

NATIONAL HYDROLOGY PROJECT

The Ministry of Water Resources, Government of India has started the National Hydrology Project with the help of World Bank. This project is the next phase of the former Hydrology Project Phase-II. The agreement was signed on 23.6.2016 between the International Bank of Reconstruction and Development (I.B.R.D.) and the Government of India, having total allocation is Rs.3678.7677 Crores. The project is effective from November, 2016. The duration of the project is 8 years and is likely to be completed by 2024. In this project, BBMB has been allocated Rs. 30.00 Crores.

VISION

1. To increase the area, quality and user base of water related data across the country and make this data available online on the Internet.
2. Providing the complete database available to users of different areas.
3. There will be two types of groups which will get benefit from this project
 - a. Central Agencies
 - b. State Agencies

Under this, WRIS (Water Resources Information Sector) developed and used in various areas such as energy, water transport, irrigation, educational institutions of agriculture and research centers and non-government institutions and social & private institutions.

4. Improve the quality and functioning of the respective offices and institutions and make them consistent with high standards.

The National Hydrology Project is being implemented in 29 states and 11 central agencies. The following States and Central Agencies are participating in this project:

States : Andhra Pradesh, Gujarat, Karnataka, Kerala, Madhya Pradesh, Chhattisgarh, Maharashtra, Odisha, Tamilnadu, Punjab, Himachal Pradesh, Goa, Puducherry (States under H.P.-II) and Bihar, Haryana, Jharkhand, Manipur, Meghalaya, Mizoram, Nagaland, Rajasthan, Sikkim, Telengana, Tripura, Uttar Pradesh, Uttarakhand, West Bengal, Delhi (new states)

Central Agencies: MoWR, CWC, CGWB, CWPRS, NIH, IMD, BBMB, CPCB (under HP-II) and SOI, NRSA, DVC (New agencies)

Work to be done during this project

1. The functions of the reconstruction and modernisation of various existing works.
2. Construction of new data center.
3. The work of installing a gate sensor at various outlets.
4. Apart from this, the training to the working engineers related to running & maintenance of models has been included.

HYDROLOGY PROJECT PHASE-II

The Ministry of Water Resources, Government of India had started the Hydrology Project Phase-II (HP-II) in association with World Bank. The agreement was signed on 19.1.2006 by the International Bank of Reconstruction and Development (I.B.R.D.) and the Government of India. The project was approved on 5th April 2006. The duration of the project was 8 years, which got completed on 31.05.2014.



Vision

The objective of the project is to make stable and effective use of Hydrological Information System (H.I.S.) by the organisation in field of planning & management of water resources as well as the consumers. This will contribute to better water distribution with low cost maintenance.

The project is applicable in 13 states and 8 central agencies including Bhakra Beas Management Board. The following states and central agencies are participating in the project.

States: Andhra Pradesh, Gujarat, Karnataka, Kerala, Madhya Pradesh, Chhattisgarh, Maharashtra, Odisha, Tamilnadu (States under H.P.-I) and Punjab, Himachal Pradesh, Goa and Puducherry, (new states)

Central Agencies: MoWR, CWC, CGWB CWPRS, NIH, IMD (under HP-I) and BBMB, CPCB (new agencies)

Under this project, Satluj & Beas Basins have been proposed for the better management of the reservoirs for the Real Time Decision Support System (RTDSS) on a priority basis. BBMB has completed the proposal to develop the Real Time Decision Support System (RTDSS) with the latest Data Acquisition System for operational management of its reservoirs.

Features of the Real Time Decision Support System (RT-DSS):

Data Acquisition System

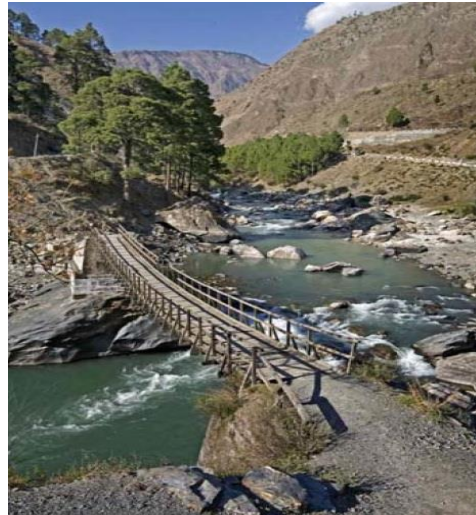
- Improvement of the system by automatic data acquisition stations.

Analysis and Modeling

- Improvement in the snow accumulation and melting, forecast of snow.

Decision Support System

- Improvements in reservoir operations, hydropower generation and water distribution.



In order to develop the Real Time Decision Support System (RT-DSS), the top management in the operational management of the reservoirs has to provide long-term and short term intervals. These decisions will be regarding the flow of reservoirs and the running of hydro-electric turbines, operation of Spillway Gates, flood warning and clearance of border area fixed by the administrative authorities. The Real Time Decision Support System (RT-DSS) will give accurate information of water resources to the top management under a very good, simple and practical manner and complete Water Resource Management Information System, so that the decision-makers will be able to decide and deal with various comparative policies in various circumstances.

The Real Time Decision Support System (RT-DSS) will be quite beneficial in master planning. This required data and report will be available after a certain period, which will facilitate the joint reservoir operational decision

from time to time and ensure optimum utilization of water. The Real Time Decision Support System (RTDSS) will be helpful in providing timely warnings in the flood for evacuation so that there is minimum loss of life and property. This will help the management to study the results of various options quickly. This will improve invariably the quality of decision-making.

Services and Benefits:

Services:

- Short term forecasting.
- Long term forecasting.
- Assistance in deciding optimum performance.

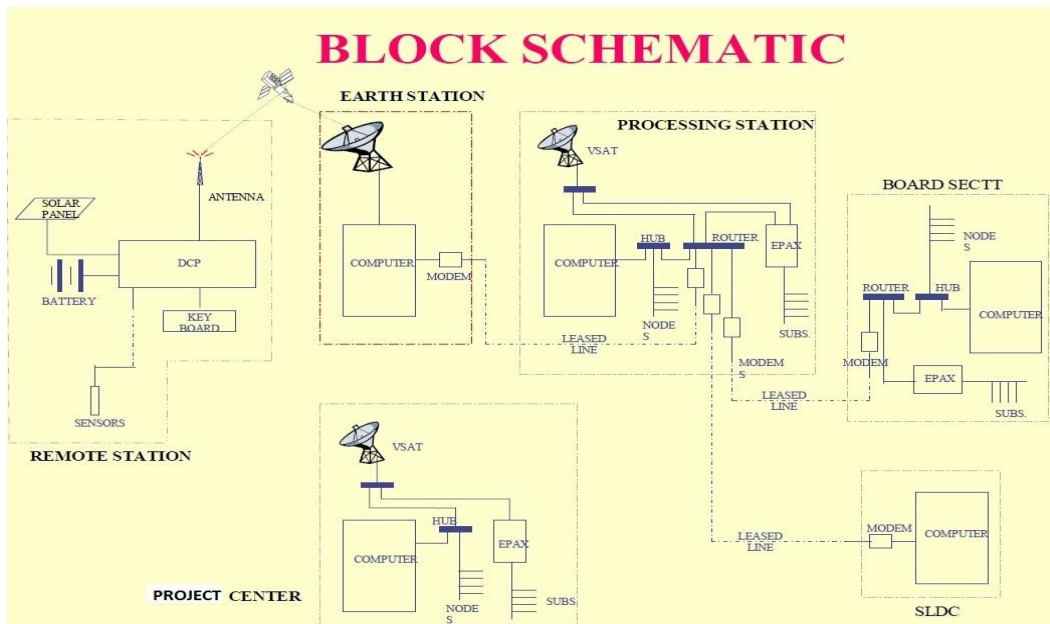
Benefit

- Minimum wastage of water.
- Maximum economic value of water
- Obtaining short term and long-term objective for dam operations.



Basic tools of Decision Support System

- The decision support system is based on the latest and tested standard modeling tools.
- Water Resources Information System based on GIS.
- Precipitation - runoff and hydrodynamic modeling
- Water Resources Management, Long-Term Forecasting, Water Allocation, Aquatic Operations.
- Salient features of tools for Real Time Decision Support System (RT-DSS):
 - verification of input data.
 - Forecasts.
 - Information dissemination.

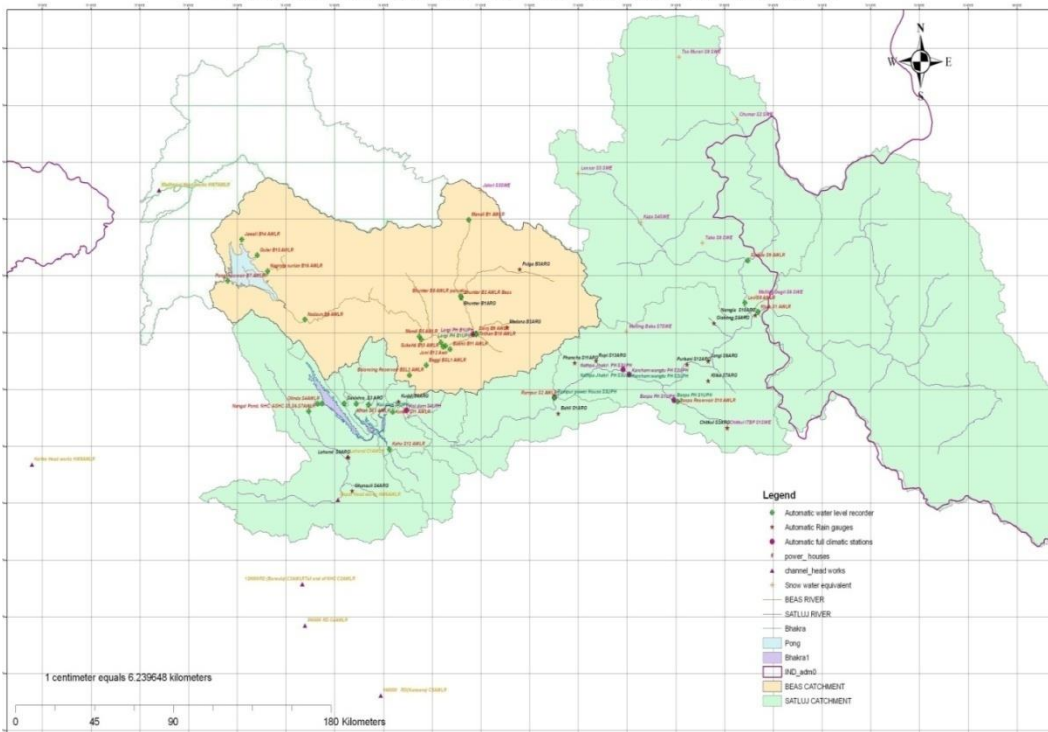


Achievement

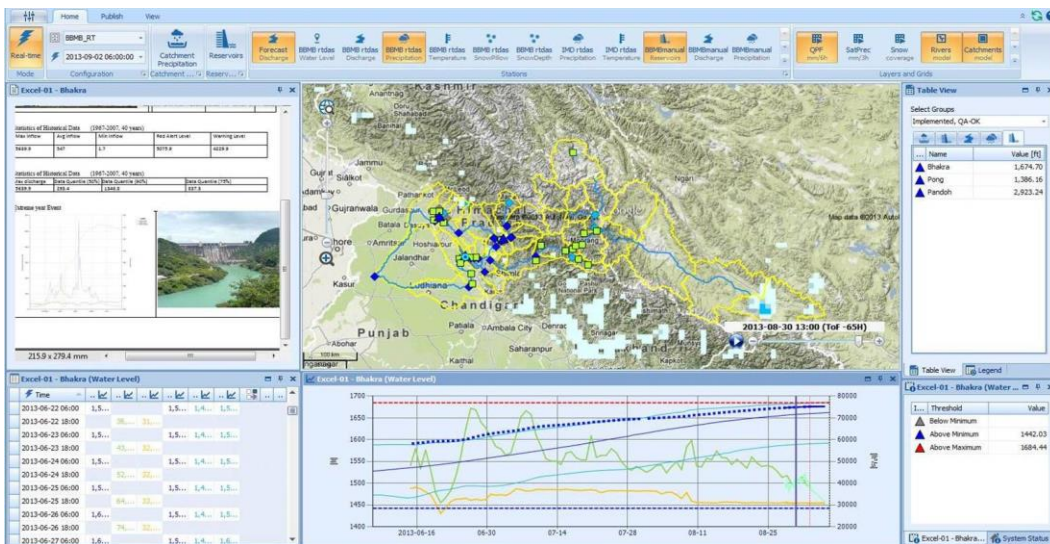
During the project period, the Bhakra Beas Management Board has upgraded manual stations to automatic stations on various project sites, which are classified below.

1. Automatic Rain Measurement Equipment
2. Automatic Weather Measurement Equipment
3. Automatic water level measurement Equipment
4. For information regarding snow
 - a) Snow Pillow
 - b) Snow Sensor/ Radar
 - c) Rain and Snow Measuring Instrument

HYDRO-METEOROLOGICAL AND GAUGING STATIONS UNDER HP- II



All these stations are collecting data and transmitting it through Indian satellites (INSAT 3D) in Earth Receiving Station (ERS) located at Chandigarh, after quality checks are analyzed by various models at Earth Receiving Station Chandigarh.



Remote sensed data from NASA & various National & International agencies has been received in nearby real time. The next 3 days & 10 days forecasted quantitative precipitation & temperature data from IMD & NCMWRF. All these data has been analyzed by the various hydrologic & hydrodynamic models and a report pertaining to possible inflows to reservoirs has been published on website regularly or daily.

Sample report:

Daily Reservoirs Inflow and Level 10 Days Forecast

With forecasted rainfall from NCMRWF till - 10-21-2017 12:00:00 AM

Reservoir	13-Oct-2017 06:00	14-Oct-2017 06:00	15-Oct-2017 06:00	16-Oct-2017 06:00	17-Oct-2017 06:00	18-Oct-2017 06:00	19-Oct-2017 06:00	20-Oct-2017 06:00	21-Oct-2017 06:00	22-Oct-2017 06:00
Bhakra Dam (Cusec)	13066.7	13077.9	13046.0	12929.3	12772.1	12623.4	12479.8	12338.7	12199.7	12063.0
Level (Feet)	1665.8	1665.6	1665.3	1665.1	1664.9	1664.6	1664.4	1664.1	1663.8	1663.5
Pong Dam (Cusec)	4252.1	4727.6	4964.3	5067.8	5097.5	5086.3	5052.8	5007.7	4956.2	4901.9
Level (Feet)	1375.5	1375.3	1375.1	1374.9	1374.7	1374.5	1374.3	1374.1	1373.9	1373.7
Pandoh Dam (Cusec)	4493.5	4848.3	5022.1	5059.2	5043.6	5001.4	4944.2	4879.0	4810.1	4739.9
Level (Feet)	2920.9	2921.4	2922.3	2923.4	2924.5	2925.5	2926.4	2927.2	2927.9	2928.4