 under Article XII(3) of the treaty, according to government sources. The IWT, signed in 1960, governs the water-sharing mechanism between the two countries for cross-border.

Treaty Signed After Nine Years of Negotiations The IWT was established after nine years of talks between India and Pakistan, with the World Bank acting as a signatory. The treaty lays out a framework for cooperation and the exchange of information on water usage for several rivers shared by both nations. India's Concerns and Changing Circumstances with Indus Water Treaty 1960 India has raised concerns over changes in population demographics, environmental issues, and the need for clean energy development to meet emission targets as key reasons for the reassessment. Government sources emphasized that these factors require a re-evaluation of the obligations outlined in the treaty. India's Call for Negotiations

India has refused to participate in the Court of Arbitration process, arguing that starting both the expert mechanism and arbitration simultaneously violates the treaty's provisions.



Source: <https://economictimes.indiatimes.com/news/india/india-sends-notice-to-pakistan-for-review-of-indus-water-treaty-cites-changes-in-circumstances/articleshow/113455607.cms?from=mdr>

EU and India developed strong ,innovative water management deal: EU envoy

Date: 19/09/2024

EU Ambassador to India Hervé Delphin highlighted the success of the ongoing water projects in India, emphasising that the European Union and India have developed a strong and innovative water management partnership. At the inauguration of the India-EU Water Forum on Wednesday, he praised its growing collaboration with India in water management and expressed interest in expanding this partnership to Africa. "We have developed a successful partnership in India. We are now keen to work with Africa to bring our respective expertise, develop innovative water management strategies and foster regional water security," Delphin said during the forum.

The India-EU water collaboration has made significant progress in areas like river basin management, the safe reuse of treated water and climate resilience, he said, adding that this partnership is contributing to improving India's water management infrastructure, strengthening efforts to tackle climate change impacts and ensure water security for millions. India's Minister of State for Water Resources, Dr Raj Bhushan, echoed these sentiments, stating that the partnership continues to enhance India's water management and climate resilience.



Source: https://www.business-standard.com/india-news/eu-and-india-developed-strong-innovative-water-management-deal-eu-envoy-124091800650_1.html

ADB Approves Support to Improve Water Security and Management in India

Date: 20/09/2024

MANILA, PHILIPPINES (20 September 2024) — The Asian Development Bank (ADB) has approved a \$50 million loan to improve water resources management, access to water, and community resilience to the effects of climate change in the state of Meghalaya, India.

“The project supports the Meghalaya State Water Policy 2019 which aims to achieve sustainable development, management, and use of the state’s water resources through a participatory approach; reduce vulnerability; and promote integrated water resource management,” said ADB Senior Project Officer for Agriculture, Food, Nature, and Rural Development Vikas Goyal. “The project will strengthen the capacity of districts in Meghalaya to manage water resources and introduce water storage structures that will ensure water

The project will support the construction of 532 water-storage facilities across 12 districts. These facilities, including small storage structures, will incorporate climate-resilient designs to capture and manage heavy rainfall and flash floods during monsoon season. The stored water will provide irrigation water during the winter dry season and cobenefits of flood management. The project will develop at least 3,000 hectares of command area to provide reliable irrigation areas for farmers. It will help construct and upgrade small multipurpose reservoirs, establish 50 weather stations for data gathering and monitoring, and climate-smart micro-irrigation systems in Garo, Jaintia, and Khasi. The project will also pilot-test renewable energy micro hydropower in three WHSs.



Source: <https://www.adb.org/news/adb-approves-support-improve-water-security-and-management-india>

California Can Slake the Thirst of Its Farms by Storing Water Underground

Date: 21/09/2024

A new UC Riverside study on California agriculture and climate proposes a plan for new water capture, storage, and distribution systems throughout California that will sustain agriculture and keep up with climate trajectories. Available water for consumption is disappearing because of climate change and failing storage systems, leaving one of its top consumers—the agricultural industry—scrambling, the study concludes.

California's agriculture sector uses about 40 percent of all the state's water, or 80 percent of its consumed water. With less water available, agriculture must adjust. The study provides a pathway for the sector to do so. The study, published last month in the Proceedings of the National Academy of Sciences, finds that groundwater aquifers have more storage potential than surface water reservoirs. So, instead of devoting decades to build more dams and reservoirs that are subject to evaporation and overflow, water should be diverted into these depleted aquifers below the Central Valley and the coastal plains.

Over the past 40 years, aquifers have been overpumped, meaning more water has been taken out than put back in. When aquifers become too depleted, the land can subside. "In some parts of the Central Valley, it's been sinking a foot or two a year," said Kurt Schwabe, a public policy professor at UC Riverside and coauthor of the study. Land subsidence can cause infrastructure like buildings and highways to crack and degrade. It also harms the aquifer's capacity to hold water and the health of the surrounding ecosystems. Not only can replenishing groundwater aquifers limit these negative environmental impacts, but it can also bolster a water "savings account" during times of drought. When California lacks surface water, water usage shifts to groundwater stores.



Source: <https://www.wired.com/story/the-key-to-fix-californias-inadequate-water-storage-put-water-underground-scientists-say/>

India, Denmark to Boost Water Collaboration..

Date: 23/09/2024

India and Denmark have reinforced their collaboration in the water sector, focusing on innovative solutions to enhance resource management. Jal Shakti Minister C R Paatil, after meeting with Danish Minister Morten Bodskov, announced plans to establish a Centre of Excellence dedicated to advancing wat..



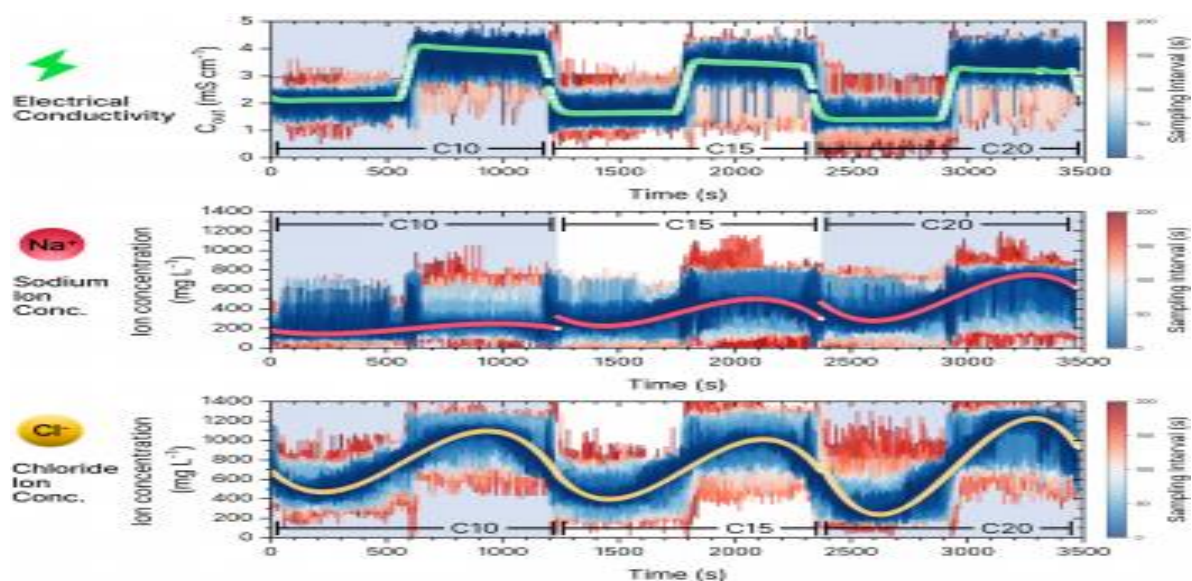
Source: <https://www.constructionworld.in/urban-infrastructure/wastewater-and-sewage-treatment/india-denmark-to-boost-water-collaboration/62799>

Artificial Intelligence Helps Produce Clean Water

Date: 23/09/2024

About 2.2 billion people, more than a quarter of the world's population, lack access to safe, managed drinking water, and about half of the world's population experiences severe water scarcity at some point during the year. To overcome these shortages, huge socioeconomic costs are being spent on sewer irrigation and alternative water sources such as rainwater reuse and seawater desalination. Furthermore, these centralized water distribution systems have the disadvantage of not being able to respond immediately to changes in water demand. Therefore, there is a growing interest in decentralized water production technologies, which are electrochemical-based technologies that are easy to adopt, such as capacitive deionization and battery electrode deionization (also known as faradaic deionization). However, the existing water quality measurement sensors used in electrochemical-based technologies do not measure and track individual ions in water, and have the limitation of roughly inferring water quality conditions from electrical conductivity..

The researchers first built a random forest model, a tree-based machine learning technique utilized for regression problems, and then applied it to predict ion concentrations in electrochemical water treatment technologies. The developed random forest-based artificial intelligence model was able to accurately predict the electrical conductivity of the treated water and the concentration of each ion (Na^+ , K^+ , Ca^{2+} , and Cl^-) ($R^2 \sim 0.9$). They also found that updates were required about every 20-80 seconds to improve the accuracy of the predictions, which means that in order to apply this technique to national water quality networks to track specific ions, it is necessary to measure water quality at least every minute to train the initial model. The random forest model used in this study has the advantage of being economically superior to complex deep learning models, requiring more than 100 times less computing resources to train.



Source: <https://www.newswise.com/articles/media-article/817170>