

NATIONAL HYDROLOGY PROJECT



WORLD BANK GROUP

OVERVIEW

Hydrology Project, an initiative of Government of India with financial assistance from World Bank has been central to efforts in India to improve the planning, development, and management of water resources, as well as flood forecasting and reservoir operations in real-time. The project having completed two phases (Phase-I between 1995 - 2003 and Phase-II between 2006 - 2014) has successfully established the backbone of a comprehensive Hydrological Information System (HIS) in India providing scientifically verified, uniformly accepted and widely accessed hydrological records covering all aspects of the hydrological cycle. This project was instrumental in setting a paradigm shift from relatively isolated water resources development towards comprehensive planning development and management of water resources in a river basin context. It has created a platform for water agencies in India to learn from each other, which encouraged them to move from manual to Real-Time Data Acquisition Systems (RTDAS), and develop tools for Integrated Water Resources Planning and Management with the objective to enhance the productivity and cost effectiveness of water related investments. Based on the successful outcome of project, the Ministry of Water Resources, River Development & Ganga Rejuvenation, Government of India with financial assistance from World Bank is now expanding the project as National Hydrology Project, to cover the entire country including the Ganga and Brahmaputra Basin states as well as the north eastern states. The project will thus strengthen information and its access, and will enable a cultural change of open access to information. It will also build up institutional capacity for informed decision making in water resources planning and operational management at the basin scale across India using the latest technology and tools.

PROJECT OBJECTIVE

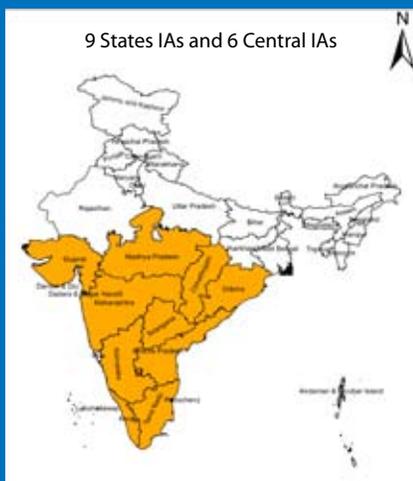
To improve the extent, quality, and accessibility of water resources information and to strengthen the capacity of targeted water resources management institutions in India.

PROJECT HIGHLIGHTS

Budget Outlay: 3,640 Crores INR
Timeline: 8 years
Scale: Pan India
Lead Agency: MoWR, RD&GR
Implementing Agencies: 49 IAs
across the country

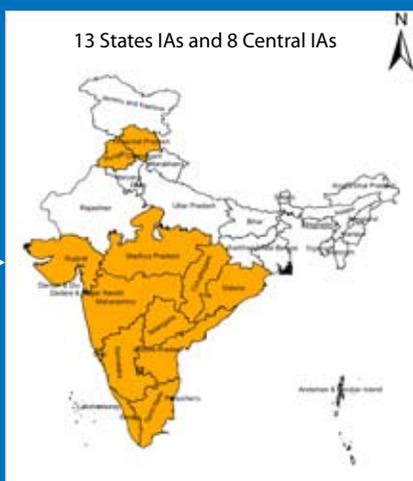
HYDROLOGY PROJECT-1

9 States IAs and 6 Central IAs



HYDROLOGY PROJECT-2

13 States IAs and 8 Central IAs



NATIONAL HYDROLOGY PROJECT

River Basins of India

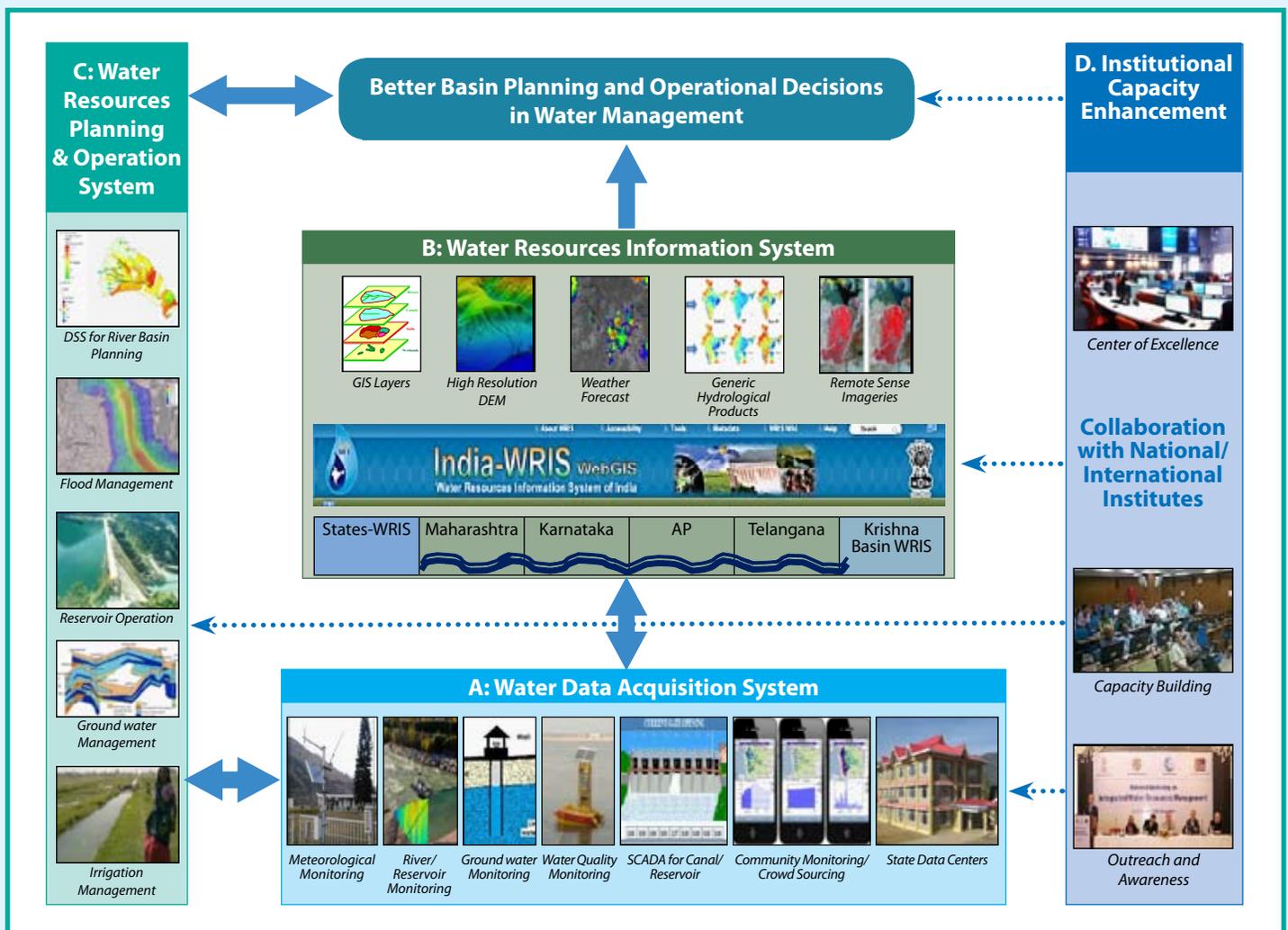


* Not to scale

CONCEPT

Based on experience under HP-I and HP-II, a four-pronged strategy to achieve the objectives has been adopted:

1. **Modernizing Monitoring:** The project will establish & strengthen monitoring networks in project states, with a focus on deploying new sensors, data storage, and telemetry technologies across the whole country, to establish comprehensive, modern, automated, real-time monitoring systems for surface water and ground water.
2. **Transforming Knowledge Access:** The project will build on the dramatic advances in cloud computing, internet, mobile devices, social media and other communication tools to modernize access to and visualization of customized water information by different stakeholders.
3. **Enhancing Analytical Tools:** The project will develop and demonstrate tools for water resources assessment, hydrologic and flood inundation forecasting, water infrastructure operations, ground water modeling, and river basin and investment planning.
4. **Modernizing Institutions:** The project will complement technology investments with investments in people and institutional capacity. Support will be provided for developing centers of expertise, innovative learning approaches, collaboration with academia and research institutes, and outreach programs. Office and equipment will be modernized to streamline workflows to effectively leverage the technology investments.



PROJECT COMPONENTS

Implementation activities of NHP involve building and strengthening capabilities, infrastructure, and knowledge through 4 components:

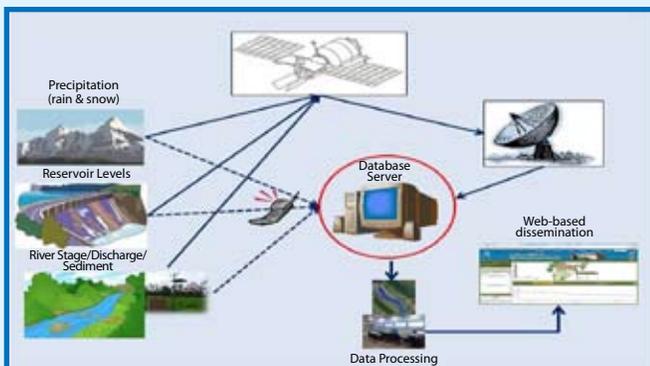
A. WATER RESOURCES MONITORING SYSTEMS

This component will finance the establishment/modernization of new and existing hydromet monitoring systems including meteorology, streamflow, ground water, water quality and water storage measurements, and construction of hydro-informatics centers that capture both water resources and uses. This component will be implemented by states/UTs with the support of core central agencies. The major activities will include (i) establishment of hydromet observation networks; (ii) establishment of Supervisory Control and Data Acquisition (SCADA) systems for water infrastructure; and (iii) establishment of hydro-informatics centers.



B. WATER RESOURCES INFORMATION SYSTEMS

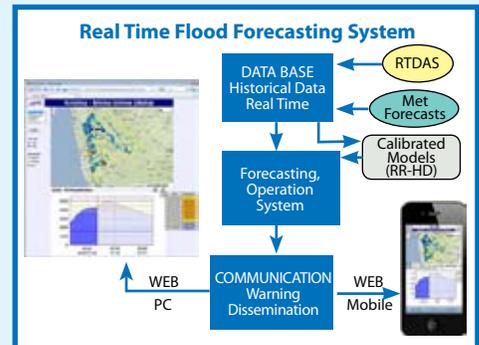
Component B will support the strengthening of national and subnational water information centers with web-enabled WRISs through standardization of databases and products from various data sources/departments and make comprehensive, timely, and integrated water resources information available to decision makers for effective planning, decision making, and operations. The sources of data/information will include the real-time data acquisition networks and centers under Component A, remote sensing data, and topographical maps and knowledge products developed under Component C. Emphasis will be on improving quality of and access to water information and on expanding public access beyond data to analytical results (trends, water balance, and so on) as well as to contribute to evidence based operational and investment plans. The project will support development or strengthening of centers for web-based WRIS at the central, regional, river basin, and state/UT levels.



Some of the key activities under this component are: (i) Strengthening of India Water Resources Information System (WRIS); and (ii) Regional Water Resources Information System.

C. WATER RESOURCES OPERATIONS AND PLANNING SYSTEMS

This component will support the development of interactive analytical tools and decision-support platform that would integrate database, models and scenario manager for hydrological flood forecasting, integrated reservoir operations, and water resources accounting for improved operation, planning, and management of both surface water and ground water, based on basin approach. The component will provide interactive systems to analyze the impacts of alternative management scenarios and generate knowledge products using real-time data under Component B. Component C has three subcomponents: (i) Development of analytical tools and decision-support platform (river basin modeling, streamflow forecasting and reservoir operation systems, and irrigation design and operations); (ii) Purpose-driven support; and (iii) Piloting innovative knowledge products.



D. INSTITUTIONAL CAPACITY ENHANCEMENT

Component D aims to build capacity for knowledge-based water resources management. It will support subcomponents in the establishment of (i) water resources knowledge centers, (ii) professional development, (iii) project management, and (iv) operational support.

The project will develop partnerships with national and international institutes, establish communities of practice, internships and visiting expert programs, customized training and workshops for knowledge exchange and professional networking, and facilitate hackathons to develop innovative water applications. Centers of Excellence (national as well as regional) will also be established to address specific needs. An outreach and awareness program will be an integral part of the project and will showcase the NHP to a broad audience, both for specific target audiences such as local communities in irrigated or flood prone areas and for the public at large. Activities will include quarterly NHP newsletters, events for the celebration of World Water Day, awareness campaigns, and the preparation of videos on project achievements and lessons learned. A series of annual Indian Water Management Conferences is also envisaged.

IMPLEMENTATION

Overall, there are 49 IAs: the lead IA (the MoWR, RD&GR); 7 central agencies; 2 RBOs; and 39 state/UT agencies dealing with surface water and ground water development and management. Implementation responsibilities are distributed across the central and subnational IAs to maintain the balance and risk between centralized and state-based activities and minimize interdependence between the center and states while ensuring the integration and standardization of systems. All central and subnational

IAs will be required to have project management units (PMUs), with a multidisciplinary team to implement project activities.

Consistent with the NHP's conceptualization as a national project covering the entire country, the MoWR, RD&GR is introducing the NHP as a 'central sector scheme', where funds will be allocated to the IAs as a grant from the central government.

IMPLEMENTING AGENCIES

- ▲ MoWR, RD&GR as lead agency
- ▲ 39 State/ UT agencies (SW & GW)
- ▲ 2 River Basin Organizations
 - Bhakra Beas Management Board, Ministry of Power
 - Damodar Valley Corporation, Ministry of Power
- ▲ 7 Central Government Agencies
 - Central Water Commission, MoWR, RD&GR
 - Central Ground Water Board, MoWR, RD&GR
 - National Institute of Hydrology, MoWR, RD&GR
 - Central Water and Power Research Station, MoWR, RD&GR
 - Central Pollution Control Board, MoEF&CC
 - Survey of India, DST
 - National Remote Sensing Centre, DOS

SUSTAINABILITY

The eight-year implementation period will allow the systems to be tested and become fully operational, and the investment in agencies and capacity building under the project will lead to a strong institutional base for sustainable continuation of the systems and services set up under the project. The majority of the procurements for goods and services under the project will require comprehensive warranty and/or O&M services for 5–10 years. This will support the commitment of agencies to operate and maintain the systems in the medium to long

term and ensure that for each agency, the system becomes an integral part of 'what they do'. GOI is establishing National Water Informatics Centre (NWIC) under NHP to support the infrastructure required to maintain the WRIS, including centralized systems–database management systems, servers, dedicated telemetry systems. The NWIC shall have the linkages with various central and state agencies to serve as centralised data base and centralised portal for dissemination of knowledge based product related to water resources to various stake holders.

BENEFICIARIES

The project has two groups of direct beneficiaries: (a) central and state implementing agencies (IAs) responsible for surface water and/or ground water planning and management, including river basin organizations (RBOs) and (b) users of the WRIS across various sectors and around the world. The ultimate beneficiaries will be the selected farm communities which benefited from pilot projects for water management; rural and urban water and power users;

populations affected by floods and droughts, especially poor rural people, and farm families who may benefit from improved irrigation water supply and management; stakeholders across the energy, inland waterways, environment, and agriculture ministries; research and educational institutions; students and researchers; and non-governmental organizations, civil society organizations, and the private sector.

For more information please contact:

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