Ministry of Water Resources, River Development & Ganga Rejuvenation

NATIONAL HYDROLOGY PROJECT

CONNECT

(January - March 2019 | News Letter)

Training on operation of "Real Time Kinematic (RTK)" along with DGPS at River Research Institute, West Bengal
जल जीवन अनमोल है, सृष्टि का परिधान,
अमृतमय हर बूंद है, श्रेष्ठ प्रकृति वरदान।
Dear Colleagues,

With each passing day, demand for water is increasing due to increased population as well as to cater to various developmental needs. As the water resources are limited, concept of efficient water management comes into picture. However any effective water resources management technique requires availability of reliable and robust water data, which can be used for developing various applications for larger benefit of all with sustainability for future generation also. Different solutions to our water problems can be tackled through sound scientific decisions based upon these data and taking into all relevant elements.

Ministry of Water Resources, RD & GR through its National Hydrology Project (NHP) has tried to make a significant contribution not only to improve the state of information about our water resources but also to make this information available to all interested parties. The existing India-WRIS portal is being revamped to develop, maintain, update and provide live water data on real time, from Centre and State Agencies.

Under NHP, a comprehensive hydro-met network is being established in every participating State and organizations so that the information could be utilized in developing Decision Support Systems (DSS) which will further help all the stake holders. However, the key to success of Water Information System will be seamless sharing of data between the stakeholders i.e. Centre to States and vice-versa. In this regard, our Ministry has recently modified its Data Dissemination Policy. We hope that other participating agencies of NHP will also follow suit to achieve the overall goal of NHP.

I am hopeful that together we will realize that efficient water management is the need of hour for all our present & future requirement. I take this opportunity to thank you all for your efforts and wish you all the very best for your endeavors.

Upendra Prasad Singh  
Secretary  
MoWR, RD & GR
Dear Colleagues,

Another financial year has come to an end and I am happy to share that many of the agencies have really performed better than last year. The steady progress of National Hydrology Project (NHP) gives the satisfaction that it is on the right track. As we have overcome many of the initial difficulties, most of the Implementing Agencies (IAs) now have a good grasp of the issues and I am confident that good progress will be made in the coming months. The project has already completed 2 years and we are, now, at the beginning of the third year of the project. In order to expedite procurement activities related to RTDAS to take benefit of 5 years of maintenance support, IAs have been communicated to initiate procurement process by September, 2019.

The progress of each agency will be monitored and scrutinized vigorously this year during the Mid-Term Appraisal (MTR) by World Bank. MTR will offer opportunity to better performing agencies to demand more resources to take up additional scientific based studies, development of their own water resource information system, capacity building of their personnel, etc. This would also provide an opportunity for course correction.

Here, I would also like to inform that the 2nd International Conference on Sustainable Water Management under NHP will be held in Nashik, Maharashtra during 6th – 8th November 2019. The Bhakra Beas Management Board (BBMB) had done an outstanding job in organizing the 1st conference in Chandigarh in December 2018, setting the standard very high. Nonetheless, I am confident that the Maharashtra Water Resources Department will do excellent work. On behalf of WRD, Maharashtra, I invite you all to participate in 2nd International Conference and seek your support in sending technical papers for the event.

Thank you all for your dedication and your excellent work.

Akhil Kumar  
Joint Secretary  
MoWR, RD & GR

घर-घर में बूंद-बूंद पानी बचाएंगे तो भविष्य का कल देख पाएंगे.
Since last year, there is significant progress under NHP, both in terms of procurement as well as finance. Though NHP is a technology-centric project, progress in procurement & finance indicates the direction or path in which project is ongoing. The detailed progress as given below tells the whole story.

**FINANCIAL PROGRESS**

![Graph showing financial progress of NHP](image)

- Since its inception in FY 2016-17 up to March 2019, a total expenditure of Rs.189 Crore has incurred under National Hydrology Project. The expenditure for the quarter ending March, 2019 was Rs. 66 Crore and for the FY 2018-19 up to March 2019 was Rs.125 Crore.

- The total Grant/ Fund released to the IAs during FY 2018-19, was Rs.80 Crore, whereas the Cumulative release till date is Rs. 309 Crore.

- Good financial progress was reported by Uttarakhand, Himachal Pradesh, Survey of India, BBMB, Telangana GW, West Bengal SW & GW, NRSC and some other agencies during FY 2018-19.

- During the FY 2018-19, grants were released to Andhra Pradesh GW, Himachal Pradesh, Kerala SW, Mizoram, Nagaland, Sikkim, Telangana GW, Uttarkhand, West Bengal GW, Puducherry, DVC, BBMB, NRSC & Sol.
## PROCUREMENT

<table>
<thead>
<tr>
<th>Total Nos. of Tender Awarded</th>
<th>The Total cost of Tender Awarded</th>
<th>Total Nos. of Tender Floated</th>
<th>The Total cost of Floated Tender</th>
</tr>
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<tbody>
<tr>
<td>222</td>
<td>Rs.258.867 Crore.</td>
<td>174</td>
<td>Rs.425.07 Crore</td>
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## Major Tenders Floated

<table>
<thead>
<tr>
<th>S. No</th>
<th>Procurement Description</th>
<th>Implementing Agency</th>
<th>Estimated Value (In Lakhs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.5m Digital Elevation Model (DEM)</td>
<td>SOI</td>
<td>Rs.8325.00</td>
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<tr>
<td>2</td>
<td>3-5 DEM</td>
<td>SOI</td>
<td>Rs.4000.00</td>
</tr>
<tr>
<td>3</td>
<td>Purchase of RTDAS (AWLR, ARG &amp; AWS) for NE states except Assam</td>
<td>CWC on behalf of NE states</td>
<td>Rs.3700.00</td>
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<tr>
<td>4</td>
<td>EHP Model for medium &amp; long term forecasting</td>
<td>CWC</td>
<td>Rs.2000.00</td>
</tr>
<tr>
<td>5</td>
<td>Setting up of Continuously Operating Reference Station (CORS)</td>
<td>SOI</td>
<td>Rs.1700.00</td>
</tr>
<tr>
<td>6</td>
<td>RTDAS for Uttarakhand</td>
<td>Uttarakhand</td>
<td>Rs.1664.00</td>
</tr>
<tr>
<td>7</td>
<td>RTDAS for Godavari Basin in Marathwada Region</td>
<td>Maharashtra SW</td>
<td>Rs.1642.00</td>
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<tr>
<td>8</td>
<td>RTDAS for state of Rajasthan</td>
<td>Rajasthan</td>
<td>Rs.1550.00</td>
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<tr>
<td>9</td>
<td>RTDAS for Godavari Basin in Vidarbh Region</td>
<td>Maharashtra SW</td>
<td>Rs.1529.00</td>
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<tr>
<td>10</td>
<td>RTDAS for Tapi Basin</td>
<td>Maharashtra SW</td>
<td>Rs.1283.00</td>
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<tr>
<td>11</td>
<td>RTDAS for remaining area of South of Panchganga in Krishna Basin</td>
<td>Maharashtra SW</td>
<td>Rs.868.00</td>
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<tr>
<td>12</td>
<td>Construction of Piezometers (50-100 m)</td>
<td>Telangana GW</td>
<td>Rs.800.00</td>
</tr>
</tbody>
</table>

### Note

जिसे अबतक ना समझे वो कहानी हूँ में,
मुझे बवाद मत करो, पानी हूँ में!
## Major Tenders Awarded / LOA Issued

<table>
<thead>
<tr>
<th>S. No</th>
<th>Procurement Description</th>
<th>Implementing Agency</th>
<th>Estimated Value (In Lakhs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>RTDAS Procurement</td>
<td>Andhra Pradesh SW</td>
<td>Rs.1,079.20</td>
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<tr>
<td>2</td>
<td>Procurement of Satellite imagery for Updation of 1:25k geodatabase</td>
<td>SOI</td>
<td>Rs.1,000.00</td>
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<tr>
<td>3</td>
<td>Procurement of Stereo Satellite imagery for creation of 3-5m DEM of gap areas</td>
<td>SOI</td>
<td>Rs.1,000.00</td>
</tr>
<tr>
<td>4</td>
<td>Supply, installation, testing, commissioning and maintenance of Real Time Data Acquisition System (RTDAS) of DVC under National Hydrology Project (NHP).</td>
<td>DVC</td>
<td>Rs.799.00</td>
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<tr>
<td>5</td>
<td>CONSTRUCTION OF STATE DATA CENTRE</td>
<td>Assam</td>
<td>Rs.630.40</td>
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<tr>
<td>6</td>
<td>INSTALLATION OF BLOCKWISE KEY PIEZOMETERS</td>
<td>Uttar Pradesh GW</td>
<td>Rs.624.20</td>
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<tr>
<td>7</td>
<td>CONSTRUCTION OF DATA CENTRE</td>
<td>Manipur</td>
<td>Rs.500.00</td>
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<tr>
<td>8</td>
<td>Procurement of archived High Resolution ALTM DEM for flood forecasting and inundation simulations for Godavari River Basin</td>
<td>NRSC</td>
<td>Rs.375.80</td>
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<tr>
<td>9</td>
<td>SCADA System for Okhla Barrage &amp; Its Regulators</td>
<td>Uttar Pradesh SW</td>
<td>Rs.351.00</td>
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<tr>
<td>10</td>
<td>50 Nos. BOLERO CAMPER PS 4WD. Vehicles will be employed for field survey activities.</td>
<td>SOI</td>
<td>Rs.335.00</td>
</tr>
<tr>
<td>11</td>
<td>SCADA and gate sensors for other dams</td>
<td>Rajasthan</td>
<td>Rs.300.00</td>
</tr>
<tr>
<td>12</td>
<td>Construction of Hydrology Control Room at DVC Maithon under NHP.</td>
<td>DVC</td>
<td>Rs.226.00</td>
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<tr>
<td>13</td>
<td>Establishment of production facility for 1:25k gdb</td>
<td>SOI</td>
<td>Rs.133.00</td>
</tr>
<tr>
<td>14</td>
<td>Establishment of production facility for 3-5m DEM</td>
<td>SOI</td>
<td>Rs.132.00</td>
</tr>
<tr>
<td>15</td>
<td>Establishment of production facility for 1:25k gdb</td>
<td>SOI</td>
<td>Rs.121.00</td>
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<tr>
<td>16</td>
<td>Purpose driven study for demand based irrigation and command area management using remote sensing and other innovative technologies</td>
<td>Rajasthan</td>
<td>Rs.110.00</td>
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<tr>
<td>16</td>
<td>Construction of State Data Centre</td>
<td>Sikkim</td>
<td>Rs.400.00</td>
</tr>
</tbody>
</table>

"दृष्टि ना करो जल को, नष्ट ना करो आने वाले कल को।"
Launched

- Launch of new Dashboard for Implementing Agency includes Financial Status, Events, Procurement, News and Updates, STEP based status
- Enhancement on Procurement Module
- “Online Tender publishing system” launched
- Integration of Milestone based Bid Monitoring System with “STEP”
- Enhancement of Monitoring & Evaluation practice by incorporating the 3rd World bank Mission Ranking requirement in the “World Bank Mission” sub-module
- Web-Application for conducting “National Conference on Flood Early Warning for Disaster Risk Reduction” launched on NHP website for registration and logistic support
- Workflow based Purpose Driven Study (PDS) module launched

To be Released soon

- “Workflow based bid document review system”
- “Hydro-met Management Information System” on NHP website
Operationalization of Integrated Water Resource Information System

The concept of integrating Information system with Centralized data base holds a great significance in the current stage of development of Water Resource Information System. In view of this, TAMC has taken up IT development plan for new Integrated System with incremental launch of new functionalities for eSWIS and WRIS, under the guidance of NPMU under NHP. Major milestone to initiate migration of these application to new technology have been achieved till now and database migration from old system to new open source databases have been completed successfully. In line with the development plan, some modules of integrated application have been made operational on March 29th 2019, with new enhanced functionalities.

Achievements

- Migration Activities completed - From existing ArcGIS 10.0 to ArcGIS 10.6, old eSWIS (Postgres 9.1) to WIMS (Water information Management System) database (Postgres 9.6), India WRIS (Oracle) to WIS database (Postgres 9.6), GEMS and some modules of Ground Water, Groundwater observation sites.
- Water Resource Information Management system (WIMS) is now available with improved data model.
- Telemetry INSAT data acquisition module is made operational.
- Ground Water Data entry module added.
- GPRS module for data acquisition tested and made operational for UP Ground Water with migration of 200 stations.
- MAP Published on ArcGIS Server with web based editor, viewer, water data online and eSWIS and telemetry. WMS and WFS are exposed for the purpose.
- Under WRIS, it is planned to provide Web Editing Tool to all the states. Maharashtra and Gujrat have been considered under the Pilot project for the implementation of this tool. The theme layers – DAM, Barrage, Weir, Anicut, Lift, Canal and Command along with base layers and administrative layers have been are published for these states for editing. WRP visualization for the spatial theme layers have been developed in WRIS.
- The Generic State-WRIS system as part of India-WRIS system is in the process of development. Under this component, two dashboards i.e. Rainfall and rivers/reservoir have been made operational. The underlying facts and principles are:
Some States already have developed their state water information systems, in others the implementation of a dedicated portal is still pending.

In order to facilitate the establishment of State water portals, under the NHP a generic State WRIS will be developed and handed over to interested agencies. This generic system can then be customised and further developed in accordance with the needs of the State.

The development of this generic State WRIS is in an initial stage.

The generic State WRIS will be connected to eSWIS and India WRIS so that all relevant hydro-meteorological data and GIS layers can directly be accessed. Also many tools of India WRIS can be used in the generic State WRIS.

It is proposed to develop some common features for a generic State WRIS application

Provide access to existing data base and layers of India-WRIS to States with secured login

States can further develop the module as per their specific requirements

Utilizing the existing functionalities of India-WRIS portal

Develop an analysis tool at State level to support the effective management of water resources

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**Generic Framework for State WRIS**

**Data Upload**
- Admin Hierarchy and meta data
- Archived/Historical data from the States (alphnumerical and geographical)
- Dynamic Data form
- Demand Side data
- Mobile App module will allow field personnel to submit Geo-tagged data for various water resources.
- SMS module will allow field personnel to send SMS based information on water resources.

**Dashboards**
- Rainfall
- Ground Water
- Reservoir
- Evapotranspiration
- Soil Moisture
- MI Tank

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**Guiding Principles: The Hydro-meteorological Data Dissemination Policy, 2018**

Based on National Data Sharing and Accessibility Policy (NDSAP, 2012) of Govt. of India and considering the provisions under RTI Act, 2005, The MoWR, RD and GR has formulated the Hydro-meteorological Data Dissemination Policy, 2018 with the objective to engage citizens in water-governance through placing of non-strategic water data in public domain. The non sensitive data should be made available for legitimate use, better decision making and meeting society’s needs. The objective of this policy is to facilitate access to Government owned shareable data and information in both human and machine readable forms through a nation-wide network.

The Hydro-meteorological Data Dissemination Policy, 2018 delineates types, frequency and availability of data collected by CWC and CGWB. From the data dissemination point of view, the Policy has divided the Country in three regions and clearly demarcated type of data which are non-classified and thus should be made available for general public.

The Policy has identified custodians of Hydro-meteorological data from CWC and CGWB and has also categorized Data User based on their origin and intent behind data use.

It has also delineated procedures for release of classified and unclassified hydro-meteorological data and its pricing.

The Hydro-meteorological Data Dissemination Policy, 2018 provides a clear guidance regarding sharing of Hydro-meteorological data amongst implementing agencies under National Hydrology Project. For more details please visit: [http://mowr.gov.in/sites/default/files/HDDP_2018_0.pdf](http://mowr.gov.in/sites/default/files/HDDP_2018_0.pdf)
The acronym SCADA stands for “Supervisory Control and Data Acquisition”. As the name suggests the SCADA System consists of two different components which are interrelated in terms of achieving the desired control function i.e. controlling based on data acquisition from remote sites.

SCADA systems encompass the transfer of data between a SCADA based central host computer and a number of Remote Terminal Units (RTUs) and/or Programmable Logic Controllers (PLCs) installed at remote locations. The RTU/PLC system gathers desired Real-time information from various field instruments and transfers the information back to a central SCADA system for data acquisition and carrying out necessary analysis, generating control commands and displaying the information in a logical and organized fashion. SCADA system can be implemented through various communication methodologies for purposes of monitoring and controlling of a wide spread distributed remote network.

**The SCADA systems mainly comprises of:**

- One or more field data interface devices, usually RTUs, or PLCs, which interface to field sensing devices and local control switchboxes.
- A communications system is used to transfer data between field data interface devices and control units and the computers and servers in the SCADA central host. The telemetry system can be GPRS/GSM, VSAT, VHF, Hardwired, etc.
- A central host server or servers (called a SCADA Centre, Master station, or Master Terminal Unit (MTU)).
- A customized software [called as SCADA Software or Human Machine Interface (HMI) software or Man Machine Interface (MMI) software] is used to provide the SCADA central host and operator terminal application, support the communications system and monitor & control remotely located field data interface devices to achieve the desired function.

**Role of SCADA based Automation in NHP:**

In addition to real-time data acquisition systems, some barrages/reservoirs, canals, and groundwater operation systems will be equipped with the SCADA based remote-control. This will allow for remote control of gate operation from a control room, allow for system response on a real-time basis, enhances the system efficiency, reduces the downtime by diagnostic analysis and saving on account of energy consumption and maintenance is achieved.

In NHP, SCADA based system are proposed for following activities:

1. **Barrage/Dams/Reservoirs** –
   - Monitoring and control of water flow through the main barrage/dams/ reservoirs and head regulators of canals.
   - Remote control based gate operation
   - Acquisition of critical data like pond level, discharge measurement etc. for developing a reliable decision support tool for implementation agency.
   - Uttar Pradesh, Rajasthan, Haryana, West Bengal, Andhra Pradesh, Jharkhand, Karnataka have proposed for implementation of SCADA based systems on their various barrage/dams/reservoirs.
2. Canal Network System-
- Modernization of canal operation by monitoring & control of discharge through main canal system.
- Optimization of available canal water.
- Development of demand based flexible irrigation schedule.
- Development of a Centralized Decision Support System (DSS).
- Uttar Pradesh, Rajasthan, Andhra Pradesh, Karnataka, Kerala, Madhya Pradesh have proposed for implementation of SCADA based systems monitoring/control on their various canal network systems.

3. Tube Well Automation –
- Correctly assess production of water from tube wells.
- Monitor the ground water levels & system efficiency.
- Assess water losses.
- Operation of tube well from control rooms based on water supply scheduling.
- Development of Centralized Decision Support System (DSS).
- Bihar and Himanchal Pradesh have proposed for SCADA based Tube well Automation system.

Pre-requisite for Implementation of SCADA based system

- Electromechanical Operation of Gates
  In order to operate the gates based on the control logics, the gates shall be electrically operated i.e. motorized operations.

- Power Supply Availability
  To operate the motors for gate operations uninterrupted power supply has to be ensured by implementation agencies.

- Control Structure Condition
  For accurate measurement of discharge in the downstream reach of barrage/dam/reservoir/canal system, it is mandatory that gate should be in good condition with minimum possible leakage. Rectification/repair of control structures should be undertaken and completed before installation of SCADA based system.

- Mr. Rakesh Bhatt
  TAMC
Sharing personal thoughts about NHP

Ms. Agatha Doren Blah,  
Superintending Engineer, Water Resources Department, Meghalaya

“The most important thing is to have data and we don’t have any data at all, so how can we plan something when there is no data?”, many years back that was my expression that I made in a concluding session of a workshop as a junior officer. I don’t even remember the theme of the workshop but the hall was full with participants from various departments of the state of Meghalaya. This issue used to bother everyone in the department a lot but we were not aware about data collection so we end up with nothing. Since we are implementing Minor Irrigation Projects with diversion weirs and small water harvesting structures so it is still safe but what if we start thinking about bigger projects, I’m sure our projects will fail.

In 2015 when, I heard about the National Hydrology Project and obviously I thought it was about construction. Meanwhile I was promoted and joined at Headquarter. Soon I joined I was sent for a training to NWA, Pune on ‘World Bank Procurement Procedures.’ Though the training was not on the technical aspects of the project, as time passes, I got more and more interested in the project and I thought this is the best thing that has happened to our state and our country. We should honour the people who had the Vision and made it their Mission to make this project happen.

It is not easy for a new state like ours to implement this project as everything is new. It requires hard work, dedication and the willingness to learn. Many people still do not realize the importance of this project as they think that our water resources will always be abundant. It is better to just be diligent in our work and not bother about advertising it. In the end, when we have done our job, we can retire with the satisfaction that we have sown the good seed and have taught our successors to continue the good work and the good seed will bear good fruits, a hundredfold.

Study Tour of Delegation of Ministry of Water Resources to Spain

There are many similarities between India and Spain from a hydrological and water resources management point of view. Both countries face important regional and temporal imbalances in natural water distribution and both have an important irrigation sector which account for a large share of total water demand. As a consequence, many of the challenges faced in the area of water management are common to both countries. In order to extract the benefits from the experiences and water governance system of Spain a need was felt to share exchange of knowledge and intensify the cooperation between the two countries. This is particularly relevant as the MoWR, RD & GR is
currently in the process of drafting a River Basin Management Bill, a Groundwater Management Bill, a National Water Framework Bill and determination of ecological flows in various stretches of rivers to improve water governance in India. In this backdrop, a high level delegation of the Ministry of Water Resources visited Spain from 17th-22nd February 2019. The delegation was headed by Sh. UP Singh, Secretary, Ministry of Water Resources, RD & GR. The other members of the delegation were Sh. S.K. Haldar, Member (WP&P), CWC and Sh. Rakesh Kashyap, SJC, NHP. The delegation met several top officials of the Spanish water administration, including the Secretary of State of the Spanish Ministry for Ecological Transition, the Presidents of the River Basin Authorities of the Júcar and Segura basins, the delegate of the Central Government in the Region of Murcia and the Directors of CEDEX and the Centre for Water Resources Studies.

The delegation also made a number of site visits including a wastewater treatment plant with a membrane bioreactor (MBR) process for water reuse, a desalination plant, a constructed wetland located in the vicinity of a protected lagoon and a couple of storage and flood protection reservoirs. A visit to the “Campo de Cartagena” –an irrigation farmers’ association, gave valuable insights into the institutional relationship between farmers and the water administration.

Considering the strong convergence of objectives and focus areas of National Hydrology Project of MOWR, RD & GR with the issues discussed during the visit, the exercise of capacity building of the water resources professionals of Central and State Govt. organisations would be initiated utilising funds under NHP once the MOU between the two countries is signed.

3rd World Bank Review Mission

The 3rd World Bank Implementation Status Review Mission for the National Hydrology Project (NHP) was conducted in two phases from 5th to 6th February at Hyderabad and 19th to 20th February 2019 at Dehradun in collaboration with the National Project Management Unit. The mission’s objectives were to review the agency-wise project implementation progress as envisaged in the annual work plans (AWP) and the project implementation plan (PIP), to identify implementation bottlenecks and to provide all possible support for the smooth implementation of the project. The mission was organized at Hyderabad and Dehradun and IAs participated in the mission at designated location as per their geographical disposition. A total of 43 agencies have participated in the Mission during Feb 2019 through more than 200 participants.

Ranking wise, Andhra Pradesh SW, Himachal Pradesh and Uttarakhand secured the pole position respectively under State Category and Survey of India under Central category in implementation of NHP.
Capacity Building

A 5-Days training cum workshop on “Advanced Hydrology“ was organized during 5th March -9th March, 2019 at National Institute of Hydrology (NIH) as part of the capacity development component of National Hydrology Project. Considering the need of IA, the Training covered topics on “Flood Routing, SWAT, River Basin Modelling, MODFLOW.

- A training cum workshop on "Ground Water Management MARS" was organized by Australian Water Partnership at National Water Academy, Pune under National Hydrology Project on 11th – 15th February 2019. With participation from various IAs, fifteen participants were selected for advanced course in Australia at ICE-WaRM.

- A National Level Training Programme was held on “Spring Rejuvenation” under National Hydrology Project during 11th March to 15th March at Kalimpong, West Bengal. The programme was organised by State Water Investigation Directorate, Department of Water Resources Investigation & Development, and Government of West Bengal. 17 Officials from different disciplines came together from the States of Sikkim, Meghalaya, Mizoram, Kerala, & West Bengal. The training covered topics on Spring Mapping, Spring Hydrology, monitoring and modelling, governance, spring protection structure, spring water quality assessment, etc.

- The Training on “Hydro Meteorological and Water Resources Monitoring and Watershed Modelling and Management” was jointly organized by Irrigation and Water Resources Department, Govt. of Mizoram & Mizoram University during 19th – 21st March 2019 under National Hydrology Project. The Faculty comprised of International experts from University of Minnesota and various national experts from reputed organisations.

- A training course on “Sediment Yield and Reservoir Sedimentation” was organized by National Institute of Hydrology Roorkee (NIH) under National Hydrology Project from 25th Feb-1st March, 2019 at NIH Roorkee.

- A 5- day (7th- 11th January,2019) training programme organised on River Basin Modelling at SIHFW, Jaipur under National Hydrology Project.

- **One day Workshop on Bid Evaluation and Use of STEP**
  A one-day workshop cum training on ‘Bid Evaluation and use of STEP’ was organized on 31st January, 2019 in the World Bank premises – H T Building, Kasturba Gandhi Marg, New Delhi under National Hydrology Project.

- The First Stakeholder Workshop for PDS titled “Impact Assessment of the Upcoming Irrigation Project and Climate Change on the Drought and Desertification Scenario for Chambal Basin in Western Madhya Pradesh” was held on 27th March, 2019 at State Water Data Centre, Govt. of Madhya Pradesh, Bhopal.
The Workshop was attended by senior officers from Central Water Commission (CWC), Central Groundwater Board (CGWB), Central Institute of Agricultural Engineering (CIAE), MP Water Resources Department (MPWRD), Madhya Pradesh Agency for Promotion of Information Technology (Map_IT), Development Alternates (DA) and National Institute of Hydrology (NIH). This workshop organized by National Institute of Hydrology & Water Resources Department, Bhopal under National Hydrology Project.

- National Workshop on web enabled Project Appraisal Management System (e-PAMS) was held at CWC Head Quarter, New Delhi on 25th February, 2019 for familiarization of all stakeholders/users including State govt. The ePAMS was also formally launched in the workshop. There are three modules in the ePAMS, one each for Irrigation & Multipurpose projects, flood control/coastal/coastal protection projects including projects dealt by Ganga Flood Control Commission (GFCC).

- Australian Water Partnership (AWP) in collaboration with the NPMU organized two workshops on Integrated Water Resources Management and presented the Basin Planning User Guide developed by the Australian Water Partnership team. First workshop was organized in Bangalore (6th March 2019) with participation of senior officials from Karnataka, Telangana and Andhra Pradesh. Second workshop was organized at National Water Academy Pune on 11th March 2019 with participation of Maharashtra Surface and Ground Water departments. The River Basin Planning Team from Australian Water Partnership had some interesting discussions and interactions with the Krishna and Godavari Basin States on sharing the learning from Australian experiences in the form of a Basin Planning user guide. States (Karnataka, Telangana, Andhra Pradesh and Maharashtra) came together on one platform and shared their various initiatives for the improvement of the Water Resources Management.

- One-day workshop(14 March, 2019) was organised on Spring Rejuvenation was organised at Dharamshala, Himachal Pradesh by CGWB. The event was organised by CGWB from NHP fund. Secretary, WR, RD & GR inaugurated the event.

- Training Programme on Basic Hydrology (18th-22nd February, 2019) at MNIT, Jaipur under National Hydrology Project.

- Training Programme on Basic Hydrology (15th -19th February, 2019) at IMTI, Kota under National Hydrology Project.

- State Groundwater Department, Kerala and National Institute of Hydrology, Roorkee Jointly Organised the Training Programme On Ground Water Flow Modelling using MODFLOW under National Hydrology Project on 14thJan-18th Jan at IITM Technotpark, Thiruvananthapuram

- NRSC has been organized training programs under NHP on Remote Sensing & GIS fundamentals and customized water resources applications. In the 2 weeks customized course on “Water Resources Assessment using Geospatial Data Inputs” held during February 11-22, 2019 at NRSC Hyderabad, a total of 23 officials from Central and State Governments have participated.
UPCOMING TRAININGS

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<td>Flood Early Warning for Disaster Risk Reduction</td>
<td>NRSC, Hyderabad</td>
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<td>Mike Hydro Basin Software</td>
<td>Gandinagar, Gurjrat</td>
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<td>HEC HMS &amp; HEC RAS Modelling</td>
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<td>e-SWIS + Discharge Measurement Techniques</td>
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INTERNATIONAL CONFERENCE/TRAINING

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<td>2nd International Conference on Sustainable Water Management</td>
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<td>6</td>
<td>Mathematical modelling on GW systems</td>
<td>IHE Delft</td>
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IMPORTANT MEETINGS

➤ A Meeting on the Generic State WRIS was held in National Water Academy Pune on 14th March -15th March, 2019 to discuss about the various issues regarding development of Generic State-WRIS. The meeting was attended by Sh. Y. Paithankar, Chief Engineer, NWA; Sh. N K Manglik & Sh Deepak Kumar, SJC, NPMU and officials from Maharashtra SW & GW and IT experts from TAMC.

➤ Fifth R&D Session was held at NIH, Roorkee on 16th -17th January 2019, aimed to consider the PDS proposals submitted by various implementing Agencies and assess the progress of 17 ongoing PDS. The meeting was attended by the members of the sub-committee on PDS and Project Investigators of PDS. During the session, 2 PDS were approved. The approved PDS were submitted by NIH, Bhopal and Water Resource Department, Rajasthan.

➤ A review meeting to discuss various activities of Maharashtra Surface Water was attended by Shri. Deepak Kumar, Senior Joint Commissioner, NPMU with SPMU at Nashik, Maharashtra on 18th March 2019.

➤ A meeting was held at Bhubaneswar on 12th - 13th February 2019 under Sri P.K. Jena, Principal Secretary, Odisha Department of Water Resources (DWR) to discuss the modification in Project Implementation Plan (PIP) of Odisha SW & GW. The meeting was attended by Ms Anju Gaur, World Bank; Sh Deepak Kumar, SJC, NPMU; Sh. Kamal Lochan Mishra, Project Director, NHP, Odisha and other officials from NPMU, State Govt. and TAMC.

➤ A TEC meeting was held on 13th-15th January, 2019 at Indore for studies of Narmada Basin.
Andhra Pradesh Surface Water

Study Tour to Maharashtra
Andhra Pradesh Surface Water deputed 15 Officers for Study Tour to Maharashtra. The Team visited Basin Simulation Division at Pune, Hydro meteorological Data Processing Division at Nashik and WALMI at Aurangabad. During the visit, the Officials from Maharashtra shared their learning and experiences with APSW team. Such cross-learning opportunity helped the visiting team to gain insights on:

- Effective use of Hydro-meteorological Information System.
- Working of Real Time Decision Support System (RTDSS) which comprises of RTDAS and RTSF and ROS in Krishna and Bhima Basin network stations of Maharashtra State.
- Benefits of RTDSS.
- Weather information and forecast data availability in the website.
- Working of Hydro-meteorological Data Storage Centre.
- Process of Validation of Hydrological and Metrological data.
- Hydro-meteorological network at field level.

Kerala Surface Water

- **Real Time Data Acquisition Systems (RTDAS)**: Stations finalised and submitted to CWC for approval.
- **Rejuvenation of water bodies**: Hiring of consultancy services for preparation of DPR for rejuvenation of Meenachil, Periyar, Bharathapuzha, Kallayi and valapattanam- REOI approved by NPMU.

Rajasthan

- 3 Regional & 17 districts Water Informatics centers have been renovated & new operational.
- Establishment of SPMU is completed

Telangana Groundwater

As a part of awareness raising activity under National Hydrology Project, Kala-Jattha – the traditional folk song and dance performers were engaged by the Telengana Ground Water Department to explain complex topics like Importance of Ground water, Participatory Ground Water Management, Low Cost Artificial Recharge Techniques for Ground Water Augmentation, Cropping Pattern and Advanced Irrigation Technologies etc. to its farming community in local language. They also carried out awareness raising activities on “Ground water issues, Management and Augmentation” in the villages of 31 districts of Telangana where over exploitation of Groundwater is rampant with an allocated budget of Rs. 35,000/- per district. As on 26th March 2019, Twenty (20) such programmes were conducted in 20 districts of Telangana State.

The District Ground Water Officer, Officials from Line Departments i.e., Irrigation, Agriculture, Horticulture and other allied sectors participated in these programmes along with NGOs and local people. During the programmes, 2000 farmers and water users were enlightened with water availability, planning and management in their vicinity for effective utilization of water and meet agriculture and other needs.

Apart from creating awareness among farming community, some programmes were also carried out in urban areas for students and residents.
A programme organized on the eve of ‘World Water Day’ with theme Water for All- No one left behind” at CWC, HQ., New Delhi under NHP on 22.03.2019.

Water Resources Department organized this programme to draw the people’s attention to the significance of water as a resource and the need to conserve it through sustainable methods. The theme “Leaving no one Behind”, reminds us of the gap that exists today in terms of the demand and availability of water and about the current imbalance in the access to clean water.

On World Water Day, Ground Water Department, Govt. of Telangana carried out awareness campaigns among urban public at 17 main centres/junctions of twin cities of Hyderabad and Secunderabad within GHMC area, on the theme “Leaving no One Behind” —everyone on the earth should have access to safe and quality water.
Swach Bharat Abhiyan

CGWB

CGWB carried out Cleanliness Abhiyan at Kalindi Kunj Ghat on River Yamuna in Delhi.

NHP Team


NWA, Pune

Swachhata Pakhwara being observed at National Water Academy Pune from 16th to 31st March 2019. Pictures depicting the Swachhata Pledge taken on 16th March 2019.

CWPRS, Pune

Swachhta Pakhwada-2019 at CWPRS, Pune.

January - March, 2019
पानी के सदुपयोग पर ध्यान
देने की आवश्यकता

राष्ट्रीय जलीय परियोजना पर मंत्रालय की आवश्यकता का आलोचना

सेटेलाइट से चलेगा
वातर रिसर्स का पता

CBIP Award

CBIP Award has been received for Excellence in Integrated Water Resources Management by Ministry of Water Resources, RD & GR for National Hydrology Project of taking initiatives for improving the extent, quality and accessibility water resources information assessment/planning and to strengthen the capacity of targeted water resources professional and management institutions in the country, 4th January 2019.
Cornerstone

Technical Document for Extended Hydrological Prediction Study was finalised and Narmada, Yamuna and Cauvery River Basins were proposed to be taken up in the first phase. The Expression of Interest was floated in February and RFP shall be issued to the selected consultants shortly.

Framework document on Bathymetric Surveys/Reservoir Sedimentation Studies have been prepared and the documents have been shared with interested IAs: Andhra SW, Bihar SW, Goa, Chhattisgarh SW, Haryana, Himachal Pradesh, Karnataka, Madhya Pradesh, Tamil Nadu, Jharkhand, to be taken up for consultancy services very soon.

Framework Document on Dam-Break Modelling Study has been prepared and has been circulated to the states of Bihar, Andhra Pradesh and Rajasthan, who have expressed interest through their PIP.

EOI for Narmada River Basin modelling was finalised which envisaged to account for developing a multi-pronged approach to address the issues related to Integrated Reservoir Operation (IRO), Water Accounting (WA) and seasonal operation simultaneously, linked with the results from the upcoming Extended Hydrologic Prediction (EHP) project. The REOI was published on 2nd March 2019 for inviting response from reputed organisations and firms.

Manual on Rainfall Data Validation

The book Manual on Rainfall Data Validation has been prepared by NPMU and is expected to be launched shortly. This Manual is a ready handbook intended for site and field engineers involved in primary validation of rainfall measurement data, water resources professional engaged in data validation at sub-divisional and divisional level, water resource planners, designers and hydrologists. The book compiles all the essential procedure related to the rainfall data for validation at primary and secondary level, with correction and compilation, completion, analysis and Report Generation.

Support for PDS Studies

NPMU has been extending support to NIH in conducting PDS studies. With total presentation of 58 PDS made till now before the expert committee at NIH in various phases, 35 PDS have been approved and are currently in progress. As far as physical progress of these studies are concerned, 10 PDS have completed the first Annual review milestone in July 2018 and presented their progress during the Fourth Review Session at NIH. Another 18 PDS reached the Annual milestone in January 2019 and presented them in the Fifth Review session at NIH.
ON FLOWING

Rain drops collect
Undulations beneath
Covered up,
Ripples on surface move.

Earth swallows fraction
Before letting run off
Run on land,
Rises over small mounds.

River meanders
A bend not an end
Many moods sort
Grains of different hues.

Meek water shears
Sturdy rocks,
Land scape eternally change
Erosion and deposition unabated.

Moments restless
Rarely reflect on behind,

Poetry by Dr. K Venugopal
Director, Andhra Pradesh
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