

National Hydrology Project: National Institute of Hydrology

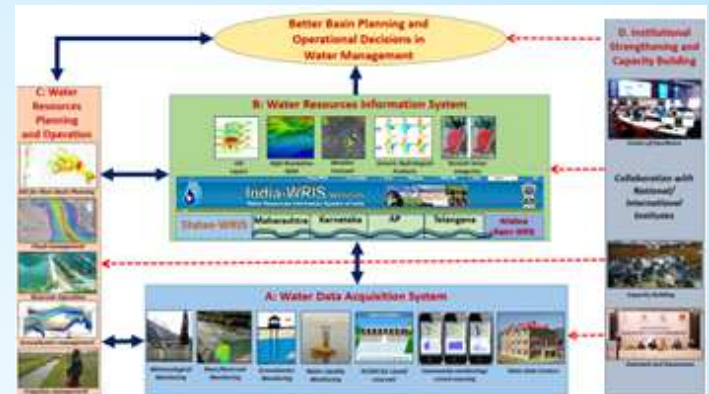
Background

The Ministry of Water Resources, River Development and Ganga Rejuvenation (MoWR, RD & GR), Government of India (GoI) has proposed the Hydrology Project Phase III, now named as National Hydrology Project (NHP) as follow-on to the earlier Hydrology Projects (HP-I and HP-II). Hydrology Projects have been the central government initiatives and 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 with completed two phases (Phase I from 1996 to 2003 and Phase II from 2006 to 2014) has 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. Apart from improving and standardizing the country's hydro-meteorological and geo-hydrological monitoring systems, HP-I and -II were instrumental in promoting a paradigm shift from relatively isolated water resources development towards comprehensive planning, development and management of water resources in a river basin context. HP-I covered nine states and six central agencies, while HP-II was implemented in 13 states and eight central agencies, predominantly in Central and Southern India.

After successfully participating in first two phases of Hydrology Project, the National Institute of Hydrology (NIH) is participating in NHP as one of the central agencies. NIH is a premier research institute in India, established in 1978 with the main objective of undertaking, aiding, promoting and coordinating systematic and scientific work in all aspects of hydrology. In addition to its Headquarters at Roorkee (Uttarakhand), the Institute has four regional centres at Belgaum, Jammu, Kakinada and Bhopal and two centres for Flood Management Studies at Guwahati and Patna. NIH has more than 70 highly qualified scientists having expertise on various areas related to hydrology and water resources supported by scientific and technical staff. The Institute at its headquarters has well equipped laboratories and computational facilities comprising of Computer Centre, Soil-Water analysis, Water Quality analysis, Isotope, Remote Sensing and GIS, Hydrological Investigations, Centre of Excellence for Advanced Groundwater Research, Snow & Glacier. The Regional Centres also have laboratory facilities.

Aims and Objectives of NHP

NHP would not only strengthen the existing monitoring systems for water availability, but would also include the monitoring of water use and would put much emphasis on IWRM and real-time monitoring and flow forecasting. There are a total of 47 implementing agencies (IAs) including eight central agencies (MoWR, RD&GR; CWC, CGWB, NIH, CPCB, Sol, NRSC and CWPRS), 37 state-level agencies and two river basin organizations (RBO).



The project will cover all major river basins of India and will require strong collaboration and cooperation among central and state levels of government. The project has four components: (A) Water Resources Data Acquisition, (B) Water Resources Information Systems, (C) Water Resources Operations and Planning, and (D) Water Resources Institutional Capacity Enhancement. These components (and their sub-components) map across the conceptual framework, with Component C spanning the application of systems/tools to generate water information products, and Component D encompassing strengthening of both technical and planning/policy capacity as shown in the figure.

Time Line

The NHP is proposed to start from April 2016. EFC has approved NHP proposal in October 2015 and has recommended that NHP may be taken up as 100% central sector scheme, without seeking any budgetary support from the states/organizations to facilitate smoother implementation. The first phase of the project will be up to 2019-20. The Second Stage, from 2019-20 to 2023-24, would be decided keeping in view the achievements till the year 2018-19, so as to maintain continuity.

NHP Management

For successful implementation of NHP, an institutional implementation arrangement has been made which will be headed by Secretary, MoWR, RD & GR. A Central Project Management Unit (CPMU) under the Chairmanship of Project Director (Joint Secretary) has been formed. NIH will be one of the central agencies under CPMU and a Project Management Unit (PMU) in NIH has been formed. This unit is headed by Project Director and supported by Nodal Officer, Coordinator Centre for Excellence, Coordinator PDS, Coordinator Training, Procurement Section, Finance Office and M&E Section.

Role of NIH in NHP

Keeping in view the NHP objectives and initiatives, NIH is involved in the following activities of NHP:

- Data Observation and network design
- Demand driven research through Purpose Driven Studies (PDS)
- Capacity building:
- Class room Training/Meetings and multi-media distance learning
- Courses on different topics of different durations
- Centre of Excellence for Hydrological modeling
- Consolidation of HP-II activities: Planning and DSS



Data Observation and Network Design

Under NHP, NIH and CWPRS have been nominated as technical agencies for guiding the state agencies in design and implementation of Hydromet System. In order to make the agencies aware of innovative technology and support in preparation of bid document, a series of trainings have been proposed during preparation of project. The proposed trainings/ workshops will be conducted by CWC, IMD, CWPRS, NIH, and World Bank experts. Case studies will be used to illustrate the design of network, the optimal density of network, suitability and limitations of each type of sensor, the options available for telemetry network via GSM and satellite technologies, examples of field installations of sensors for various conditions, important considerations for inspection and maintenance of the system, the options for various types of reservoir monitoring systems, the SCADA systems for GATE operations; and the World bank procurement procedure.

Purpose Driven Studies (PDS)

One of the main focuses of NHP is Research and Development (R & D) in the form of Purpose Driven Studies (PDSs). Considering the peculiarities and large variation in the nature of problems associated with water resources planning and development, the issues involved in research related to particular region and specific project, the NHP is sponsoring research proposals of applied nature along with basic and action research. The research activities of such nature are implemented through R & D Section of NHP. PDSs are related to specific issues of water management problems identified within the area of operation of IAs and of public concern. Outcomes of the studies are expected to provide feasible and cost effective methodologies for replication in other areas situated in similar hydro-geological setup. The main role of R&D Section is to coordinate these activities and to review and monitor the progress of the PDSs.

Training and Capacity Building

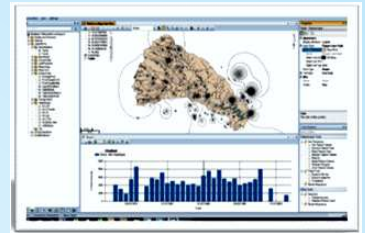
NIH has been assigned with the important task of planning and organizing the training programmes for capacity building of the IAs under NHP. The main objective of the training and capacity building activities is to create, enhance and develop capacity in IAs at desired level to plan, implement and operate water resources schemes. A Training section has been formed in NIH. For this purpose which will identify the training needs and prepare annual training programs in relevant areas in consultation with various IAs. In collaboration with the other Institutes/Organisations, NIH will provide training on various aspects of hydrology and water resources.



Decision Support System (DSS)

Decision Support System (DSS) component is essential for up-gradation and maintenance of DSS(P) software

developed and implemented in the pilot basins of nine state agencies during HP-II project. New applications of DSS(P) in other basins would also be considered in association with states data centers and their planning and design departments. These activities would ensure the sustainability of DSS(P) software in state IAs and its utilization for planning various water resources activities.



Developing a "Centre of Excellence for Hydrologic Modeling" and giving leadership to the Country in hydrologic modelling services is one of the four major tasks assigned to NIH under the NHP. To grow and sustain, the centre has to become knowledge repositories in hydrological processes understanding, advanced tools and techniques, advancement taking place from time-to time globally on hydrological research, tools and techniques to respond to the India's hydrologic modelling services. To attain this objective, the Institute has to have capabilities and resources to develop demand driven tools and techniques using popular computational platforms and help capacity building of the Country through technology and knowledge disseminations. The aim is to make India self reliant in water management tools and techniques to help decision making on movement, availability, fate and quantity and quality management of both surface and sub-surface water. The 'Centre of Excellence' will primarily deal with three components: Surface water Modeling; Groundwater Modeling; and Water Quality Modeling. Web-enabled models and e-learning packages on hydrological modules will be developed.

Budget Outlay

Overall budget of NHP is about Rs. 3680 crore and it will be implemented as a Central Sector Scheme in two stages. In the first stage, keeping in view the availability of funds, an amount of Rs. 1681.57 crore has been recommended for the period 2015-16 to 2019-20 for NHP. Fifty per cent of the amount would be World Bank loan and remaining 50% would be Central assistance from the budgetary support. The Second Stage, beyond 2019-20 upto 2023-24, would be processed keeping in view the achievements till the year 2018-19.

Project Secretariat (nhp.nih@gmail.com)

Er. R D Singh, Director, NIH, Roorkee
Singhrd3@gmail.com

Dr. Sharad K Jain, Sc.'G' & Project Director, NHP
s_k_jain@yahoo.com

Dr. Sanjay K Jain, Sc.'G' & Nodal Officer, NHP
sanjay.nih@gmail.com

Dr. N.C. Ghosh, Sc. 'G', Coordinator, Centre of Excellence, NHP
ncg_1959@rediffmail.com

Dr. M K Goel, Sc.'G' & PDS, Coordinator, NHP
goel.mk1@gmail.com

Dr. A K Lohani, Sc.'G' & Training Coordinator, NHP
aklnih@gmail.com

Web site : www.nih.ernet.in/NHP