

Visit to IAs by NPMU/TAMC



Senior Joint Commissioner
Mr. Neeraj Manglik visiting
Gujarat Groundwater Department

NPMU members and different domain experts from TAMC have provided continuous support to Implementing Agencies. Visits were made to Haryana, Maharashtra, Andhra Pradesh, Telengana, Jharkhand, Punjab, Rajasthan, Madhya Pradesh, Gujarat, Tripura, Manipur, BBMB and Assam during this period. The visits addressed problems faced by implementing agencies at state level, bottlenecks etc. These field visit are crucial as these are providing important insights about technical and non-technical issues and their intensity that are challenging proper implementation of NHP activities at field level. NPMU has planned to continue with providing supportive visits to all the IAS in the coming days as well.

Upcoming Events

Workshop on Water Accounting for Cauvery Basin

A workshop on WA+ using remote sensing techniques for 12 officials is being scheduled on 4th September, 2018 at NWA, Pune.

International Conference on Water Resource Management

Bhakra Beas Management Board will organize an International Conference on Water Management under NHP at Chandigarh tentatively during 10 to 12 December 2018. Dignitaries and eminent personalities from Water Sector around the globe will come together to discuss challenges, innovations and the way forward.

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Ministry of Water Resources,
River Development & Ganga Rejuvenation



NATIONAL HYDROLOGY PROJECT CONNECT newsletter

From the desk of Secretary

Dear Colleagues!

The recent release of NITI Aayog's Composite Water Index emphasised the significance of having real time information on water resources that goes far beyond being just data about water. It may lead to changes in the cropping pattern, urban water planning, investment in drinking water supply and many other domains beside flood forecasting and drought management. We have the knowledge and the technology to improve our water resources information systems and we have the will too. NHP has provided the financial and technical support to fulfil the ambitious objective of having a centralized water resources database with inputs from a decentralized real time data collection mechanism. I am expecting that things will move ahead rapidly.

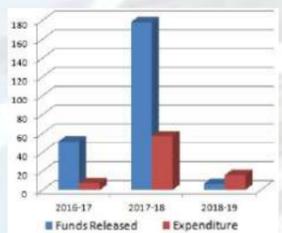


We have to show our efficiency in procuring the required goods and services for capturing hydromet data. Simultaneously we need to prepare our manpower to be ready to analyze and utilize the data acquired. I believe all the Implementing Agencies (IAs) will utilise the NPMU's support to expedite the process of procurement and ensure participation of the key persons from your organizations in the upcoming trainings.

I am confident that NHP is progressing in the right direction to build a community of great impact. I take this opportunity of the launch of the first quarterly newsletter of NHP to thank all of you for your hard work and wish you all the very best for your upcoming endeavours.

Financial Progress

Since its inception in 2016-17, a total expenditure of Rs. 64 Cr has been incurred up to 31st March'18 under the National Hydrology Project. During 2018-19 the expenditure was Rs. 16 Cr. till quarter ending June'18. The Public Financial Management System (PFMS) is being implemented among all Implementing Agencies (IAs). As of now 48 out of 49 agencies are registered with the PFMS and 34 are using it for the release of funds and the booking of expenditure.



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Sh. Upendra Prasad Singh
Secretary
MoWR, RD & GR



About NHP

The National Hydrology Project (NHP) has been approved by the Union Cabinet in April 2016 as a central sector scheme with a total outlay of Rs. 3679.80 Crore. With support from World Bank, under this scheme, 100% grants to the Implementing Agencies are being released. NHP has pan India coverage with 49 Implementing Agencies (IAs). The project is has a total duration of 8 years from 2016-17 to 2023-24.

The Objectives

The core objective of NHP is to improve the extent, quality and accessibility of water resources information to create decision support systems for floods and basin level resource assessment/planning and to strengthen the capacity of target water resources professionals and management institutions in India.

The Expectations

- ❑ Basin/State-wise total water assessment
- ❑ Improve Flood management
- ❑ Water resource Planning and Management at Basin Level
- ❑ Optimization of Water Sector Investments
- ❑ Mitigating Climate change impacts

Update on 2nd World Bank Implementation Support & Review Mission

The second World Bank Implementation Support & Review Mission for the National Hydrology Project (NHP) was conducted from April 25 to June 6, 2018 at three locations where states/IAs assembled for review - Gangtok, Sikkim (April 25-27); Munnar, Kerala (May 23-25) and in New Delhi (June 4-6). During the mission, the World Bank and NPMU representatives reviewed agency-wise project implementation progress as envisaged in the Annual Work Plan (AWP) and the Project Implementation Plan (PIP).



2nd World Bank Implementation Support and Review Mission at Munnar, Kerala

They also identified implementation bottlenecks and provided support to states and central implementation agencies for the smooth implementation of the project. An Aide Memoire was released.

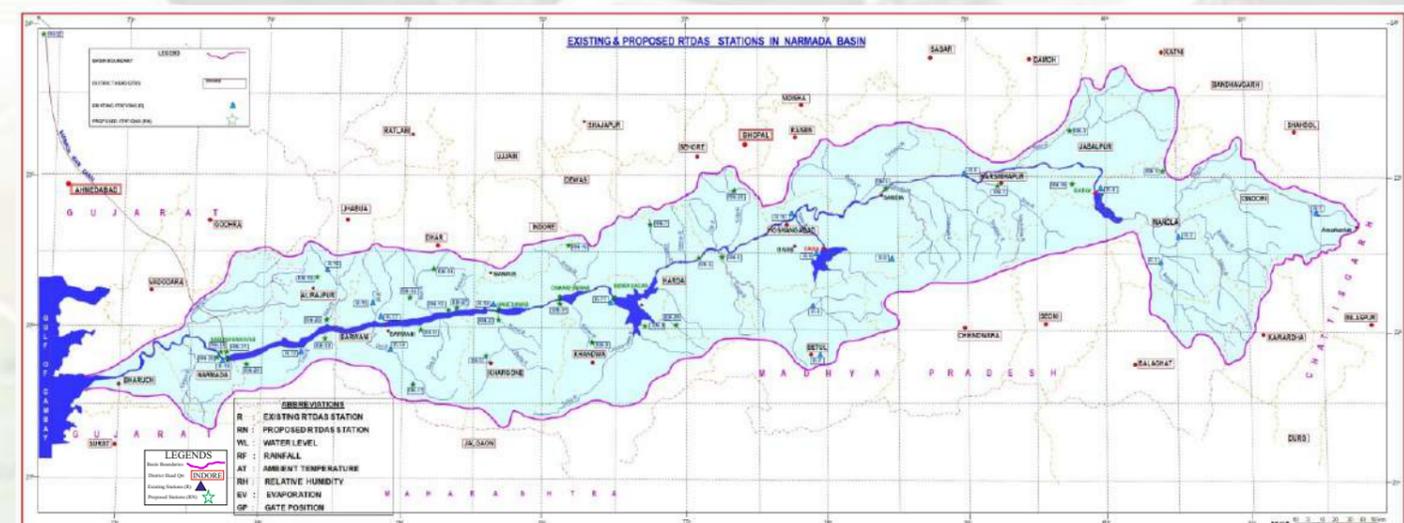
Narmada River Basin Modelling

The Narmada is the largest west flowing river of India. The Narmada Basin extends over the states of Madhya Pradesh, Gujrat, Maharashtra and Chhattisgarh having an area of 98,796 Sq. Km. Narmada river rises near Amarkantak in Madhya Pradesh at an elevation of about 900 m and flows for about 1312 km before outfalling into the Arabian Sea through the Gulf of Cambay. Its principal tributaries are the Burhner, the Halon, the Heran, the Banjar, the Dudhi, the Shakkar, the Tawa, the Barna ,the Kolar, the Ganjal, the Beda, the Goi, and the Orsang. At present CWC maintains 18 hydraulic observation sites in the basin. In addition, gauge-discharge data are available at 43 sites established by State. CWC also operates 4 flood forecasting stations in the basin. To strengthen this network, under NHP another 29 RTDAS Station are being proposed. The major part of basin is covered with agriculture accounting to 56.90%. Water bodies cover 2.95% of the total basin area. NPMU/TAMC experts have been engaged in assisting the Narmada Control Authority (NCA) in their efforts to automate water accounting and take it a step further by adopting a river basin model that will be used both as a planning and an operational tool in the future. TAMC consultants are currently developing suitable modelling test problem that addressed the needs of NCA. Various model vendors and their respective consultants will then be asked to provide their solutions to the test problem. This will help NCA to narrow down the choices and select one of the available cutting edge tools that best meets their needs. This is an exciting development which will move NCA into the forefront of river basin modelling in India.

Existing Station: RTDAS Network on Narmada River Basin

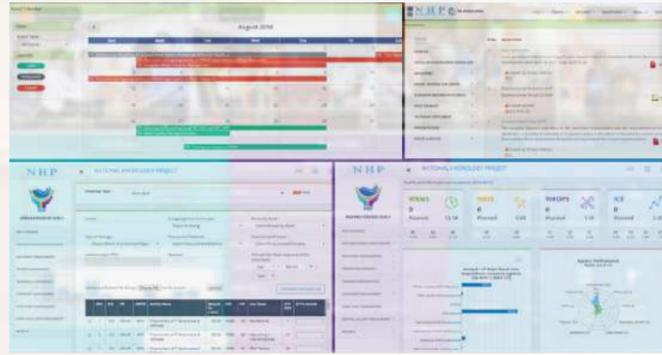
Stations	River	Parameter	Stations	River	Parameter
Dindori	Narmada	RF, AT & RH	Hoshangabad	Narmada	RF, AT & RH
Amgaon	Narmada	WL, RF, AT & RH	Indirasagar	Narmada	WL, RF, AT & RH
Bamni Banjar	Banjar	WL, RF, AT & RH	Maheshwar	Narmada	RF, AT & RH
Bargi	Narmada	WL, RF, AT & RH	Barwani	Narmada	RF, AT & RH
Barmanghat	Narmada	WL, RF, AT & RH	Pati	Goi	WL, RF, AT & RH
Pachmarhi	Denwa	WL, RF, AT & RH	Dhulsar	Uri	RF, AT & RH
Betul Bazar	Machna	RF, AT & RH	Jobat	Hatni	RF, AT & RH
Tawakati	Tawa	RF, AT & RH	Dhadgaon	Uri	WL, RF, AT & RH
Tawa	Tawa	RF, AT & RH	Sardar Sarovar	Narmada	RF, AT & RH

Hydro Meterological Observation Stations on Narmada Basin



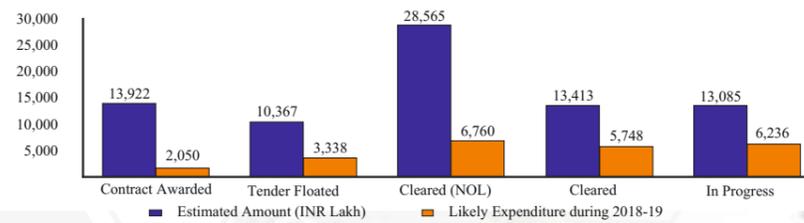
Web-Site and MIS

The NHP is being implemented on a pan India basis in order to streamline the information flow and effective monitoring, a robust web-based information management system is being developed. During this quarter, a new Procurement Module has been added to enable the workflow of creation and approval of agency-wise Procurement Plan. Data-Synchronization features are added to MIS Procurement & STEP (World Bank) to monitor and control discrepancies in these two parallel system. Real time status of procurement packages can now be tracked using the MIS application. The Training module is revamped to add User Profile creation for Training/Event and provisions added to upload required documentation for international trainings. Charts and Dashboards for Admin & Agencies are prepared. A Tender Management & Announcement Facility are now available in NHP website. Modules for Mission ranking calculator, Map based display and Workflow of Purpose Driven Study (PDS) are under progress. Hydromet module is being redeveloped. This module will facilitate Agencies to review, add and edit existing/proposed hydromet stations' data. A display facility of hydromet stations on map on



Procurement Progress

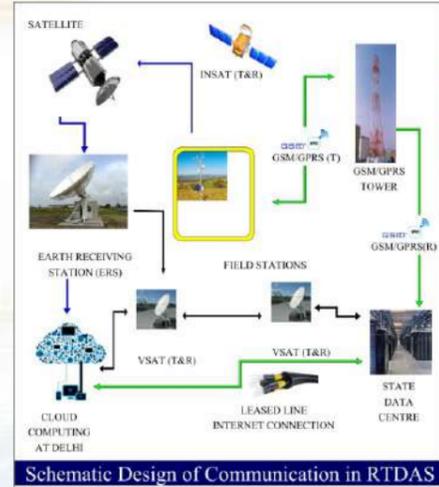
Procurement is one of the key elements of the NHP. We have initiated tendering processes of major procurement items including Real Time Data Acquisition System (RTDAS – AWS,



ARG and AWLR), Piezometer, DWLR, SCADA and ADCP. As on date, 909 procurement packages have been reviewed and cleared by NPMU on the MIS. 94 out of 98 bid documents received at NPMU till date, with estimated cost of Rs. 717 crore, have been reviewed and cleared. Under the Water Resources Monitoring System (WRMS) component, 42 bid documents (RTDAS-24, DWLR-5, SCADA-6 and ADCP-7) amounting to about Rs. 294 crore have been cleared by NPMU out of which 12 bid documents worth about Rs. 85.5 crore have been floated and remaining 30 bid documents are in process of floating. Further, the bid documents for generation of DEM 0.5m and DEM 3-5 m amounting to about Rs. 130 crore under the Water Resources Information Systems (WRIS) component have been floated. For three river basins, the procurement of Integrated Water Resource Management (IWRM) consultancy amounting to Rs. 60 crore is at financial evaluation stage and expected to be finalized by October, 2018. Besides, NPMU and TAMC have taken several steps including conducting 5-days procurement training, uploading of Frequently Asked Questions (FAQs) on the MIS, and sharing of Standard Bidding Documents (SBDs) and sample documents with the IAs in order to streamline the procurement capacity and processes. In addition, few contracts have been awarded under the NHP. DVC, SOI and Uttrakhand have awarded the works for construction of data centres. Uttrakhand has also awarded the contract for renovation of water quality labs at IRI Haldwani and Roorkee.

Hydro-met Network

It is said that you can't manage what you can't measure. The Real time Hydro-Met data acquisition network which is under implementation in NHP will provide key data required for forecasting inflows and other various related activities of Basin. A Real Time Data Acquisition System (RTDAS) consists of a telemetry network of automated rainfall stations, automated weather stations and water level stations along rivers/reservoirs, which are installed to provide continuous real time data. The sensors like Automatic Rain Gauges (ARG), Automatic Weather Stations (AWS), E pan evaporation sensors, Automatic Water Level Recorders (AWLR), Spillway gate sensors, etc. Can be combined within a single station to optimize the costs of INSAT, GSM & GPRS communication and the recurring costs associated with these devices. NHP encourages combining data from multiple stations through the use of wired or wireless technology to minimize the number of data transmission systems. Provisions are made under NHP for the up-gradation of existing stations along with the setting up of new Hydromet Stations. Agency wise details are given for new automatic and digital instruments for capturing aqua-data.



Type and Number of Hydromet Instruments to be installed under NHP

AWS	ARG	AWLR	DWLR	PIEZOMETER
245	1261	1678	5643	3250

Implementing Agency-wise list of new Hydromet Instruments (July 2018)

States	AWS	ARG	AWLR	DWLR	Piezometer
Andhra Pradesh (GW)				430	430
Andhra Pradesh (SW)	16		59		
Assam		50	75		
Bihar (GW)				40	40
Bihar (SW)		17	54		
Chattisgarh (GW)				137	97
Chattisgarh (SW)	2	63	58		
Goa	10				
Gujarat (GW)				526	145
Gujarat (SW)	82	29	180		
Haryana (SW)		30	169		
Himachal Pradesh	6	44	9	56	56
Jharkhand		15	14	137	118
Karnataka	22	150		800	
Kerala (GW)				150	730
Kerala (SW)			52		
Madhya Pradesh	9	79	155	410	
Maharashtra (GW)				354	
Maharashtra (SW)	17	293	208		
Manipur	6	12	17	9	9
Meghalaya	5	25	25	20	20
Mizoram	10	27	16	10	10

States	AWS	ARG	AWLR	DWLR	Piezometer
Nagaland	6	41	32	10	10
Odisha (GW)				206	
Odisha (SW)	27	60	31		
Punjab	5		19	550	45
Rajasthan	1	147	113	150	158
Sikkim	5		5		
Tamil Nadu			51		74
Telangana (GW)				900	800
Telangana (SW)		4	28		
Tripura		11	11	30	30
Uttar Pradesh (GW)				171	171
Uttar Pradesh (SW)			89		
Uttarakhand	1	49	64		
West Bengal (GW)				472	236
West Bengal (SW)		45	58		
UTs					
Puducherry			6	9	5
Central Agencies					
CWC*	5	40	45		
CGWB				60	60
BBMB	6	15	10		
DVC	4	15	25		

* for Arunachal Pradesh

National Water Informatics Centre (NWIC)

Under the NHP, Union Cabinet had also approved the establishment of a National Water Informatics Centre (NWIC) as an independent organization with adequate administrative and financial powers under the overall control of the Secretary, MoWR, RD & GR. NWIC has been notified on 28th March, 2018 as a repository of nation-wide water resources data which would be a single window for updated data on water resources in India. Considering the fact that availability of updated data is a prerequisite for scientific assessment, monitoring, development of Decision Support System (DSS) and integrated water resource management in the country, establishment of NWIC would be a milestone for effective management of precious water resources.

India-WRIS & e-SWIS Water Information System

Guided by the National Water Policy of India and with a vision of providing a 'Single Window repository' for all water resources data and information in a standardized national GIS framework, the Central Water Commission had earlier developed the India-WRIS portal in collaboration with NRSC. Through this portal, an effort was made to integrate all water related data, like rainfall, snowfall, geo-morphological, climatic, geological, surface water, ground water, water quality, irrigated area with well-defined procedures and formats to ensure dissemination, online updating and transfer of data to facilitate informed decision making in the management of water.

Considering the convergence of India WRIS with the objectives of NWIC, India WRIS will become an integral component of NWIC. As of now the India-WRIS portal has 95 GIS layers with temporal data ranging from 5

to 100 years and more than 700 attributes. The major GIS layers are basin boundary, river network, water bodies/reservoirs, canal network, major & medium irrigation project command boundary, water resources project (dam, barrages), administrative boundary, road network, town and village extent. However, these details at the macro level and lacking information details, analytics and various decision support systems on a micro level.

Since India-WRIS is envisaged to be a platform for the future development of various water resources applications at a more detailed level, depending upon the needs of various state governments, an effort is being made under NHP to upscale Water Resource Information System at State level (State-WRIS) utilizing the existing layers and information's of India-WRIS to be supplemented with state specific detailed information.

Under NHP, the up scaled India- WRIS will also be integrated with e-SWIS which is a web based water resources database management system developed with open source software. A number of functionalities are also being added to e SWIS which includes capturing of telemetry and ground water data. Thus the revamped integrated e-SWIS will be the central National database for surface as well as groundwater.



Collaboration with Google

State-of-the-art technology for flood management

The Ministry of Water Resources, River Development and Ganga Rejuvenation (MOWR, RD & GR) under National Hydrology Project and Google have joined hands together to use artificial intelligence and advanced geo-spatial mapping tools that aim at effective flood management in India. The Central Water Commission (CWC), an attached office of the MOWR, RD & GR, has entered into a Collaboration Agreement with Google. This will help CWC to use state-of-the-art advances made by Google in the field of Artificial Intelligence, Machine Learning and geo spatial mapping for effective management of water resources particularly in the field of flood forecasting and dissemination of flood related information to the public widely using the dissemination platforms developed by Google. This initiative is likely to help crisis management agencies to deal with extreme hydrological events in a better manner.



MOWR, RD & GR and Google to collaborate for using state of art technologies for flood management

Training & Capacity Building

Capacity building of the project personnel on a continuous basis is an integrated objective of NHP. Seven National training programmes have been conducted during April-June'18 with an overall participation of 130 people from 26 Agencies.

1. NRSC organised a week long training programme on RS&GIS Fundamentals in Hyderabad.

2. A 5 days training on Irrigation Benchmarking was organized by NWA, Pune.

3. NWA has also organized a 5 day programme on "Flood Hydrology: Measurement to Modelling".

4. SOI organized a 3 days training programme on the creation of DEM at Dehradun. This course is designed to impart theoretical knowledge as well as practical training to personnel from IAs associated with the creation of DEMs from geospatial data.

5. The National Centre for Good Governance, Uttarkhand organized a 4 days training program on personality development and management ethics.

6. 32 people attended 5 -days training course on "Hydromet Network Design and Instrumentation" organized by the Central Water And Power Research Station (CWPRS), Pune aimed to cover the modules Network Design and Instrumentation.

7. 28 participants from various agencies attended another important 5 days training, organised by CPCB at IIPA, Delhi on Water Quality Instrumentation and Monitoring at the end of June. State Level trainings were organised by Rajasthan and Andhra Pradesh on Basic Hydrology and e-SWIS respectively. Training cum Workshop on flood forecasting, data requirements and reliability & applicability in flood modelling with specific reference to Brahmaputra was successfully organised on 21st -22nd June at AWRMI, Assam.

Five months training on Water Accounting Plus (WA+) using remote sensing technology was organised by IHE - DELFT under NHP in two parts in which 12 officials (6 from CWC, 2 each from CGWB, NIH & NRSC) participated. The first part of the training with a 3 months duration at IHE-Delft, Netherland has been completed and the 2nd part at NWA, Pune is going on. After completion of training, participants will develop a water account of Cauvery Basin.

