

Promotion of Digital Technologies in Water Resources Management

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The Ministry of Jal Shakti has taken several initiatives to promote the use of digital technologies and has developed various integrated digital platforms for water resources management and monitoring, across the country. The major initiatives, include:

National Mission for Clean Ganga (NMCG) has adopted digital technologies for river basin planning, monitoring, project management and decision support including:

- i. Ganga Pulse for monitoring the performance of Sewage Treatment Plants (STPs) through Online Continuous Effluent Monitoring Systems (OCEMS) and manual reporting;
- ii. Drain Dashboard: A GIS-enabled platform for real-time monitoring of drains, sewage outfalls, industrial discharges and STP outlets, entering the Ganga basin, facilitating pollution hotspot identification and decision-making;
- iii. Ganga Knowledge Portal (www.gyanganga.ai): An AI-enabled knowledge repository providing access to research publications, technical reports, river maps, datasets and decision-support resources related to water resource management;
- iv. Ganga District Performance Monitoring System (GDPMS): A web-based platform for monitoring the performance of District Ganga Committees (DGCs), including meetings, key performance indicators and district-wise progress under the Namami Gange Programme;
- v. Project Monitoring Tool (PMT): A dashboard for real-time monitoring of project implementation, progress, delays, MS reporting and project status across the Ganga basin;
- vi. Geo-PRAYAG: A GIS-based platform integrating satellite imagery, LiDAR, drone, hydrological, hydrogeological and other geospatial datasets to support river basin planning and management.

NMCG has also developed PRAYAG (Platform for Real-time Analysis of Yamuna, Ganga and their Tributaries) under the Ganga Knowledge Centre (GKC) as an integrated digital platform. PRAYAG integrates multiple digital systems, including Ganga Pulse, Project Monitoring Tool (PMT), Ganga District Performance Monitoring System (GDPMS), Geo-PRAYAG and CCTV-based STP monitoring. The platform also integrates hydrological, satellite and field datasets, enabling real-time monitoring, GIS-based visualization, dashboard analytics and evidence-based decision-making for river basin management. It provides a unified digital ecosystem for monitoring river health, project implementation and pollution abatement under the Namami Gange Programme.

Central Water Commission (CWC) has developed digital platforms including the Reservoir Storage Monitoring System (RSMS) Portal to monitor live storage capacity of reservoirs of the country, Project Appraisal Management System (e-PAMS) for online submission of project proposals, Flood Forecasting

System through online portals (<https://ffs.india-water.gov.in/> and <https://aff.india-water.gov.in/>) and Flood Watch India application for real-time flood tracking and early warnings. Further, CWC also launched the C-FLOOD web-based Inundation Forecasting System.

Central Ground Water Board (CGWB) has adopted advanced digital technologies for efficient groundwater monitoring, assessment and management, including:

- i. The conventional monitoring network using water-level sounders is augmented with Automatic Digital Water Level Recorders (DWLRs). IoT-based sensors, telemetry, GIS tools and real-time monitoring systems are utilized for high-frequency monitoring and improved data availability and accuracy. DWLRs with telemetry have been installed across the country for continuous monitoring of groundwater levels. The data is made accessible through CGWB's online data portal.
- ii. GRASP (Groundwater Resources Assessment for Strategic Planning) for database management and analysis of groundwater levels, groundwater quality and lithological logs.
- iii. India Groundwater Resource Estimation System (IN-GRES), a GIS-based web platform, for estimation of groundwater resources and visualization of assessment results.
- iv. Bhu-Neer portal, a web-based digital platform for online processing of No Objection Certificates (NOCs) applications. The portal facilitates a transparent and streamlined mechanism for groundwater regulation and management.

National Institute of Hydrology (NIH) has developed digital tools such as KISAN SATHI/KISAN MAITRI Mobile application for irrigation management. It provides information regarding water availability in reservoir, crop demand, deficit in Water User Associations (WUAs) using forecast digital data. NIH also developed the NIH-DHAARA (Design Hydrology and Advanced Rainfall Analysis), a web-based platform for Design Flood Hydrology and Rainfall Analysis.

The National Water Informatics Centre (NWIC) has been established to facilitate collection, storage, analysis and dissemination of water resources data. The Government of India has modernized surface water and groundwater monitoring networks through telemetry systems, GIS-based tools and decision support systems for integrated water resources management.

Jal Shakti–Data Management System (<https://jalshakti-data.gov.in/>): A unified digital platform developed by the Government of India for visualization and analysis of water data received from various Central and State agencies. It enables policymakers, researchers, and public to explore and analyse water-related issues through user-friendly interfaces.

India-WRIS (Water Resources Information System) provides a web-enabled GIS-based platform for water resources information and serves as a single-window system for accessing, visualizing and analyzing water resources and allied data for assessment, monitoring, planning and management.

Under the Irrigation Census Scheme, implemented by Ministry of Jal Shakti, NIC has developed a unified digital platform to enable the digital data collection through mobile application, data validation and monitoring through web application. A dashboard showing the real time progress is also incorporated in the web application of the Census.

Under Hydrology Project, a comprehensive Hydrological Information System has been established for providing scientifically verified, uniformly accepted and widely accessed hydrological records covering all aspects of the hydrological cycle.

Bharat WIN Portal is operationalized to accelerate development and deployment of innovative water technologies. (<https://bharatwin.mowr.gov.in/>)

The information was provided by **THE MINISTER OF STATE FOR JAL SHAKTI SHRI RAJ BHUSHAN CHOUDHARY** in a written reply to a question in Lok Sabha today.

ND/HM

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