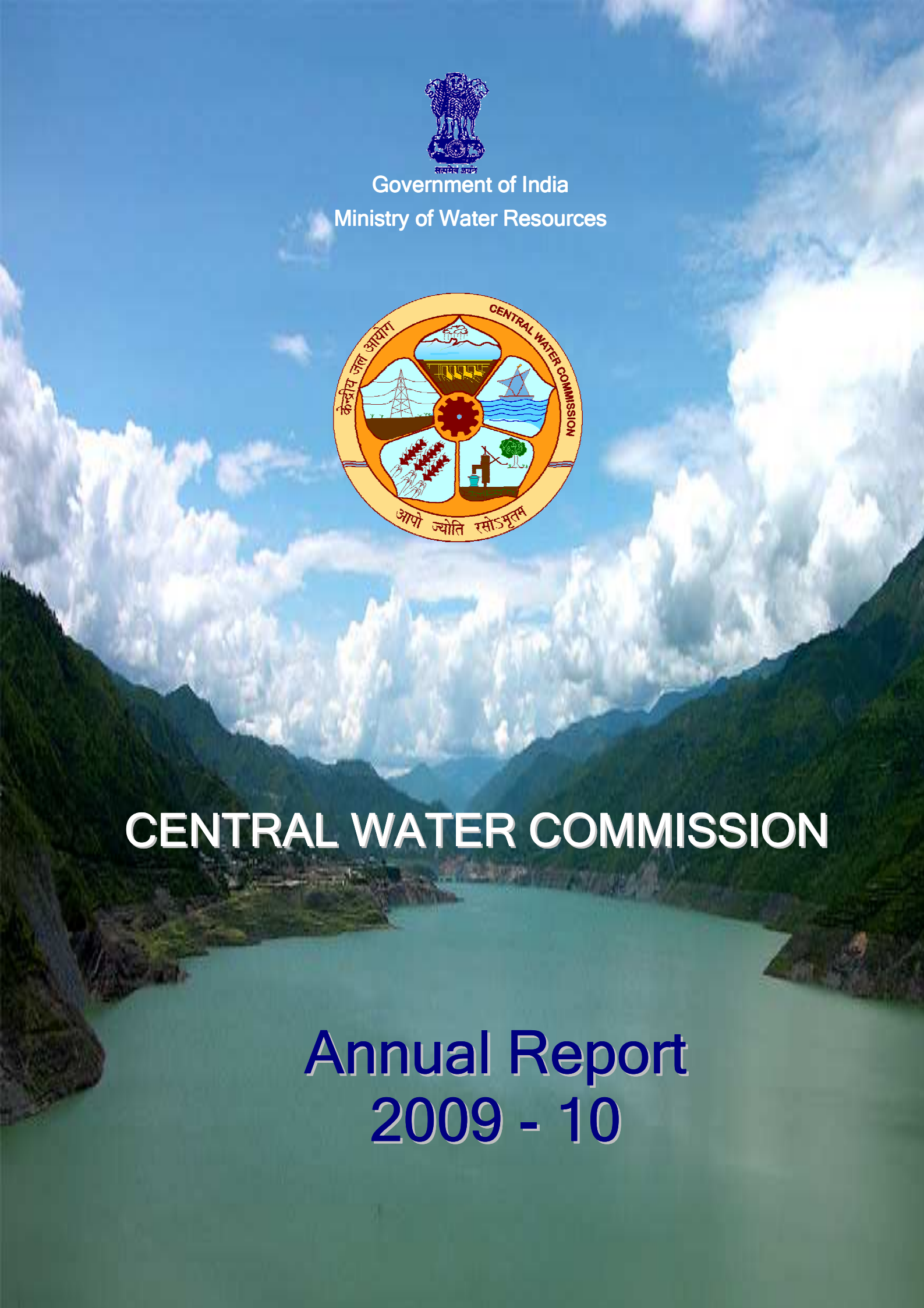


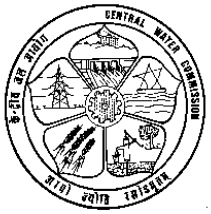
Government of India

Ministry of Water Resources

CENTRAL WATER COMMISSION

Annual Report
2009 - 10

ANNUAL REPORT
2009 - 10



CENTRAL WATER COMMISSION

INDIA – LAND AND WATER RESOURCES: FACTS

•	Geographical Area & Location	328.7 M ha Latitude 8^0 4' & 37^0 6' North Longitude 68^0 7' & 97^0 25' East
•	Population 2008 (Projected)	1176.74 Million
•	Rainfall Variation	100 mm in Western most regions to 11000 mm in Eastern most region
•	Major River Basin (Catchment Area more than 20,000 Sqkm)	12 Nos. having catchment area 253 M ha
•	Medium River Basin (Catchment Area between 2000 and 20,000 Sq km)	46 nos. having catchments area 25 M ha
•	Total Navigable Length of Important Rivers	14464 km

WATER RESOURCES

•	Average Annual Rainfall (2008)	3674.43 BCM
•	Mean Annual Natural Run-Off	1869 BCM
•	Estimated Utilisable Surface Water Potential	690 BCM
•	Total Replenishable Ground Water Resources	433 BCM
•	Ground Water Resources Available for Irrigation	369.6 BCM
•	Ground Water Potential Available for Domestic, Industrial And Other Purposes	71 BCM (approx.)
•	Ultimate Irrigation Potential	140 M ha
•	Irrigation Potential from Surface Water	76 M ha
•	Irrigation Potential from Ground Water	64 M ha
•	Storage Available Due to Completed Major & Medium Projects (Including Live Capacity less than 10 M.Cum)	225.14 BCM
•	Estimated Additional Likely Live Storage Available due to Projects Under Construction / Consideration	171.43BCM

LAND RESOURCES (2005-06)

•	Total Cultivable Land	182.2 M ha
•	Gross Sown Area	193.7 M ha
•	Net Sown Area	140.3 M ha
•	Gross Irrigated Area	85.8 M ha
•	Net Irrigated Area	60.9 M ha

HYDROPOWER

•	Ultimate Hydropower Potential (As per reassessment)	84044 MW at 60% L.F.
•	Potential Developed by 31st March, 2009	36877.76 MW (total capacity) 32099.8 MW (For the Projects above 25 MW)

From Chairman's Desk

It is our pleasure to bring out this Annual Report of the Central Water Commission (CWC) for the year 2009-10. The Report gives an insight into the organisation structure, functions and activities of CWC highlighting the contribution made in the development and management of Water Resources of the country.

CWC continued to forge ahead in providing the necessary leadership and guidance for the development of the water sector and provided necessary support to the Ministry of Water Resources on all technical and policy matters during the year 2009-10. Officers of CWC headed several committees and contributed substantially on various issues. CWC provided technical assistance to the Ministry on various issues related to sharing of waters with neighbouring Countries and bilateral treaties and MoUs. Regular activities of appraisal of major and medium irrigation projects and other water resources development schemes, monitoring of major, medium and extension/renovation/modernization (ERM) projects, environmental issues related to projects, design of hydraulic structures, hydrological observations and studies and flood forecasting services were successfully carried out during the year. Some of the important achievements of CWC during the period are:

Consultancy & Advisory Services

- Design Consultancy in respect of 101 Water Resources Development projects in India and neighbouring countries like Afghanistan, Bhutan, Nepal, etc.

Monitoring & Appraisal of Water Resources Projects

- Techno-economic appraisal of water resources development projects and clearance for multi-purpose/irrigation/flood control projects.
- Monitoring of 58 Major, 19 Medium and 9 ERM Projects and CAD works of 136 projects.
- Examination of proposals for Major and Medium Irrigation Projects for release of Rs.5528.626 crore of Central grant under AIBP programme.
- Examination of proposals under the scheme for renovation, restoration and revival of water bodies.
- Monitoring storage position of 81 reservoirs in the country.

Flood Management

- Timely issue of 3991 flood forecasts (with 97.87 % accuracy) during the monsoon period of 2009 to help effective flood management.
- Techno-economic evaluation of 58 schemes of Flood Management/Master Plans for Flood Control.

(A K BAJAJ)
CHAIRMAN

HIGHLIGHTS OF THE YEAR 2009 -10

❖ DESIGNS :

- Design units of CWC undertook detailed designs and drawings of various types of hydraulic structures for 101 water resources development projects. DPR's of 71 projects submitted by various State Govts. and other agencies were technically examined in D&R wing during 2009-10.

❖ RIVER MANAGEMENT :

- Carried out Hydrological Observations at 878 sites spread over the country.
- Operated 175 flood forecasting stations (including 28 inflow forecasting sites) spread over 9 major river basins. During the flood season 2009, 3991 flood forecasts were issued out of which 3906 (97.87 %) were within prescribed limits of accuracy. Daily flood bulletins and weekly flood news letters were issued during the flood season. 23 Red Bulletins (for Unprecedented Flood Situation) and 31 Orange Bulletins (for High Flood Situation) were issued.
- Completed installation of satellite based telemetry system at 165 stations upto March, 2010 in addition to existing 55 stations in Chambal and Mahanadi Basins.
- Provided assistance to Royal Government of Bhutan for maintenance of 35 Hydro-meteorological sites in Bhutan.
- 58 Flood Management Schemes/Master Plans for Flood Control were examined/ appraised during the year 2009-10 upto March, 2010.
- Processed 110 flood management schemes for release of funds to Government of J&K, Goa, Punjab and Orissa during 2008-09 under "Flood Management Programme".

❖ WATER PLANNING :

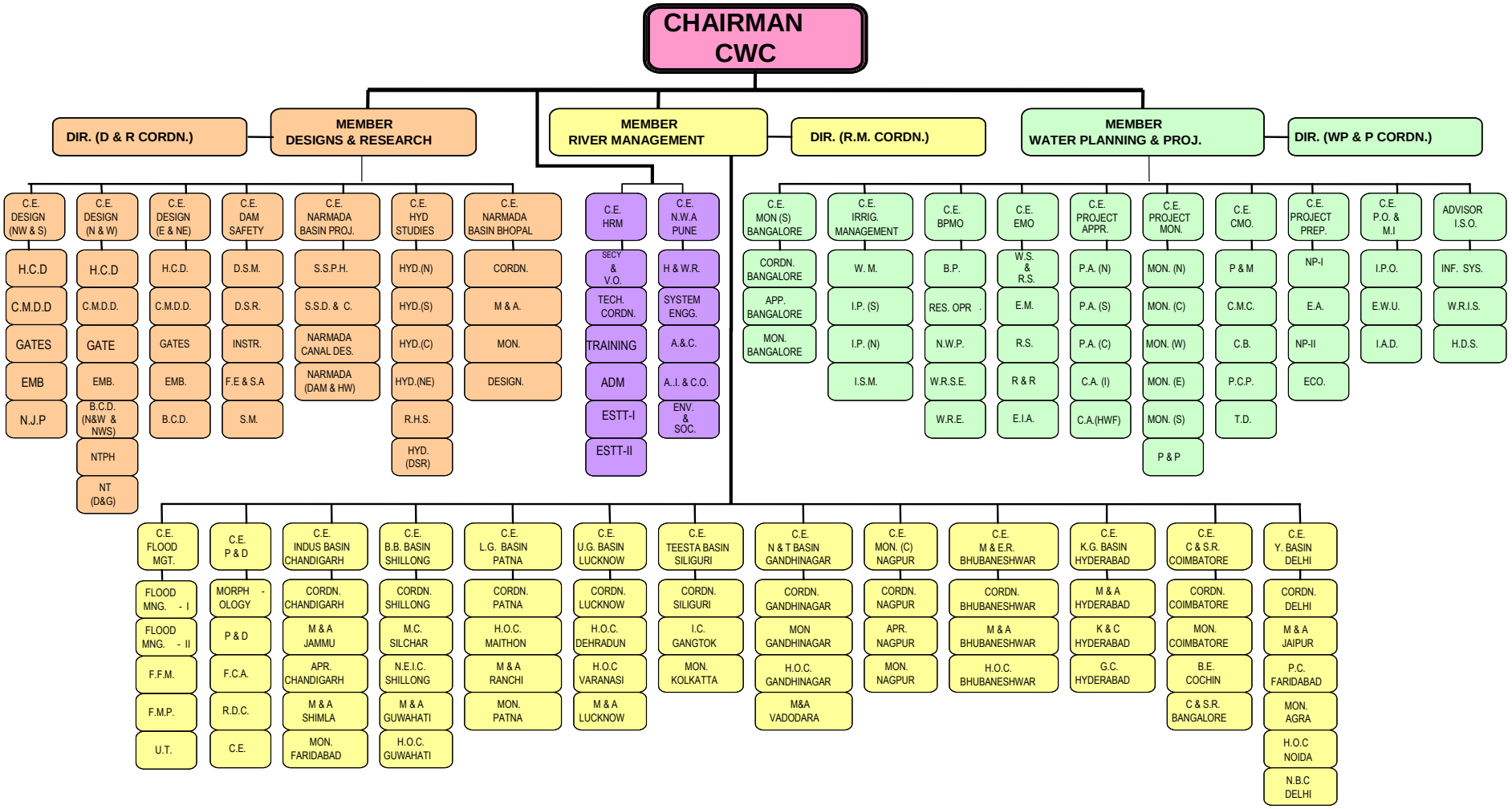
- 68 new major irrigation projects, 43 revised major irrigation projects, 58 new medium irrigation projects and 24 Hydroelectric power schemes were under appraisal in CWC. 27 projects comprising 9 major, 7 medium irrigation projects and 11 flood control projects were accepted for investment clearance by the Advisory Committee.
- Monitored 95 Major, Medium and Extension/Renovation/Modernization (ERM), irrigation projects receiving CLA under AIBP and 134 CAD projects.
- 81 important reservoirs with total live storage of 151.77 BCM were monitored on weekly basis.
- Examination of proposals for Major and Medium Irrigation Projects for release of ₹ 5528.626 crore of Central grant under AIBP programme.
- Provided technical assistance to MoWR in respect of the inter-State water disputes such as Cauvery Water Disputes, Mandovi Water Disputes, Krishna Water Disputes and the Ravi-Beas Water Disputes.

❖ HRM :

- 104 in service officers were sponsored for training, attending seminars/ workshops, etc. within the country and 19 officers participated in various programmes abroad. NWA, Pune conducted 37 training programmes including Workshop/Seminar for 954 officers of Central / State Governments and Public sector undertakings.

C O N T E N T S

Organogram of Central Water Commission 2009 - 10



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CHAPTER-I

INTRODUCTION

1.1 History of CWC

Central Water Commission (CWC), an apex organization in the country in the field of Water Resources came into existence as "Central Waterways, Irrigation and Navigation Commission" vide Department of Labour Resolution No. DW 101(2) dated 5.4.1945. In the year 1951, it was renamed as "Central Water and Power Commission" (CW&PC) after its merger with the "Central Electricity Commission". Following the changes in the Ministry of Agriculture and Irrigation, in the year 1974, water wing of CW&PC was separated as "Central Water Commission", which continues till date. At present Central Water Commission functions as an "Attached Office" of the Ministry of Water Resources and is its main technical arm. It is manned by the Central Water Engineering Services (CWES) cadre, the only organised service of the Ministry of Water Resources.

1.2 Organisation

CWC is headed by a Chairman, with the status of Ex-Officio Secretary to the Government of India. The work of the Commission is divided among 3 wings namely, Designs and Research Wing (D&R), Water Planning and Projects Wing (WP&P) and River Management Wing (RM). Allied functions are grouped under respective wings and each wing is placed under the charge of a full-time Member with the status of Ex-Officio Additional Secretary to the Government of India. Each wing comprising of a number of Organizations is responsible for the disposal of tasks and duties falling within the scope of functions assigned to it. In the discharge of these responsibilities, officers of the rank of Chief Engineer, Director/Superintending Engineer, Deputy Director/Executive Engineer, Assistant Director/Assistant Executive Engineer and other Engineering and Non-Engineering officers and supporting staff working in various regional and headquarter organizations, assist the Members. There is a separate Human Resources Management Unit headed by a Chief Engineer, to deal with Human Resources Management/ Development, Financial Management, Training and Administrative matters of the Central Water Commission. National Water Academy located at Pune is responsible for training of Central and State in-service engineers and functions directly under the guidance of Chairman. Broad functional areas of Chairman and Members are:-

Chairman

Head of the Organization – Responsible for overseeing the various activities related to overall planning and development of surface water resources of the country and management of the Commission as a whole.

Member (Water Planning & Projects)

Responsible for overall planning and development of river basins, national perspective plan for water resources development in accordance with the National Water Policy, techno-economic appraisal of Water Resources Projects and assistance to the States in the formulation and implementation of projects, monitoring of selected projects for identification of bottlenecks to achieve the targeted benefits, preparation of project reports for seeking international assistance, environmental aspects, issues related to construction machinery of projects, application of remote sensing technologies in water resources, etc.

Member (Designs & Research)

Responsible for providing guidance and support in planning, feasibility studies, standardization and designs of river valley projects in the country, safety aspects of major and medium dams, hydrological studies for the projects, coordination of research activities, etc.

Member (River Management)

Responsible for providing technical guidance in matters relating to river morphology, flood management, techno-economic evaluation of flood management schemes, collection of hydrological and hydro-meteorological data, formulation of flood forecast on all major flood prone rivers and inflow forecasts for selected important reservoirs, investigation of irrigation / hydro-electric / multipurpose projects, monitoring of major and medium projects with regard to Command Area Development, etc.

The incumbents to the posts of Chairman and Members of Central Water Commission during the year 2009-10 were:

1.	Chairman, CWC	:	Shri A.K.Bajaj
2.	Member (D&R)	:	Shri A.K. Ganju (17.03.2009 to till date)
3.	Member (WP&P)	:	Shri A.K. Ganju* (01.04.2009 to 18.06.2009)
			Shri V.K. Jyothi (19.06.2009 to till date)
			Shri Indra Raj (19.06.2009 to till date)
4.	Member (RM)	:	Shri R C Jha

* Additional Charge (Current Duties)

1.3 Broad Functions

CWC is charged with the general responsibility of initiating, coordinating and furthering in consultation with the State Governments concerned, schemes for the control, conservation and utilization of water resources in the respective State for the purpose of flood management, irrigation, drinking water supply and water power generation. The Commission, if so required, can undertake the construction and execution of any such scheme.

In exercise of the above responsibilities following are the main functions of CWC:

- To carry out Techno-economic appraisal of Irrigation, flood control & multipurpose projects proposed by the State Governments.
- To collect, compile, publish and analyse the hydrological and hydro-meteorological data relating to major rivers in the country, consisting of rainfall, runoff and temperature, etc. and to act as the central bureau of information in respect of these matters;
- To standardize instruments, methods of observation and record, for hydrological data collection;
- To collect, maintain and publish statistical data relating to water resources and its utilization including quality of water throughout India and to act as the central bureau of information relating to water resources;
- To provide flood forecasting services to all major flood prone inter-state river basins of India through a network of 175 flood forecasting stations.
- Monitoring of selected major and medium irrigation projects, to ensure the achievement of physical and financial targets. Monitoring of projects under Accelerated Irrigation Benefit Programme (AIBP), and Command Area Development (CAD) programme has also been included in its field of activities;
- To advise the Government of India and the concerned State Governments on the basin-wise development of water resources;
- To undertake necessary surveys and investigations as and when so required, to prepare designs and schemes for the development of river valleys in respect of power generation, irrigation by gravity flow or lift, flood management and erosion control, anti-water logging measures, drainage and drinking water supply;
- To undertake construction work of any river valley development scheme on behalf of the Government of India or State Government concerned;

- To advise and assist, when so required, the State Governments (Commissions, Corporations or Boards that are set up) in the investigation, surveys and preparation of river valley and power development schemes for particular areas and regions;
- To advise the Government of India in respect of Water Resources Development, regarding rights and disputes between different States which affect any scheme for the conservation and utilization and any matter that may be referred to the Commission in connection with river valley development;
- To impart training to in-service engineers from Central and State Organisations in various aspects of water resource development;
- To initiate studies on socio-agro-economic and ecological aspects of irrigation projects for the sustained development of irrigation;
- To conduct and coordinate research on the various aspects of river valley development schemes such as flood management, irrigation, navigation, water power development, etc., and the connected structural and design features;
- To promote modern data collection techniques such as remote sensing technology for water resources development, flood forecasting and development of related computer software;
- To conduct studies on dam safety aspects for the existing dams and standardize related instrumentation for dam safety measures;
- To carry out morphological studies to assess river behaviour, bank erosion/coastal erosion problems and advise the Central and State Governments on all such matters;
- To promote and create mass awareness regarding the progress and achievements made by the country in the water resources development, use and conservation.

1.4 Headquarters

There are eighteen organisations, each headed by a Chief Engineer at CWC headquarters, New Delhi. Out of which, nine organisations are under WP&P wing, six organisations are under D&R wing and two organisations are under RM wing. In addition, Human Resources Management (HRM) Unit headed by Chief Engineer (HRM) is also located at headquarters. The details of the organisations are given in the organogram.

1.5 Regional Offices

In order to achieve better results in the Water Resources Sector and have better coordination with the State Government departments, CWC has established regional offices in the major river basins. It has 13 regional offices, each headed by a Chief Engineer. The offices are located at Bangalore, Bhopal, Bhubaneswar, Chandigarh, Coimbatore, Delhi, Gandhi Nagar, Hyderabad, Lucknow, Nagpur, Patna, Shillong, and Siliguri.

1.6 Personnel Management

The staff strength of CWC in position as on 31.3.2010 was 3599 as against the sanctioned posts of 4980. The details of posts (sanctioned and filled) at the headquarters and at the Regional offices are given in Table 1.1. Summary of sanctioned and filled posts in different groups is given in Table 1.2.

Table 1.1

Staff Strength

Category	Sanctioned	Filled
Headquarters	1888	}
Regional Offices	3092	3599
Total	**4980**	**3599**

Table 1.2

Group-Wise Details of Posts Sanctioned and Filled

Sl. No.	Category	Sanctioned	Filled
1	Group "A"	708	524
2	Group "B"	1154	405
3	Group "C"	3118	2670
	Total	**4980**	**3599**

Note *All the Group D posts of CWC on upgradation as Group "C" (with grade pay of Rs.1800/-) have been merged and redesignated as 'Skilled Work Assistant' as per accepted recommendation of VIth CPC in r/o Group "D". Therefore the figure of Group "D" staff is included in figure of Group "C" staff above.*

1.7 Plan Schemes & Annual Budget

1.7.1 Plan Schemes

Details of the Plan Schemes during the year 2009-10 are given below:

(₹ in Crore)

S. No.	Name of Schemes	Objective / Scope of Works	XI Plan outlay	FY 2009-10 (CWC Component)		
				BE	FE	Exp.
1.	National Water Academy	●Training for in-service engineers from State and Central organisations in the area of water resources development.	15.00	2.60	2.60	2.60
2.	Hydrology Project (Phase II)	●To extend and promote the sustained and effective use of Hydrological Information System (HIS) by all implementing agencies concerned with water resources planning and management in 13 States and 8 Central Agencies.	Total cost - ₹ 631.83 crore, CWC component ₹ 29.60 crores	4.98	1.02	1.33
3.	Development of Water Resources Information System	●To develop information system on water resources at national level by linking the concerned State & Central Departments for collection and exchange of data	234.30	70.00	68.39	63.25
4.	Investigation of Water Resources Development Schemes	●To carry out the activities related to survey and field investigation. ●Preparation of pre-feasibility / feasibility reports and DPR of various water resources development schemes including the schemes for interbasin transfer of water.	Total cost ₹ 290.00 crore, CWC component ₹ 40.00 crore	9.56	8.56	7.13

5.	Dam Safety Studies & Planning	Setting up of Instrumentation Demonstration Centre (spill over works of Xth Plan Scheme). ●Environmental & Social Assessment (ESA) Studies. ● Risk Analysis Studies and other specialized studies for identified projects. ●Training and development of special purpose packages on dam safety activities. ●Balance payment for Generalized PMP Atlases prepared for Indus & Krishna Basins. ●Digitization of Generalized PMP Atlases for Krishna Basin (Spillover works of Xth Plan Scheme). ●Preparation and digitization of Generalized PMP Atlases for Ganga & Brahmaputra basins. ●Up gradation & digitization of atlases prepared under Dam Safety Assurance & Rehabilitation Project (DSARP).	10.00	1.00	1.00	0.37
6.	Flood Forecas-ting	●Balance works of X Plan. ●Continuing activities of data collection, transmission, and flood forecast formulation / dissemination. ● Installation of telemetry system at additional 222 stations.	130.00	25.00	19.99	17.62
7.	River Management Activities & Works related to Border Areas	River management activities on border rivers which include: ● hydrological observations ● investigations and necessary flood control measures in cooperation with neighbouring countries wherever necessary.	Total outlay ₹ 601.00 crore, CWC outlay ₹ 118.95 crore)	33.54	13.20	12.92
8.	Infrastruc ture Develop ment	●Scheme includes activities related to (i) land& building of CWC, (ii) lands & buildings of CGWB, (iii) IT development of MoWR and (iv) up gradation and modernisation of computerisation and information system of CWC.	Total cost ₹ 115.00 crore			
			CWC component			
			(i)Land & Building ₹ 57.00 crore	9.5	6.69	4.21
			(ii) Up-gradation and moderni-sation of comput-erisation and infor-mation system of CWC ₹ 6.00 crore.	0.4	1.149	0.395

1.7.2 Annual Budget

The non-plan budget outlays and expenditure for the year 2009-10 are given in Table 1.3.

Table 1.3

CWC (NON-PLAN) SCHEMES - OUTLAY AND EXPENDITURE

2701- MAJOR & MEDIUM IRRIGATION

(₹ in crores)

SL.NO.	NAME OF THE SCHEMES	BE. 2009-10	EXP. 2009-10
1	Direction & Administration	23.00	25.56
2	Data Collection	69.22	82.02
3	Research	1.60	2.89
4	Training	0.65	0.38
5	Survey & Investigation	7.60	9.52
6	Consultancy	21.90	25.44
7	Exhibition & Trade Fair	0.30	0.14
8	Cell for Mon. externally aided Project	0.60	0.63
9	Mod. Of Equip. CWC Offset Press	0.35	0.32
10	Water Planning Wing	1.40	1.38
11	Hydrological Obs. In Chenab Basin	1.60	2.08
12	Seminars and Conferences	0.004	0
13	Contribution to International Bodies	0.015	0.01
	Total:	**128.24**	**150.36**

2711- FLOOD CONTROL & DRAINAGE

(₹ in crores)

SL.NO.	NAME OF THE SCHEMES	BE. 2009-10	EXP. 2009-10
1	Flood Control	55.00	68.51
2	Payment to Government of Bhutan for Maintenance of Flood Forecasting & Warning Centres	1.20	1.06
3	Strengthening & Modernisation of FF and Hyd. Obs. Network in Brahmaputra and Barak Basin	2.25	2.12
	Total:	**58.45**	**71.69**

1.8 Consultancy Services

The Designs & Research Wing and the investigation circles of CWC have been providing consultancy to Central Departments, State Governments and Public Sector Organisations in planning, surveys & investigation and design of river valley projects in India and abroad.

1.9 Progressive Use of Hindi in Official Work

The official language policy is being implemented in all the offices under the administrative control of the Central Water Commission. Continued measures were taken for improving progressive use of Hindi for official purpose. The Official Language Implementation Committee of the Commission meets regularly under the Chairmanship of the Chairman, Central Water Commission. Various measures required for progressive use of Hindi are discussed and timely action is being taken on the decisions in the meetings. Sufficient progress has been made in the

implementation of the Rajbhasha Act in the Commission. Following initiatives in regard to progressive use of Hindi in this year were taken:

1. With a view to review the progressive use of Hindi and also to keep a watch on the compliance of Orders, instructions etc. field offices of the Central Water Commission being inspected and effective measures taken for rectifying short comings noticed during the inspection.
2. To generate awareness about Hindi, and to give practical knowledge of the Official Language provisions and incentive schemes etc. four Hindi workshops including computer training programme were organised at Central Water Commission headquarter, in which 51 officials participated.
3. Letter received in Hindi are invariably replied in Hindi. The Progress made in the implementation of important instructions issued by the Deptt. of Official Language regarding progressive use of Hindi for Official purpose, the Official Language Act, 1963 and the Official Language Rules, 1976 is watched through the quarterly progress report regularly.
4. Apart from translation of documents falling under section 3(3) of the official Language Act, the Annual Report of the Central Water Commission, 2008-09 and other urgent translation material received form MoWR were translated into Hondi.
5. For the effective implementation of the official language policy and to create awareness about Raj Bhasha, Hindi Fortnight was organised from 14 to 29 September, 2009. Various competitions like Hindi noting/drafting, competeion on the knowledge of the Administrative and Technical Glossary, Kavya spardha were organised and winneres were awarded cash prizes and certificates. Raj Bhasha Shields for the year 2008-09 were awarded for doing their maximum work in Hindi during the year to the Central Water Commission offices situated at region A, B, C viz. Middle Ganga Division-I, Lucknow, Tapi Division, Surat, Gujarat, Krishna & Godavari Organization, Hyderabad and Establishment-IX Section. Plant and Machinery Directorate within the Commission for doing their maximum work in Hindi during the year.

1.10 Reservation for SC, ST & OBC

The representation of SC, ST & OBC officials in different grades is given in Table 1.4.

Table 1.4

Representation of SC & ST Officials in Different Grades

(As on 1-01-2010)

Category	No. of Filled posts	No. of SCs	No. of STs	No. of OBCs
Group A	492	62	29	36
Group B	702	138	18	13
Group C	1720	326	104	59
Total	**2914**	**526**	**1151**	**108**

Note *The above figures do not include figures pertaining to CSS, CSSS and CSCS Cadres which are controlled by the Ministry of Water Resources and the other cadres cadre controlled by Deptt. of Economic Affairs & Deptt. of Statistics.*

1.11 Status of Filling up of Vacancies Reserved for Disabled Persons

In pursuance of Section 33 of Persons with Disabilities (Equal Opportunities Protection of Rights and Full participation) Act, 1995 posts for disabled persons have been identified and the position of Disabled Persons in position as on 31.03.2010 is given in Table 1.5. Efforts are being made to fill up the backlog vacancies.

Table 1.5
Number of Disabled Persons in Position

(As on 31.03.2010)

GROUP	OH	VH	HH	TOTAL
'A'	2	0	0	2
'B'	2	0	1	3
'C'	6	4	1	11
Total	**10**	**4**	**2**	**16**

OH *- Orthopaedic Handicapped* ***VH*** *- Visually Handicapped* ***HH*** *- Hearing Handicapped*
Group D employees converted to Group C as per 6th pay recommendation.

Note *The above figures do not include figures pertaining to CSS, CSSS and CSCS Cadres which are controlled by the Ministry of Water Resources and for the other cadres controlled by Deptt. of Economic Affairs & Deptt. of Statistics.*

1.12 Welfare Measures and Incentives

The different welfare measures and incentives that are in existence are given under.

1.12.1 Benevolent Fund

The Central Water Commission Benevolent Fund set up in 1966 aims at providing prompt financial assistance to the deserving members to take care of damages at the time of natural calamities or to meet expenses of medical treatment for their own prolonged illness such as Cancer, TB,, etc. and surviving family members of those who died while in service. The financial assistance is provided in two ways:

- Immediate Relief upto ₹ 15,000/-
- Long Term Relief upto ₹ 10,000/- payable in ten monthly instalments.

The administration of the fund vests in the Governing Body, which comprises of a Chairman, one Honorary Secretary, one Treasurer and 8 Members. The audited accounts are placed before the General Body in the Annual General Body meeting. The existing subscription rate is ₹10/- (ten) per month. During the year 2009-10 there were seven cases of immediate relief approved by the Governing Body of the Benevolent Fund.

1.12.2 Co-Operative Thrift and Credit Society

Department of Irrigation Co-operative Thrift & Credit Society Ltd., has been functioning with its registered office at West Block-I, R.K. Puram, New Delhi since March 1959 for the welfare and benefit of the officers and staff of the Ministry of Water Resources, Central Water Commission, Central Soil & Materials Research Station, Department of Power, Principal Pay & Accounts Office of the Ministry of Water Resources and Pay & Accounts Office, Central Water Commission. It provides its member loans to the extent of ₹1,50,000/- and emergency loan of ₹10,000/-, recoverable in 60 and 10 monthly instalments respectively at a rate of interest of 9% per annum. The Society pays gratuity for retiring members and writes off outstanding loans against deceased members from the members' welfare fund. It has won several awards for best cooperative society of Delhi.

1.12.3 Sports and Cultural Activities

CWC officials brought laurels to the Commission by excelling in the field of sports and culture competitions. Jal Tarang, in addition to performing on Water Resources Day, did us proud by winning individual and team trophies in Short Play (Play write, Acting), Folk Section, Instrumental

Music and Vocal Music in the Inter-Ministry Dance & Music & Short Play Competition, 2009-10.

As usual CWC did exceeding well in sports. Our Hockey team won the Inter Ministry Hockey League 2009-10 for the consecutive 4th time. S/Shri Satish Kumar, Ashwani Kumar, Sh Davendar Kumar, Ms. Noor Jahan, Ms. Mini Polson, Ms. Kamlesh Gauba in Athletics, Ms. R. Laxmi Ganguli in Swimming and Sh. Indresh Kumar in Table Tennis gave sterling performances in Inter-ministry as well as Delhi State Veteran Athletic Competitions.

Mr. Narottam Singh Rawat represented India in Commonwealth Boxing Championships. He was also member of Indian Boxing Team which stood winners in the 1st International Boxing Championships held at Chandigarh.

1.12.4 Liaison Cell for SC/ST/OBC/Handicapped Persons

A Liaison Cell for SC/ST/OBC /Handicapped Persons has been set up in CWC to look after their welfare.

1.13 Restructuring of Central Water Commission

The National Commission for Integrated Water Resources Development Plan (NCIWRDP) set up under the Chairmanship of Dr. S.R. Hashim, the then Member, Planning Commission, to study the development and management of National Water Resources in a professional manner, in its report has, inter-alia, recommended that the "entire question of restructuring of the Central Water Commission may be got studied in detail by appointing competent consultants."

Accordingly, the Ministry of Water Resources had awarded the Consultancy for the above studies to the Administrative Staff College of India, Hyderabad on 12th September, 2001. The terms of reference of the study included (i) the evaluation of present status of Central Water Commission and its functions; (ii) future projections in the Water Sector for 2025; (iii) Mission for Central Water Commission in respect of the future projections for 2025; and the organizational structure and related issues in respect of CWC to enable it in achieving the Mission. The final report of the ASCI was submitted during July 2007 and amended and corrected in May, 2010.

1.14 Citizen's Charter for CWC

As per the guidelines issued by Department of Administrative Reforms & Public Grievances (AR&PG), a Task Force under the Chairmanship of Member (WP&P), CWC and Chief Engineer (BPMO), CWC as Member-Secretary & Nodal Officer was constituted for formulating Citizen's Charter for CWC. The Citizen's Charter was finalised with the concurrence of MoWR and has been uploaded on CWC website.

1.15 Right to Information Act

The Right to Information Act enacted by Parliament on 15th June, 2005 came into force on the 12th October, 2005 (120th day of its enactment). CWC has implemented the provisions of the Act. Information in respect of Central Water Commission in compliance of Right to Information Act ' 2005 has been put in public domain through its official website at http://cwc.gov.in

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CHAPTER-II

WATER RESOURCES DEVELOPMENT

2.1 Water Resources in India

Central Water Commission (CWC) has been making periodic assessment of the Country's water resources. The water resources potential of the country, which occurs as a natural runoff in the rivers is about 1869 Billion Cubic Metres (BCM). It constitutes a little over 4% of the total river flows of the world. However, due to various constraints of topography and uneven distribution over space and time, only about 1123 BCM of the total annual water potential can be put to beneficial use. This can be achieved through 690 BCM of utilizable surface water and 433 BCM through ground water.

While water for drinking purpose has been accorded top most priority in water use, irrigation is the major consumer of water. Ultimate irrigation potential which can be created making use of the utilizable surface water resources through major, medium and minor projects would be about 75.9 m ha. Irrigation potential making use of ground water has now been assessed as 64 m ha. Thus the total irrigation potential from surface and ground water sources would be about 139.9 m ha. Besides this, an additional irrigation potential of about 35 m ha can be created by taking up long distance inter basin transfer of water from surplus to deficit basins. Water resources potential in the major river basins is given in CWC Publication – Handbook on Water and Related Information, March, 2009.

In order to appropriately address the present and future water demand and food grain requirements of the society, the following thrust/priority areas for water resources related issues have been identified by the Government

- Improving water utilization efficiency;
- Command area development and participatory irrigation management;
- Flood management and erosion control;
- Protection of costal erosion;
- Dam safety and rehabilitation;
- Revival and restoration of existing water bodies;
- Appropriate regulation and management of ground water;
- Ground water recharge;
- Pursue the agenda for Inter-linking of rivers, starting with the south-bound rivers;
- Rural drinking water supply and sanitation;

Central Water Commission is directly and indirectly contributing in achieving the objectives of these thrust/priority areas.

2.2 Highlights of Water Resources Sector

As the variability of rainfall over the country is well known, the development of water resources for irrigated agriculture received high priority in the different Plan periods. Expansion of irrigation facilities, along with consolidation of the existing systems, has been the main strategy for increasing production of food grains.

Irrigation support is provided through major, medium and minor irrigation projects and command area development.

2.2.1 Irrigation Potential: Major & Medium Irrigation Sector

The ultimate irrigation potential of the country is estimated as 139.9 m ha. of which irrigation potential from major and medium irrigation projects is assessed as 58.47 m ha. Irrigation potential created in the country from major and medium irrigation projects, which stood at 9.7 m ha. in 1951, has risen to 42.277 m ha. till the end of X Plan (anticipated). The target for Eleventh Plan is to achieve an additional irrigation potential of 9 m ha. in the MMI sector. The cumulative figures of potential created in the successive plan periods are given in Figure 2.1

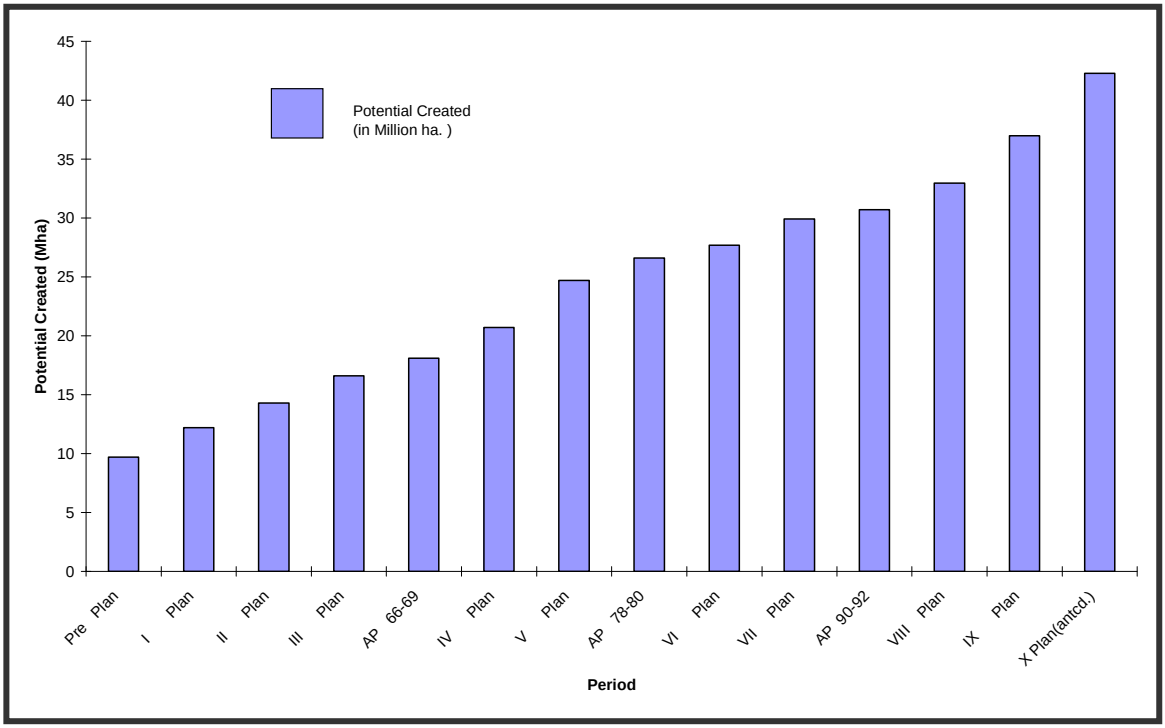


Fig 2.1 - Growth of Irrigation Potential Created During Pre-Plan and Plan Period (Cumulative) (Major and Medium Irrigation Sector)

2.2.2 Major and Medium Irrigation Projects

In 1951, during launching of the First Five Year Plan, there were 74 major and 143 medium irrigation projects in the country. During the plan period since 1951 to end of X plan in 2007, as per available information, total No. of projects taken up are 368 major, 1087 medium and 215 ERM schemes out of which 186 major, 814 medium and 117 ERM projects have been anticipated to be completed by end of X Plan as given below in Table 2.1. The cumulative irrigation potential created till the end of X Plan is anticipated as 42.277 m ha. and target kept for XI Plan is 9 m ha. State wise cumulative potential created through major and medium projects upto end of IX Plan and anticipated cumulative achievement upto X Plan are given in Table 2.2. Growth of irrigation potential created through major and medium irrigation projects and corresponding outlays/expenditure in various plan periods is given in Table. 2.3.

Table 2.1

Number of Major, Medium & ERM Projects taken up and completed upto X Plan

Category	Projects Taken Up			Projects likely to be completed			Spill over into XI Plan
	Pre-plan	Plan	Total	Pre-plan	Plan	Total	
Major	74	368	442	74	186	260	182
Medium	143	1087	1230	143	814	957	273
ERM	-	215	215	-	117	117	98
Total	**217**	**1670**	**1887**	**217**	**1117**	**1334**	**553**

Source: *Report of the Working Group on Water Resources for XI Five Year Plan (2007-12)*

Table 2.2

State wise Creation of Irrigation Potential through Major & Medium Irrigation Sector

(Thousand ha.)

Sl. No.	State	Ultimate Irrigation Potential	Potential created upto IX Plan (1997-2002)	Potential creation during X Plan	Potential created upto X Plan
1	Andhra Pradesh	5000.00	3303.22	439.44	3742.66
2	Arunachal Pradesh	0.00	0.00	1.2	1.20
3	Assam	970.00	243.92	68.98	312.90
4	Bihar	5223.50	2680.00	279	2959.00
5	Jharkhand	1276.50	354.47	249.5	603.97
6	Goa	62.00	21.17	16.48	37.65
7	Gujarat	3000.00	1430.37	788.13	2218.50
8	Haryana	3000.00	2099.49	91.87	2191.36
9	Himachal Pradesh	50.00	13.35	2.1	15.45
10	Jammu & Kashmir	250.00	179.69	23.61	203.30
11	Karnataka	2500.00	2121.12	6.63	2127.75
12	Kerala	1000.00	609.49	480.98	1090.47
13	Madhya Pradesh	4853.07	1386.90	65	1451.90
14	Chattisgarh	1146.93	922.50	888.18	1810.68
15	Maharashtra	4100.00	3239.00	255.15	3494.15
16	Manipur	135.00	91.15	11.9	103.05
17	Meghalaya	20.00	0.00	0.00	0.00
18	Mizoram	0.00	0.00	0.00	0.00
19	Nagaland	10.00	0.00	1	1.00
20	Orissa	3600.00	1826.56	163.41	1989.97
21	Punjab	3000.00	2542.48	62.19	2604.67
22	Rajasthan	2750.00	2482.15	408.2	2890.35
23	Sikkim	20.00	0.00	0.00	0.00
24	Tamil Nadu	1500.00	1549.31	11.75	1561.06
25	Tripura	100.00	4.90	13.8	18.70
26	Uttar Pradesh	12154.00	7910.09	871.26	8781.35
27	Uttrakhand	346.00	280.30	9.35	289.65
28	West Bengal	2300.00	1683.29	86.52	1769.81
29	UTs	98.00	6.51	0	6.51
	Total States+U.Ts.	**58465.00***	**36981.43**	**5295.63**	**42277.06**

Source: *Report of the Working Group on Water Resources for XI Five Year Plan (2007-12)*

Table 2.3

Plan wise Outlays and Cumulative Growth in Creation of Irrigation Potential

(Major & Medium Projects)

Period	Outlay/ Expenditure (₹Crore)	Cumulative Expenditure (₹Crore)	Potential created (m ha.)		Potential Utilized (m ha.)
			During	Cumulative	
Pre-plan period	--		9.70	9.70	9.70
I Plan (1951-56	376	376	2.50	12.20	10.98
II Plan (1956-61)	380	756	2.13	14.33	13.05
III Plan (1961-66)	576	1332	2.24	16.57	15.17
Annual Plan (1966-69)	430	1762	1.53	18.10	16.75
IV Plan (1969-74)	1242	3004	2.60	20.70	18.39
V Plan (1974-78)	2516	5521	4.02	24.72	21.16
Annual Plans (1978-80)	2079	7599	1.89	26.61	22.64
VI Plan (1980-85)	7369	14968	1.09	27.70	23.57
VII Plan (1985-90)	11107	26075	2.22	29.92	25.47
Annual Plans (1990-92)	5459	31534	0.82	30.74	26.31
VIII Plan (1992-97)	21072	52606	2.21	32.95	28.44
IX Plan (1997-2002)	49289	101895	4.03	36.98	31.01
X Plan (2002-2007) *	71213	173108	5.30	42.28	34.42

***Provisional**

Source: *Report of the Working Group on Water Resources for XI Five Year Plan (2007-12)*

Number of Major, Medium and ERM projects taken up and completed in the pre plan and plan period are shown in Fig 2.2, 2.3 and 2.4 respectively.

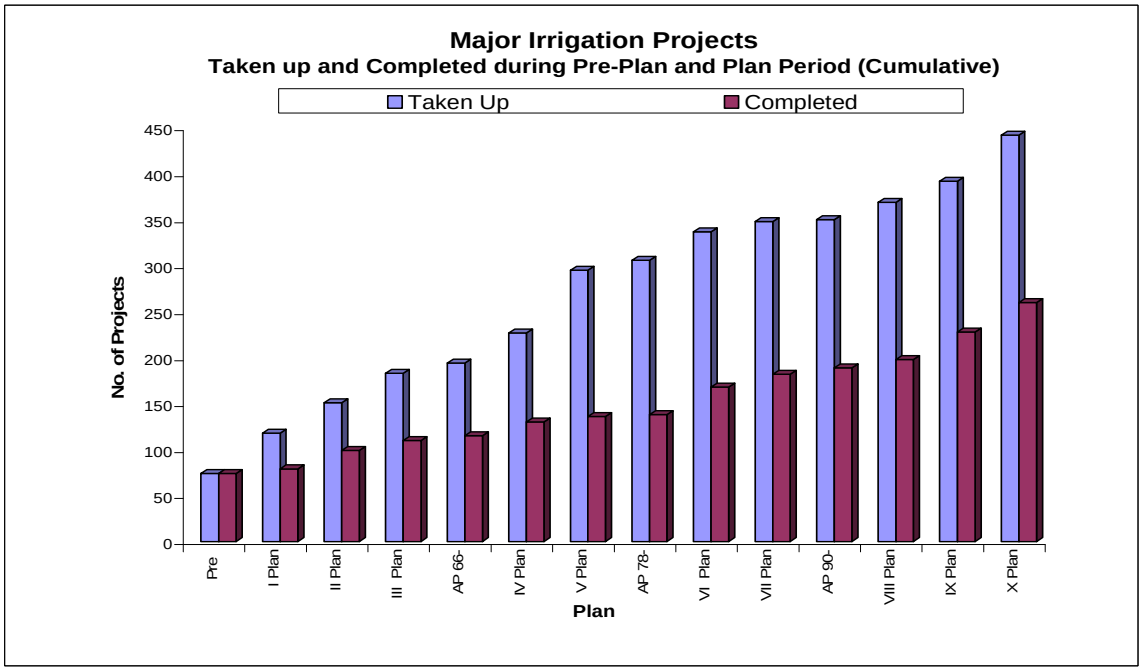


Fig 2.2 - Major Irrigation projects taken up and completed during pre-plan and plan period (Cumulative)

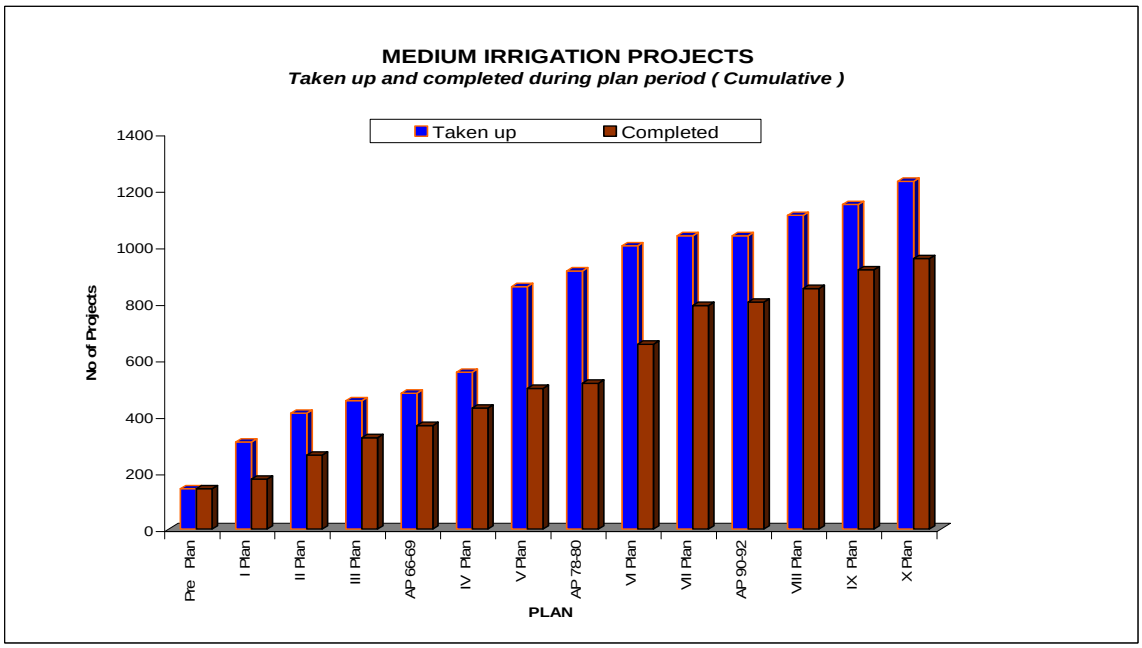


Fig 2.3 - Medium Irrigation projects taken up and completed during pre-plan and plan period (Cumulative)

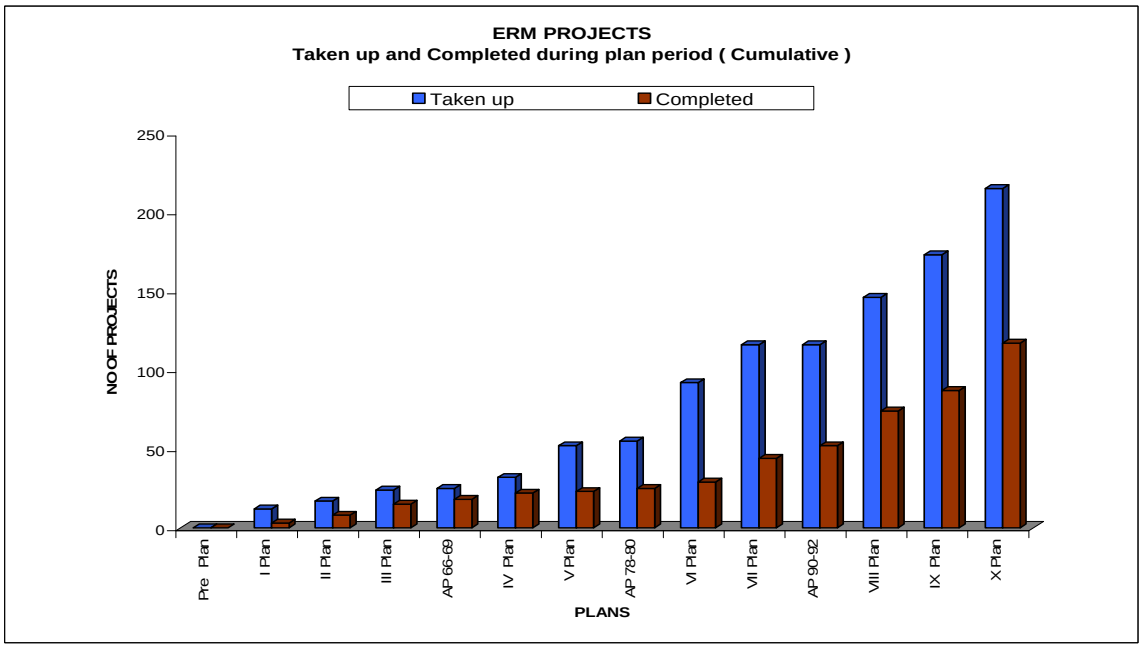


Fig 2.4 - Modernisation of ERM Projects taken up and Completed during pre-plan and plan period (Cumulative)

2.2.3 Irrigation Development under Tribal Sub-Plan districts

A Tribal Cell was originally sanctioned in March 1979 as part of the strengthening of the Irrigation Dte. One of the functions entrusted to Tribal Cell is "Preparation of Annual Status Report on irrigation development in TSP areas in respect of all the given States having major/medium irrigation projects for the benefit of ST & SC's". The report on the status of irrigation projects benefiting TSP is prepared every year.

3

CHAPTER-III

RIVER MANAGEMENT

3.1 Systematic Collection and Storage of Hydrological Data

Central Water Commission at present operates National Network of 878 Hydrological Observation Stations. Out of these 878 stations, 300 are Gauge Stations, 200 are Gauge and Discharge Stations, 123 are Gauge Discharge and Water Quality Stations, 32 are Gauge Discharge and Silt Stations, 3 are Gauge and Water Quality, 2 Snow Hydrology Observation Stations and 218 Gauge Discharge Silt & Water Quality Stations. The basin-wise distribution of these stations is detailed below in Table 3.1.

Table 3.1

Basin-wise number of Hydrological Observation Stations

Sl.No.	Name of Basin	No. of Sites
1	Indus	34
2	Ganga,Brahmaputra, Meghna/Barak	450
3	Subarnrekha	12
4	Brahmani-Baitarni	12
5	Mahanadi	37
6	Godavari	67
7	Krishna	56
8	Pennar	8
9	Cauvery	34
10	Tapi	18
11	Narmada	25
12	Mahi	12
13	Sabarmati	13
14	West Flowing rivers of Kach, Saurashtra & Loni	15
15	West Flowing Rivers to South of Tapi	55
16	East Flowing Rivers between Mahanadi & Godavari	12
17	East Flowing rivers between Krishna and Pennar	1
18	East Flowing rivers between Pennar and Cauvery	17
	Total	**878**

The basic data collected by field units is processed and validated at the Sub-Division, Division and Circle level and the authenticated data in the form of Water Year Books and Water Quality Year Books is published and then transmitted to CWC (HQ) for storage, updating, retrieval etc. The dissemination of data to bonafide users is processed as per the request for data received in Regional offices of CWC as well as at the Headquarters by the Planning & Development (P&D) Organisation and Information System Organisation (ISO) of CWC.

P&D Organisation is maintaining hydrological data pertaining to Ganga, Brahmaputra and Barak Basins in computerized format. The data of these basins being of classified nature is provided to the bonafide users on request following a set procedure and guidelines for release of classified data. Computerized data is now available for other regions also after the implementation of the Hydrology Project Phase-I. The users of the data include Central/State Government offices, Public Sector Undertaking and Institutions/Societies working under the direct control of Central/State Governments and IIT's and Research Institutions/Scholars.

Under Hydrology Project, five Regional Data Centres were set up at Nagpur, Bhubneshwar, Hydrabad, Gandhinagar and Coimbatore for storage of data. At National Srurface Wate Data

Centre, data of above regions of CWC is stored and combined catalogue of metadata is hosted on website.

3.1.1 Hydrology Project

Central Water Commission has implemented Hydrology Project Phase-I spread over the 9 peninsular States of India with the World Bank Assistance which started in 1966. Under the project, Hydrological Information System (HIS) has been established for 284 sites to provide reliable hydrological data for long term planning, design and management of water resources and water use systems and for research activities in the related aspects together with improvement in the infrastructure for data collection. 9 States and 6 Central agencies participated in phase-I of HP.

Central Water Commission has got developed software (WISDOM) for all surface and ground water participating agencies for data storage and dissemination in respect of hydrological and meteorological data under the Hydrology Project. A combined catalogue containing Meta Data (information about availability of data) of various data storage centres have been hosted on the web (www.india-water.com). The Catalogue provides on-line information to the data users regarding type of data available with each agency and period and frequency for which it is available and the user can generate a Data Request File (DRF). The DRF, so generated, is automatically e-mailed to all the concerned data storage centres and these data storage centres after authenticating the eligibility of the data user may supply the same.

Hydrology Project-II has been launched after implementation of Hydrology Project-I. It envisages establishment of Hydrological Information System on the pattern of HP - I in four more States/UTs namely Punjab, Himachal Pradesh, Goa and Pondicherry and vertical extension in existing nine States and eight central agencies for utilization of data.

The components of Central Water Commission under Hydrology Project Phase-II are Institutional Strengthening and Vertical Extension. It is proposed to carry out the consolidation of HP-I, increasing awareness for data dissemination and knowledge sharing, logistical support etc. under the Institutional Strengthening. Under the vertical extension component the major activities envisaged by the Central Water Commission is Development of Hydrological Design Aids Software including standardization of methodology/protocols.

The estimated cost of the proposal is ₹ 2962.98 lakh.

I. Institutional Strengthening:

Under this component it is proposed to consolidate the gains made under HP-I by way of strengthening of capacities through training, upgradation /replacement of hardware /software acquired during HP-I, maintenance of web site; data dissemination and knowledge sharing, workshop/ seminars/ study tours, etc.

It is proposed to enhance the computing capabilities in the realm of data processing, organisation and management and getting the software developed indigenously to obviate the AMC related problems. Upgradation of the data storage centre software (WISDOM) is also envisaged to integrate the additional data such as water use, socio-economic status etc.

National Water Academy (NWA), Pune will organise various training courses for all the participating agencies under horizontal and vertical extension component of the project. Provision has been made for creating additional infrastructural facilities at NWA.

II. Vertical Extension:

Development of Hydrological Design Aids

The Hydrological analysis in the formulation of various water resources projects by different State agencies are not uniform and even today some of these projects are being formulated using

empirical formulae which are no longer in use. The hydrological analysis is carried out in a limited way exploring various alternatives under the various data scenario condition.

Under HP-II it is proposed to develop tools for making use of the state of art technology for rational design and analysis and carry out integrated water resources analysis including study of hydrology of the complete water system.

Following activities are proposed under the project:

- Comprehensive software for hydrological analysis and report writing.
- Development of standard practices of hydrological analysis as an important input to integrated water resources management.
- Development of better technology in snow hydrology.
- Design aids for un-gauged catchments.
- Design aids for agricultural drainage schemes.

Status of HP-II

The project was cleared by the CCEA in October, 2005 and the agreement for the project between the Government of India and the World Bank was signed on 19th January, 2006. Status of major activities of CWC is as given under:

- A contract agreement was signed between CWC and the appointed Consultancy firm on 18.11.2009 for carrying out the consultancy services for "Development of Hydrological Design Aids (SW)". The Consultant has commenced the work with effect from 09.12.2009.
- After the administrative approval for the works at NWA, the bid documents for this work were prepared by CPWD and were submitted to World Bank through CWC/MoWR for "No Objection". The bids were floated after receipt of the "No Objection" from the World Bank. The bids received have been opened on 15.12.2009. Necessary process has started for award of the work. The work is likely to be completed by May 2011. A proposal for construction of residential accommodation and modernisation of facilities at NWA Pune at an estimated cost of ₹ 5.15 crores was accepted by the World Bank during its Mid Term Review (MTR) held in the month of October-2009. The process for undertaking the above work has been started.

3.2 Flood Forecasting & Warning Services

For techno-economic reasons, flood management measures, wherever planned and executed in our country, have been only against the flood of certain magnitude while the floods of higher magnitude do occur creating havoc. Accordingly, flood forecasting and warning system has been planned parallel to structural measures of flood management, as advance knowledge of incoming floods plays an important role in reducing flood damage as also better planning of rescue/ relief operations. Inflow Forecast also helps in optimum regulations of (multipurpose) reservoirs with or without flood cushion.

Flood Forecasting activities in India made a beginning in a scientific manner in 1958 when the erstwhile Central Water and Power Commission (CW&PC) set up a Flood Forecasting Unit (FFU) for issuing flood warnings for the river Yamuna at the National Capital, Delhi. This service has since been expanded by CWC to cover almost all major flood prone inter-State river basins of India. . At present there are 175 flood forecasting stations, of which 147 are level forecasting and 28 are inflow forecasting stations on major dams/barrages. It covers 9 major river systems in the country, including 71 river sub-basins spread over 15 States viz. Andhra Pradesh, Assam, Bihar, Chhattisgarh, Gujarat, Haryana, Jharkhand, Karnataka, Madhya Pradesh, Maharashtra, Orissa, Tripura, Uttarakhand , Uttar Pradesh, West Bengal; one Union Territory of Dadra & Nagar Haveli and the National Capital Territory of Delhi.

On an average, over 6000 forecasts are issued every year by Central Water Commission during flood season. Normally, these forecasts are issued 12 to 48 hours in advance, depending upon the river terrain, the locations of the flood forecasting sites and base stations. For the purpose of Flood Forecasting, hydrological data is being observed at 878 Gauge and Discharge sites and hydro-meteorological data at 500 rain gauge stations and communicated through a network of 550 wireless stations. Synoptic weather situations, weather forecast /heavy rainfall warnings etc. are also being collected from Flood Meteorological Offices (FMOs) of IMD.

3.2.1 Flood Forecasting Performance during 2009

During the flood season of 2009 (May to October), 3991 flood forecasts (3324 level forecast and 667 inflow forecasts) were issued, out of which 3906 nos. (97.80%) forecast were within accuracy limit. During the flood season, the real time hourly data of over 250 stations (most of flood forecasting stations and few base stations) was collected through web and was compiled and analysed to generate flood reports of the regions.

During the flood season of 2009 (May to October), out of 147 level forecasting sites, unprecedented flood situations (where the highest flood level attained during the flood season exceeded their respective previous H.F.L.), were witnessed at 3 flood forecasting stations viz. Mantralyam on river Tungbhadra (Andhra Pradesh), Elgine Bridge and Ayodhya on Ghaghra (third consecutive year at Ayodhya after HFL of 2007 and 2008). This is the unique year in which no unprecedented flood occurred in Monsoon season of IMD (1st June to 30th September) and three unprecendented flood occurred in October 2009.

Also, in addition to monitoring forecasts, hourly level data of over 200 stations in few basins (most of them are Base stations) were also monitored, collected and analysed and used for inferring long range forecasts (advisory nature) of flood situation along major rivers like Godavari, Yamuna, Brahmaputra, Ganga etc. using web-enabled software which connected each Divisional Data centre with Central Control Room, Sewa Bhawan, New Delhi. The vital information was disseminated to National Disaster Management Authority (Min. of Home Affairs) on real time basis, in addition to various User Agencies from each Division.

3.2.2 Flood Bulletins

Central Water Commission has been issuing Daily Flood Bulletins and Special Flood Bulletins during the flood season every year based on the information collected from affected State Governments and its own field formations. During the year 2009, a total of 54 Special Flood Bulletins (Unprecedented-23 and High flood situations-31), were issued, mostly on 3 hourly basis. In addition, 169 ordinary daily bulletins were issued; which included both level and inflow forecasts information.

3.2.3 Modernisation of Flood Forecasting Services

The Central Water Commission is making a constant endeavor in updating and modernizing the flood forecasting services to make it more accurate, effective and timely. The forecasting of flood involves a number of stages namely, data observation, collection, transmission, compilation and analysis, formulation of forecasts and their dissemination. To make the flood forecasts more accurate, effective and timely, the modernization activities are being taken up on a continuous basis.

During 9th Plan, Modernization of inflow forecasting services in Mahanadi and Chambal basins was taken up with a view to improve the quality and accuracy of the forecasts through (i) Automated data collection and transmission (ii) use of Satellite based communication system through VSAT (III) Improvement of forecast formulation techniques using computer based catchments models. This scheme proved to be of immense help to provide forecast to various dam sites and flood prone cities for taking advance action for suitable reservoir regulation for ensuring safety of the dam as well as property and livestock. During 10th plan it was further

extended to Brahmaputra, Damodar, Krishna, Godavari, Yamuna, and Mahanadi river basins and 168 additional Telemetry stations in these rivers were planned as follows:

Godavari Basin	63 stations
Krishna Basin	41 stations
Brahmaputra Basins	19 stations
Damodar Basin	20 stations
Yamuna Basin	15 stations
Mahanadi Basin	8 stations

By the end of the year 2009-10, 166 stations (out of 168 mentioned above) and 11 modeling centers have been installed. During XI plan, 232 additional telemetry stations are proposed to be installed in the following river Basins:

Indus Basin	04 stations
Narmda & Tapi Basin	70 stations
Brahmaputra Basins	14 stations
Lower Ganga Basin	18 stations
Upper Ganga Basin	45 stations
Yamuna Basin	25 stations
Mahanidi Basin	36 Stations
Godavari Basin	4 stations

The work of setting up of 11 modeling centres at Dibrugarh (Assam), New Delhi (UYD), Agra, Hyderabad(LKD), Hyderabad (LGD), Kurnool, Bhadrachalam, Bhubaneswar, Guwahati, Asansol and Maithon, undertaken in X Plan, is also in progress; where the hourly data will be transferred from existing earth stations located at Jaipur (Rajasthan) and Burla (Orissa) through VSAT.

The use of computerized mathematical models for forecast formulation was introduced in CWC in the last two decades. Five such hydrological models viz. SSARR, HECID, NIC, NAM - SYSTEM 11 (MIKE-11) and CWCFFL were acquired under UNDP and Central Water Commission-DHI Schemes. Recently, Window based MIKE-11 modeling software has been procured under World Bank aided DSARP Scheme. Up gradation of DOS based MIKE-11 to latest Window based MIKE -11 Software (12 Nos.) and procurement of Arcveiw & BD Analysis software has been completed.

3.5 Flood Management Programme

The Government of India approved in principle in November, 2007 “Flood Management Programme”, a State Sector scheme under Central Plan, to provide Central assistance amounting to ₹ 8000 crore to States during XI plan for taking up flood control, river management, drainage development, flood proofing and anti-sea erosion works. The schemes for central funding are decided by an Empowered Committee headed by Secretary (Expenditure), Ministry of Finance, GOI, depending upon the critical emergent situation and availability of funds with the GOI.

The works under this scheme are implemented generally by the Flood Control / Irrigation Departments of the State Government. In exceptional cases, the works can be entrusted to the Central Government Organizations / Undertakings also in exigency of work. The schemes are being monitored by Central Water Commission (CWC), Ganga Flood Control Commission (GFCC) and Brahmaputra Board, in their respective jurisdiction.

The appraisal of schemes for the States for other than Ganga Basin and appraisal of all schemes for drainage development and anti-sea erosion works is done by CWC. Under “Flood Management Programme” the proposals of the States other than North Eastern States and Ganga Basin States as well as the proposals of all States for anti-sea erosion works are processed and coordinated by CWC for release of funds. Under the above plan scheme, the spill

over works of J&K approved in X Plan under various plan schemes, 22 new works of J&K and 102 new works of Orissa, 02 works of Goa, 01 work from Himachal Pradesh, 01 work of Haryana, 03 works of Punjab and 01 work of U.P. were processed in CWC up to 31st March, 2010. During 2009-10, the central assistance of ₹173.63 crore was released towards the schemes coodinated by CWC.

Central assistance to 'other than the Ganga basin states' has been processed as detailed below:

(₹ in lakh)

S. No.	States/UT No. of Schemes	Estimated Cost	Central Share	Centre Share Released		
				2008-09	2009-10	Cumulative release
1.	Goa (2)	2273.00	1704.00	181.50	241.00	422.50
2.	Gujtrat (1)	794.31	595.73	0	0	0
3.	Haryana (1)	17375.00	13031.25	0	4691.00	4691.00
4.	Himachal Pradesh (1)	18724.00	16851.60	0	2700.00	2700.00
5.	J&K (20)	30879.42	27791.48	3002.00	4118.39	7795.39
6.	Kerala (2)	14361.30	10770.98	0	0	0
7.	Orissa (71)	20637.86	15478.40	4590.00	2586.61	7176.61
8.	Punjab (4)	14238.00	10678.50	2151.00	1308.00	3459.00
9.	Tamil Nadu (5)	63551.00	47665.50	0.00	111.00	111.00
10.	Uttar Pradesh (2)	5663.30	2277.21	0.00	1605.50	1605.00
	Puducherry (1)	**13967.00**	10475.25	0.00	0.00	0.00
Total	**110**	**202467.19**	**157320.65**	**9924.50**	**17361.50**	**27961.50**

3.7 Flood Plain Zoning

The need for enactment of Flood Plain Zoning legislation has been emphasized in various national fora since 1975. A model bill for Flood Plain Zoning was prepared by CWC and circulated in 1975 to all the States for enactment of legislation by the States.

Central Water Commission has been continuously impressing upon the States for necessary follow-up action to implement Flood Plain Zoning approach. To facilitate this effort, CWC has prepared pamphlets depicting essential features of flood plain management and circulated it to all the State Governments. Manipur enacted flood plain zoning legislation in 1978, but the demarcation of flood zones is yet to be done. The State of Rajasthan also enacted legislation in the State; however, enforcement thereof is yet to be done. The Governments of Uttar Pradesh, Bihar and West Bengal have initiated the process for enactment of legislation. Other States have yet not taken any action for enactment of legislation.

In 1978, the work of preparation of flood prone area maps of 0.5 m contour interval in the scale of 1:15,000 for the state of U.P. Bihar, Delhi, West Bengal, Haryana, Punjab, Assam and Jammu and Kashmir was taken by SOI and an area of about 54,750 square km was surveyed and maps were prepared.

The work of updating and digitization of existing flood plain zoning maps with contour interval of 0.5 m, maps to be in five layers viz. contour, water bodies (river/ponds) communication, vegetation existing flood control works i.e. embankment, anti erosion works etc was initiated and provision has been kept in EFC memo of Flood Forecasting for XI plan. The total cost of the work as initiated by SOI is ₹ 179.00 lakh as per details given below.

S. No.	Item of work	Amount (₹ Lakh)
1.	Updating of existing 800 no. flood plain zoning maps covering the area of 54.740 sq. km. of the State of U.P., Bihar, West Bangal, Punjab, Haryana, Delhi, Assam and J&K	91.00
2.	Digitization of 800 nos. above maps @ ₹ 11,000/- per map	88.00
	Total	**179.00**

Survey of India has so far prepared 33 maps of Assam State and 20 maps of Uttar Pradesh and the work is in progress.

3.8 River Morphology

The study of river morphology and implementation of suitable river training works as appropriate have become imperative for our nation as large areas of the country are affected by floods every year causing severe damage to life and property in spite of existing flood control measures taken both by Central and State Governments. Problems are aggravating mainly due to large quantity of silt/sediment being carried and deposited in down stream reaches. The special behaviour of the river needs to be thoroughly understood for evolving effective strategies to overcome the problem posed by it.

Morphological study of six river was proposed in 10th plan, out of which morphological studies of four rivers namely, Kosi, Ghagra Sutluj and Gandak rivers were taken up during 10th plan period. The draft reports for Kosi, and final report of Ghaghra and Satluj, have been submitted by NIH, Roorkee during December 2009 and is being examined. For river Gandak the interim report has been submitted by CWPRS, Pune.

With a view to having a multi disciplinary approach, a 'Standing Committee for Morphological studies of Himalayan rivers of India' having members from MoWR, CWC, Brahmaputra Board, CWPRS, IIT Roorkee, NRSA, Hyderabad, Space Application Centre, Ahmedabad, GSI, IWAI, Water Resources/Irrigation Departments and Space Application Centres of State Government of the Basins concerned was constituted by MoWR in June 2006. Member (RM) is the Chairman of the Committee and Director (Morphology) is its Member Secretary. The first meeting of the Standing Committee was held on 11th December 2006.

During the meeting, it was decided to include eleven more rivers for Morphological Studies in 11th Five Year Plan and to modify the existing General guide lines (1991) for preparing River Morphological reports. The General guide lines have been modified and new guide lines have been issued in March, 2009. During 11th Plan, morphological studies of seventeen rivers are proposed to be taken up under the Plan Scheme, 'R&D Programme in Water Sector'. The rivers are Ganga (Allahabad to Buxer), Sharda, Rapti, Yamuna, Brahmaputra, Subnsiri, Pagladia, Mahanadi, Kosi, Bagmati, Mahananda, Tapi, Krishna and Tungbhadra. Two main components of the proposed works during 11th Plan are –

- Morphological study using remote sensing images and other historical information like topo-sheets etc. and preparation of comprehensive report;
- Collection of field data like cross-sections of river, discharge and silt data etc. for studies in future.

As per approved EFC Memo for the 'R&D Programme in Water Sector', the component for morphological study is ₹21.18 crore.

3.9 Water Quality Monitoring

Central Water Commission is monitoring water quality at 371 key locations covering all the major river basins of India with a three-tier laboratory system for analysis of the parameters. The level-I laboratories are located at 258 field water quality monitoring stations on major rivers of India where physical parameters such as temperature, colour, odour, sp. conductivity, total dissolved solids, pH and dissolved oxygen of river water are observed. There are 24 level-II laboratories located at selected Divisional Headquarters to analyse 25 nos. physico-chemical characteristics and bacteriological parameters of river water. 4 Level-III/II+ laboratories are functioning at Varanasi, Delhi, Hyderabad and Coimbatore where 41 parameters including heavy elements/toxic parameters and pesticides are analysed periodically. The data generated are computerized in the data base system and disseminated in the form of Year Book, Status Reports and Bulletins. Water Quality Year books are published and WQ Bulletins are issued regularly.

Ministry of Environment and Forests laid emphasis on water quality monitoring in an integrated manner by constituting the Water Quality Assessment Authority (WQAA) at national level under the provision of Environmental Protection Act in June, 2001 for coordinated effort in maintaining the quality of work of national water resources. The Chief Engineers/ Superintending Engineers of CWC are the Member Secretaries of most of State Level Water Quality Review Committee (WQRC).

The Working Group to advise WQAA on the minimum flows in the rivers to conserve eco system headed by Member (RM), has submitted the recommendations to WQAA. In the 5th meeting of WQAA Chairman suggested to modify the report by incorporating the Water Quality aspects in deciding the minimum flows and accordingly the report was modified by incorporating Water Quality aspects and submitted to WQAA on 2-8-2007 for approval. A committee under the Chairmanship of Chief Engineer (EMO) was set up to look into to the legal & institutional aspects for adopting minimum flows recommended in the report. The Committee has submitted the report to WQAA on 27th October, 2009.

3.10 Coastal Erosion

Coastal erosion is a phenomenon experienced all over the world and Indian Coast is not an exception. A vast portion of the Indian coastline is facing constant erosion due to various reasons, natural as well as man-made. As per National Hydrographic Office, Dehradun, the Indian coastline is extending to a length of about 7516.60 km. out of which about 2150 kms is affected by sea erosion.

The following schemes are under implementation / consideration for protection of vulnerable coastal areas of maritime States / Union Territories from sea erosion.

3.10.1 Centrally Sponsored Scheme

A Centrally Sponsored Scheme namely "Critical anti erosion works in coastal and other than Ganga basin States", estimated to cost ₹ 20.64 crore, for implementation during X Plan, was approved in March, 2004. The proposals for coastal protection works of the States of Karnataka, Kerala, Maharashtra, Orissa, Puducherry, Tamil Nadu and Pilot project on beach nourishment and preparation of Coastal Atlas were included in the scheme. The scheme has now been transferred to State Sector and revised to ₹ 46.17 crore.

During XI Plan, the anti-sea erosion works are being funded under “Flood Management Programme” approved in principle for providing central assistance of ₹ 8,000 crore to States.

3.10.2 Sustainable Coastal Protection and Management Project

Realizing the severity of sea-erosion problem in certain reaches of the costline, Ministry of Water Resources initiated the process of collecting details of severely affected reaches with a view to

explore the possibility of preparing a National Coastal Protection (NCPP) for taking up the same for external assistance. As on outcome of discussions between the Governemnt of India and the Asian Decvelopment Bank (ADB), a Project Prepatory Technical Assistance (PPTA) with ADBgrant of $ 1 million for preparing a Sustainable Coastal Protection and Management Project for the States of Goa, Karnataka and Maharashtra was taken up. The Technical Assistance broadly supports NCPP.

ADB loan of about $ 250 million is in the pipeline for implementing sustainable Coastal Protection works which would be phased out in three tranche over a period of 8 years (2010-2017). Mirya Bay (Maharashtra), Coco and Colva Beach (Goa) and Ullal (Karnataka) were selected sub – projects to be implemented in the first tranche of the project.

Additionally, ADB has also accepted in the principle for inclusion of few other maritime States and initiated the selection process of States for the PPTA phase-II.

3.10.3 Coastal Protection & Development Advisory Committee (CPDAC)

Realizing the need of overall planning and cost effective solution to the coastal problems, the Govt. of India constituted Beach Erosion Board in the year 1966 under the Chairmanship of Chairman, CWC (erstwhile CW&PC). Subsequently, the Beach Erosion Board was reconstituted and renamed as Coastal Protection and Development Advisory Committee (CPDAC) by the Ministry of Water Resources, Govt of India, in April, 1995, under the Chairmanship of Member (RM), CWC and representatives of all coastal States and related Central Departments as its members. So far, CPDAC has held 11 meetings.

3.11 Climate Change Issues and National Water Mission

Hon'ble Prime Minister unveiled National Action Plan on Climate Change on 30.06.08 wherein eight missions have been launched including National Water Mission. Ministry of Water Resources has been mandated to institutionalize the water mission. The Mission document prepared by MoWR identified various studies and strategies for assessment of impacts of Climate Change on water resources as well as to take up the activities for adaptation to minimize the impacts. Central Water Commission being apex organization has to shoulder major responsibilities in taking up the objectives of the Mission. A 19 member High Level Steering Committee (HLSC) under the Secretary (WR) constituted by MoWR for guidining the preparation of mission document would also monitor and supervise the implementation of the mission.

Reassessment of basin water using latest technologies including remote sensing, satellite data, mathematical modelling with observed data and review of data collection networks of various hydrological parameters are a few important activities which have been taken up by CWC under National Water Mission.

4

CHAPTER-IV

BASIN PLANNING

4.1 National Water Planning

The uneven distribution of water in time and space and the recurring occurrence of floods and droughts in various parts of the country have underscored the need for a national perspective in water resources development involving participation of all concerned. Planning of water resources development and utilisation is a multi-level process involving Central and State Governments, Non-Governmental Organisations and beneficiaries with intense interaction among them.

4.2 National Water Resources Council

National Water Resources Council (NWRC) was set up in March, 1983 as a National apex body with the Hon`ble Prime Minister as Chairman. The composition of the Council is shown in Fig. 4.1. The council has held five meetings so far.

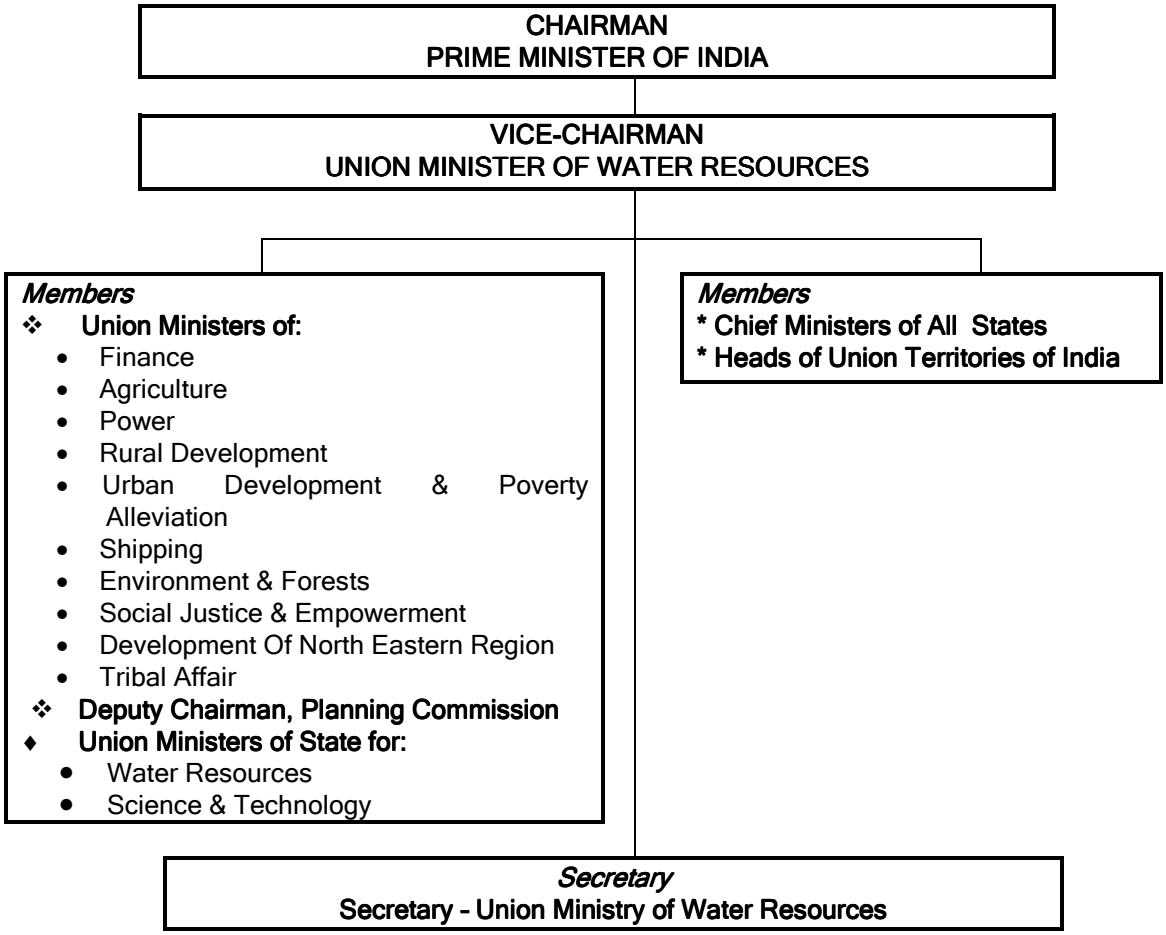


Fig. 4.1 – Composition of National Water Resources Council

After deliberations and subsequent emergence of consensus in the 5th meeting of the National Water Resources Council held on 1st April, 2002, the National Water Policy (NWP), 2002 was adopted by the Council.

Follow-Up Action of NWP

Consensus was reached during the fifth meeting of NWRC for the followings:

- Formulation of water policy for individual states.
- Formulation of an operational action plan with an aim to achieve the desired objectives of the policy.

Accordingly, the Action Plan for implementation of National Water Policy 2002 was adopted in 12th National Conference of Water Resources and Irrigation Ministers held on 5th February 2003 under the Chairmanship of the Hon'ble Union Minister of Water Resources. The Action Plan broadly includes the proposed action points for every provision of the National Water Policy (2002) and identifies the Ministries/Departments who are to provide vital inputs towards its implementation. The proposed time frame for implementation of the Action points is also indicated.

4.3 National Water Board

To review the progress achieved in the implementation of the National Water Policy and to report the progress to the National Water Resources Council from time to time, the Government of India has constituted a National Water Board in September 1990 under the Chairmanship of Secretary (WR). The Composition of Board is shown in Fig. 4.2. 13th meeting of the Board held on 18th September 2009, in which the following agenda items were discussed and suitable recommendations were made by the board.

(a) Follow up Action on the Decisions taken in the 12th Meeting of the National Water Board

(b) National Water Mission

(c) Review of National Water Policy -2002

(d) Amendment to River Board Act under entry 56 of Union List to make it more effective

(e) Setting up of River Basin Organizations (RBOs)

(f) Amendment of the Inter-State River Dispute Act

(g) Enactment and implementation of the bill for Ground Water Regulation and Management

(h) Enactment and implementation of legislation for Participatory Irrigation Management

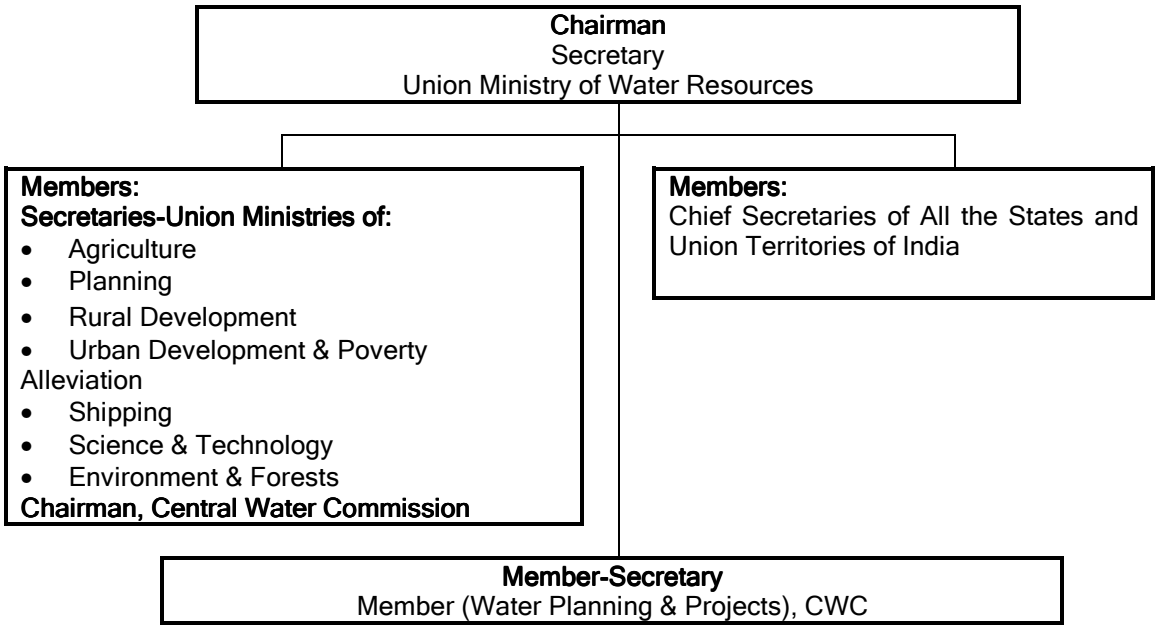


Fig. 4.2 - National Water Board

4.3.1 Formulation/Adoption of State Water Policy

So far the State Water Policies have been finalized and adopted by 11 states namely Andhra Pradesh, Chhattisgarh, Goa, Himachal Pradesh; Karnataka, Kerala, Madhya Pradesh, Maharashtra, Orissa, Tamil Nadu, and Uttar Pradesh. However, Chhattisgarh and Tamil Nadu are in the process of revising the State Water Policies. The state /UTs namely Delhi, Daman and Diu and Nagar Haveli have adopted the National Water Policy.

Formulation / adoption of State Water Policies is in progress in Arunachal Pradesh, Assam, Bihar, Gujarat, Haryana, Jammu and Kashmir, Jharkhand, Manipur, Meghalaya, Mizoram, Nagaland, Punjab, Rajasthan, Sikkim, Tripura, Uttarakhand, West Bengal and Union Territories of Andaman & Nicobar, Chandigarh, Lakshwdweep, and Puducherry.

4.3.2 Review of National Water Policy-2002

The National Water Policy – 2002 provides that "National Water Policy may be revised periodically as and when need arises". Ministry of Water Resources received suggestions from time to time in respect of various provisions of National Water Policy. MoWR constituted a Committee under the Chairmanship of Additional Secretary (WR) to examine various views that have been expressed at various fora. The committee observed that following important issues need to be deliberated for appropriate incorporation in National Water policy 2002.

- ❖ Due emphasis should be given to ground water development in the National Water Policy and ground water development and management issues should be highlighted.
- ❖ The provisions related to "Rainwater Harvesting and Artificial recharge" should be appropriately incorporated under the para on "Groundwater Development and Management".
- ❖ To reflect 'prevention of over-exploitation of water by industry and agriculture, the words 'industry and agriculture may be included appropriately in the existing provisions of the policy.
- ❖ Desilting of vulnerable pockets of main river and selective tributaries may be incorporated appropriately under either 'Flood Control and Management' or 'Erosion Control' in the policy.
- ❖ Issues related to 'Disaster Management' should be incorporated in the policy and various relief measures related to disaster may be discussed under it.

4.3.2.1 Consultations with State Governments

To seek the views and suggestions of the State Governments in respect of review of National Water Policy – 2002, the matter was included as an agenda for meeting of National Water Board which was constituted to review the progress achieved in implementation of National Water Policy and to report the progress from time to time.

To seek the views and suggestions in respect of review of National Water Policy -2002, the matter was included as an agenda for meeting of National Water Board. The following views emerged during the deliberations of 13th meeting of National Water Board.

- Due priority be given to ecology in National Water Policy as ecology is quite important and that ecosystem management including salinity control should be criterion for water allocation priorities.
- The proposal of private sector participation should be considered with the prior consent of state government concerned.
- Water being a State subject; Inter-State water transfer should be with the approval of the State's legislature.

- "Reuse of Treated Water" should be included in the National Water Policy.
- National Water Policy should include some specific provision regarding inter State pollution.
- " Value" be attributed to water.
- Ground water development should renamed as groundwater development and management.
- National Water Policy must be emphatic in protecting the existing beneficial users.

4.3.3 River Basin Organisation

National Water Board formed a Committee on River Basin Organisation, under the Chairmanship of Additional Secretary, MoWR with Commissioner (PP), MoWR as Member Secretary. The representatives from eight states namely Maharashtra, Tamil Nadu, Uttar Pradesh, Jharkhand, Madhya Pradesh, Gujarat, West Bengal and Orissa were its members. The report of the committee finalized in its fourth meeting held in June 2004 has been submitted and subsequently discussed in 12th NWB Meeting.

Under the XI Plan, it has been proposed to set up three river basin organisations, for which the draft SFC memo has been put up for the approval. In this connection, as desired by the Secretary (WR) a draft concept paper on the RBO has also been prepared to send to the States in which the aforesaid identified basins/sub-basins are situated. Secretary (WR) has further proposed only two river basins namely Mahanadi and Godavari for constitution of RBO under River Board Act, 1956 during XI Plan.

4.3.4 Implementation of irrigation projects in time bound manner

The States endorsed the actions/points brought out in the agenda for time bound completion of irrigation projects. Several issues were highlighted by the States regarding the implementation of irrigation projects in a time bound manner. The suggestions put forward by the States include need for fixing milestones, devising suitable mechanism to resolve inter-state matters in a time bound manner, easing norms for environmental and forest clearance of water resources development projects, relaxation of the norms under AIBP, reviewing the norms of AIBP for the North Eastern States, changing the time of release of CLA to April-May and November-December instead of October and March, expediting the process of appraisal and clearance, funding of projects under AIBP on the pattern of Pradhan Mantri Gramin Sarak Yojna etc. It was also suggested that the central grant under AIBP needs to be stepped up substantially.

In regard to the resettlement issues and the environment & forest problems the State of Maharashtra informed that the State has constituted a State Resettlement Authority and also a team for looking into forest and environment problems of the projects

4.3.5 Ground Water Management

Ministry of Water Resourecses has been pursuing the matter regarding enactment of law on ground water with all States/UTs. The Model Bill was initially circulated in 1970 which has been re-circultade in 1992, 1996 and 2005 to the Styates/ Union Territaries to enable them to enact suitable legislation for regulation and control of ground water development on the lines of Model Bill.

The States of Arunachal Pradesh, Manipur and Mizoram informed that there is presently no over exploitation of ground water and therefore there is no need for ground water legislation. So far 11 States/UTs like Andhra Pradesh, Goa, Himachal Pradesh, Kerala, Tamil Nadu, Bihar, Chandigarh, West Bengal, Puducherry, Dadar and Nagar Haveli and Lakshadweep informed that necessary act/legislation have been enacted and implemented. The States of Orissa and Uttar

Pradesh informed that formulation / enactment of the act/ bill is under progress. The remaining States/ UTs were requested to expedite the same in a time bound manner.

4.3.6 Participatory Irrigation Management (PIM)

The board noted that the legislation for Participatory Irrigation Management had already been enacted in Assam, Bihar, Chhattisgarh, Goa, Gujarat, Karnataka, Madhya Pradesh, Maharashtra, Orissa, Rajasthan, Tamil Nadu and Uttar Pradesh. The Board further noted that the legislation for Participatory Irrigation Management was under the process of enactment in Himachal Pradesh, Jammu and Kashmir and Meghalaya and that the bill was under formulation in the States of Haryana, Jharkhand, Kerala, Nagaland, Uttarakhand and West Bengal.

The following views emerged during the deliberations.

- Dual pipelines (for drinking water and for other uses) should be made absolutely mandatory in the newly developed habitations / settlements.
- Extension, Renovation and Modernization (ERM) projects may be allowed under AIBP in relaxation of 1:1 criteria.
- Desert Development Programme areas should be treated at par with Drought Prone Area Programme areas for AIBP funding,
- PIM should be invoked one year prior to the completion of project.

4.3.7 Need for Regulatory Mechanism to ensure sustainability of the resources and facilities created.

The State of Maharashtra informed that Maharashtra Water Regulatory Authority (MWRA) has already been formulated and is functional. The States of Himachal Pradesh, Madhya Pradesh, Orissa, Rajasthan, Tamil Nadu and Uttar Pradesh stated that the process of setting up of regulatory mechanism is under formulation. The Board impressed upon the States the necessity for setting up of appropriate regulatory mechanism for optimum, judicious and equitable management, allocation and utilisation of water resources in a time bound manner.

4.4 Inter-Basin Transfer of Water & Interaction with NWDA

The National Water Development Agency is engaged in carrying out water balance studies, link canals studies for diversion of surplus waters to water deficit areas including inter-basin transfers and field surveys and investigations for preparation of feasibility reports of the link canals for water resources development with a national perspective. Now NWDA's functions have been extended/ amended to prepare pre-feasibility/feasibility/DPR of links under National Perspective Plan as well as Intra-State links proposed by the States. Chairman, Member (WP&P) and Member (D&R), CWC are members of NWDA Society and Governing Body of NWDA.

4.4.1 Technical Advisory Committee (TAC) of NWDA

The Governing Body of the NWDA Society has constituted the Technical Advisory Committee (TAC) for the Agency under the Chairmanship of the Chairman, Central Water Commission, for examination and scrutiny of the various technical proposals framed by the Agency. Member (D&R), CWC and Member (WP&P), CWC are the members of the TAC of NWDA.

38th TAC meeting was held on 22nd January, 2010 and the and following technical issues have been discussed:

- Follow-up action on important decisions of the 37th meeting of TAC of NWDA held on 12th September, 2008 at New Delhi
- Status of Studies pertaining to the Peninsular Rivers Development Component of NPP

- Feasibility Reports of Mahanadi-Godavari-Krishna-Pennar-Cauvery-Vaigai-Gundar Linkage System
- Status of Studies pertaining to the Himalayan Rivers Development Component of NPP
- Prefeasibility Report of Jogighopa-Tista-Farakka Link Project
- Intra – State link proposals
- Requirement of data from State Govts for updating studies by NWDA

4.4.2 Consensus Group

In pursuance of the decision taken in the 42nd meeting of the Governing Body of the NWDA, a Consensus Group has been constituted under the Chairman, CWC to discuss and expedite the process of arriving at consensus amongst the states regarding sharing of surplus water as well as issues of preparation of detailed project report of schemes regarding interlinking of rivers.

So far nine meetings of the consensus group have been held. The 9th Consensus Group meeting was held on 22nd June, 2007 to discuss the various issues regarding Parbati-Kalisindh-Chambal (P-K-C) link.

4.4.3 Committee for expediting work of Inter Linking of Rivers

MOWR vide an office memorandum has constituted a committee of environmentalists, social scientists and other experts on interlinking of rivers with a view to make the process of proceeding on interlinking of Rivers (ILR). Secretary, MOWR is the Chairman and Chairman, CWC is a member of the committee.

The 8th Meeting of the Committee of Environmentalists, Social Scientists and other experts on Interlinking of Rivers (ILR) was held on 05.03.2010 at New Delhi. The meeting was chaired by Secretary, Ministry of Water Resources. Following technical issues have been discussed:

- Follow up action on the important decision taken during the 7th meeting of the Committee held on 31.7.09.
- Environmental Impact Assessment (EIA) studies of Par-Tapi-Narmada and Damanganga-Pinjal links.
- Field visit of Members of the Committee to Par-Tapi- Narmada and Damanganga-Pinjal link area.
- Impact of climate change.

4.4.4 Committee to Monitor and Supervise the overall work for preparation of Detailed Project Reports of Par-Tapi-Narmada & Damanganga-Pinjal link projects.

Ministry of Water Resources vide an Office order has constituted a Committee under the Chairmanship of Chairman CWC to monitor and supervise the overall work of preparation of Detailed Project Report (DPR) of Ken-Betwa link project in February, 2006. NWDA has now taken up the work of preparation of the DPRs of Par-Tapi-Narmada (P-T-N) & Damanganga-Pinjal link projects (D-P). Subsequently, MoWR had decided to include monitoring and supervision of all the DPRs by NWDA in the functions of the above committee vide office order dated 11th November, 2009.

First meeting of Committee to Monitor and supervise the overall work for preparation of Detailed Project Reports of Par-Tapi-Narmada & Damanganga-Pinjal link projects was held on 15th February, 2010. Following technical issues have been discussed:

- Scope of Work for Preparation of DPRs of P-T-N & D-P Link Projects:
- Finalization of Modalities for Execution of DPR:
- Present Status of Various Works for Preparation for DPR of D-P & P-T-N links:
- Co-operation from State Governments on Survey & InvestigationWorks and Preparation of DPR:

4.5 Reservoir Operation

4.5.1 Joint Operation Committee of Rihand Reservoir

The 22nd meeting of Joint Operation Committee of Rihand Reservoir was held in New Delhi on 5th October 2009 under the chairmanship of Member (WP&P) in which the actual releases made from Rihand reservoir during 2008-09 were discussed and the operation plan for 2009-10 was finalized.

4.5.2 Decision Support System (Planning)

Under World Bank funded Hydrology Project-II, the preparation of a Decision Support System (Planning) is in process at National Institute of Hydrology, Roorkee, which is the nodal agency for this work. A 'Review Committee' has been constituted under the chairmanship of Director (NIH) and Director (RO) CWC is one of the members of the 'Review Committee'. So far, two meetings of 'Review Committee' have been held.

4.6 Basin Planning

4.6.1 Standing Sub-Committee for Assessment of Availability and Requirement of Waters for Diverse Uses in the Country.

A Standing Sub-Committee has been constituted by MOWR for Assessment of Availability and Requirement of Water for Diverse Uses in the Country. Member (WP&P), CWC is the Chairman and Chief Engineer (BPMO), CWC is the Member-Secretary. The sub-committee is represented by officers of the rank of Joint Secretary of various Ministry/Department concerned with water.

This committee has to provide necessary assistance to the Standing Committee for overall National perspective of water planning and coordination in relation to diverse uses of water under Chairmanship of Additional Secretary, MOWR with Commissioner (PP) as Member-Secretary and members from various Ministries/Department concerning water.

4.6.2 Reassessment of basin-wise water situation in the country –National Water Mission

The National Action Plan on Climate Change (NAPCC) was prepared by the Government of India, which was released by the Hon'ble Prime Minister on 30th June 2008. The NAPCC has laid down the principles and has identified the approach to be adopted to meet the challenges of impact of climate change through eight National Missions. National Water Mission is one of them.

One of the recommended strategies identified for implementation in the Mission Document is "Reassessment of basin-wise water situation in the present scenario including water quality by using latest techniques, which inter -alia may include:

(i) Development or adoption of comprehensive water balance based model,

(ii) Fitting models to basin using current data, and

Assessment of likely future situation with changes in demands, land use, preparation and evaporation

In pursuance to the above, discussions were held with National Remote Sensiing Centre, ISRO, Hydrabad for formulating the methodology for assessment of water resources using sateliite remote sensing data based geo-spatial approach. It has been decided that the study would first be taken up on a pilot basis for two river basins namely Godavari and Brahmani-Baitarni and then depending upon the outcome of the study for these two basins, further course of action would be decided.

In this regard, a working group consisting of the officers of CWC and NRSC, Hydrabad has been created to discuss and deliberat the methodology to be adopted for assessment of water resources in the river basin. Based upon the progress of working group, the different aspects have been discussed in three meetings chaired by Member (WP&P) at New Delhi with the officers group and accepted by the committee headed by Member (WP&P), CWC for the study of pilot basins namely, Brahamani-Baiterni and Godavari.

4.6.3 Publication

The landmark publication named “Guidelines for Preparation of River Basin Master Plan” has been prepared.

5

CHAPTER-V

DESIGN & CONSULTANCY

5.1 General

Design and Research Wing of Central Water Commission plays a pivotal role in the field of design and consultancy for water resources projects. Various units of the wing are actively associated with Design Consultancy, Technical Studies and Research & Development activities in the water resources sector. In addition to above, technical appraisal of Detailed Project Reports of water resources development projects prepared by different agencies is also carried out in this Wing.

Major activities of D&R Wing comprises of:

- Planning and design of water resources projects.
- Hydrological studies.
- Review of safety aspects of existing dams and its monitoring.
- Technical appraisal of multipurpose river valley projects.
- Coordination of research, development and training.

5.2 Composition of Design & Research Wing

The Design and Research Wing is composed of the following four design units to cater to specific requirements and to attend to special design related problems of the water resources projects located in different regions of the country:

i. Design (North & West) unit
ii. Design (North-West & South) unit
iii. Design (East & North-East) unit
iv. Design (Narmada Basin) unit

Each of the above units have specialized Directorates such as Hydel Civil Design (HCD), Concrete & Masonry Dam Design (CMDD), Embankment Design (EMBD), Gates Design (GD) and Barrage & Canal Design (BCD) etc.

In addition there are specialized units looking after Hydrology and Dam Safety aspects.

5.3 Functions of D&R Wing

5.3.1 Planning and Design of Water Resources Projects

Design consultancy work in respect of 101 projects (including 4 projects with special problems) is being carried out in the design units of D&R Wing during the year 2009-2010 as under:

Sl. No.	Category	No. of Projects
a.	Projects at construction stage.	60
b.	Projects at investigation and planning stage (for which detailed project reports are being prepared)	37
c.	Projects with special problems	4
	Total	**101**

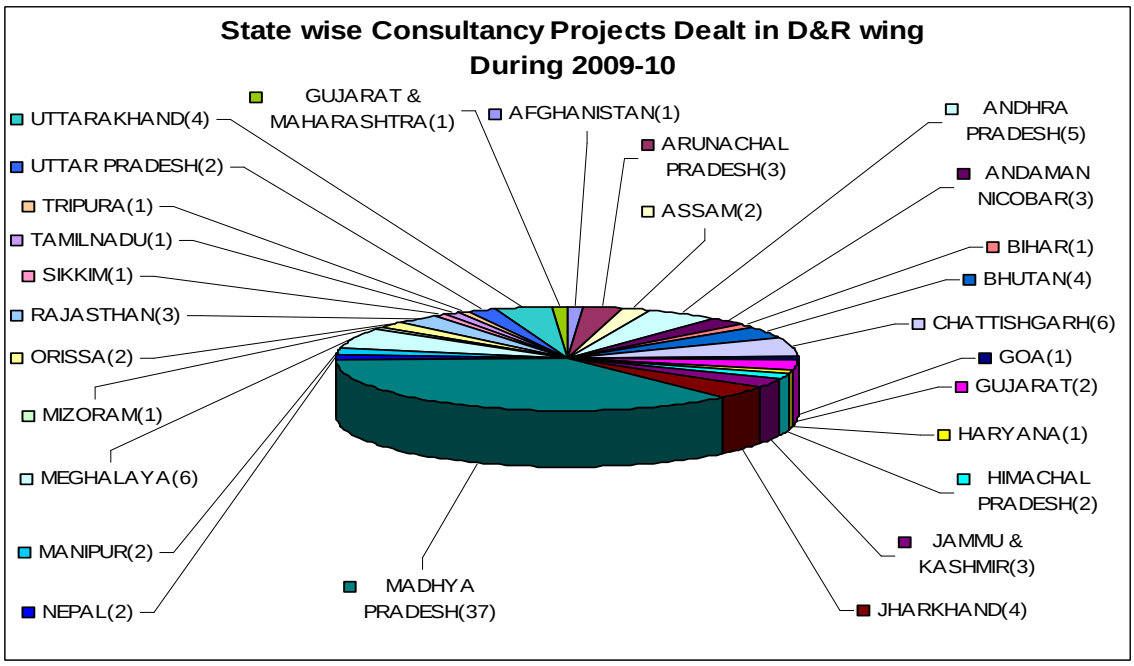


Fig. 5.1

State-wise break up of the 101 projects is shown in Fig. 5.1 and list of projects is in Annex 5.1.

Some of the important projects, which are presently being designed/handled in D&R wing, are as follows:

1. **Pancheshwar Multipurpose Project and Poornagiri Re-regulating Dam (Indo-Nepal)**

Pancheshwar multipurpose project over River Mahakali, also known as Sharda River in Indian territory, envisages hydro power generation and irrigation to Nepalese and Indian command areas as major benefits. Under the Indo-Nepal bilateral co-operation, the scope of Pancheshwar Multipurpose project is being actively discussed and defined to enable finalisation of the Detailed Project Report. The treaty between His Majesty's Government of Nepal and Government of India signed in 1996 lays down the framework for integrated development of the Mahakali River Basin including Pancheshwar Project, Sarda Barrage Project and Tanakpur Barrage Project. DPR Chapters and Drawings for Pancheswar multipurpose project have already been prepared. Several meetings of the Joint Group of Experts took place afterwards.

The proposed project envisages a 293 m high rock-fill dam with central clay core just downstream of the confluence of the Mahakali and Sarju rivers. The project is proposed to have a live storage capacity of 9.24 BCM and a dead storage capacity of 2.15 BCM. In the project area, the river forms the border between India and Nepal, dividing the Far Western Development Region of Nepal from the Uttar Pradesh State in India. The project is thus, an international scheme, primarily aimed at energy production and irrigation.

The Pancheshwar project also envisages a re-regulating dam for which two alternatives at Poornagiri (1020 MW) and Rupaligad (500 MW) were considered. In the Nepalese DPR, the re-regulating dam had been proposed at Rupaligad, Indian side had proposed Poornagiri as the re-regulating Project (1020 MW). This was reviewed in the Ministry of Water Resources and it was decided to consider both the alternatives. Geo-physical investigations for Rupaligad Project are being carried out and the DPR will be prepared after receipt of the results of geo-physical investigations. However, Draft DPR has already been prepared taking re-regulating dam at Poornagiri.

2. Sapta Kosi High Multipurpose Project, Indo-Nepal

Preliminary studies of Sapta Kosi High Dam Multipurpose Project envisages construction of a 269 m high dam to divert river waters through a dam toe power house with an installed capacity of 3000 MW (at 50 % load factor) and irrigation of 15.22 lakh ha Gross Command Area through construction of a barrage 1 km downstream of the dam. An additional capacity of 300 MW is further contemplated by construction of three canal type power houses along the canal system. Field investigation studies and preparation of DPR for Sapta Kosi High dam Multipurpose Project and Sun Kosi Storage-cum-Diversion Scheme are to be taken up jointly by Govt. of India and Nepal. A Joint Project Office (JPO) has already been set up in Nepal for investigation of the project. DPR stage design engineering for this project is to be carried out by Central Water Commission. CWC has furnished the investigation stage layout for power house related components.

3. Sun Kosi Storage-cum-Diversion Scheme, Indo-Nepal

Based on the preliminary studies carried out so far, four alternatives proposals for present study by Joint Project Office (SKSK) have been selected for Sun Kosi Storage-cum-Diversion Scheme. An optimal option amongst the four alternatives is required to be investigated in detail. For taking up the field works, the requirement of topographical survey and geo-technical investigations for the selected layout is to be finalised. CWC has furnished the investigation stage layout for power house related components for the Kamala Dam Power House for the Rock fill Dam alternative.

4. Tehri Dam Project, Uttarakhand

Tehri Dam Project is the first multi-purpose river valley project taken up for construction on river Bhagirathi to tap its vast potential and is being executed by Tehri Hydro Development Corporation (THDC) Ltd. A 260.5 m high earth and rock fill dam has been constructed, which is the fourth highest dam in the world. The design engineering and consultancy including construction drawings for dam and appurtenant structures, such as Chute Spillways, Shaft Spillways, and Intermediate Level Outlets etc. were handled in D&R wing. An inspection gallery has been provided in the core of fill dam joining left and right abutments, which is a unique feature for rock fill dam undertaken for the first time in India. CWC had carried out structural design of lining and issued all the necessary construction stage drawings in respect of Intermediate Level Outlet tunnel (ILO at EL 700) and additional ILO (at EL 750). Inter-Ministerial committee report for permission to plug the Additional Intermediate Level Outlet (AILO) is under consideration. Controlled filling of the reservoir had started on 29th October, 2005 and the project was set for generation mode. Unit IV was commissioned on 17.07.2006, Unit III on 25.10.2006, Unit II on 30.01.2007 and Unit I in March, 2007. CWC is rendering consultancy for recommending remedial measures to various post-commissioning problems related to civil structures of the project.

Member (D & R), CWC is a Member of the Board of Directors of THDC. CWC has been advising THDC and Ministry of Power on safety aspects of Tehri Dam and National Committee on Seismic Design Parameters with its secretariat in CWC has been considering related issues

5. Koteshwar HE Project, Uttarakhand

Koteshwar HE Project is an integrated part of Tehri Power Complex comprising of Tehri Hydro Power Plant (1000MW), Tehri Pumped Storage Plant (1000MW) and Koteshwar Hydro Electric Project (400 MW) to develop the hydro-electric potential of river Bhagirathi. The project envisages construction of a 97.5m high concrete gravity dam across river Bhagirathi and a surface power house with an installed capacity of 4x100 MW on the right bank near village Pindaras of Tehri District, about 20 Km downstream of Tehri Dam site at Koteshwar.

The reservoir which will be created by Koteshwar Dam shall also act as a lower reservoir for Tehri Pumped Storage Scheme as well as balancing reservoir for Koteshwar Hydel Scheme. This

will facilitate the functioning of Tehri Power Complex as a major peaking station in Northern Grid, having a total installed capacity of 2400 MW

As per a Memorandum of Understanding (MoU) signed between Central Water Commission and Tehri Hydro Development Corporation, the D&R wing is providing design consultancy services for the entire power house including intake and tailrace etc. Construction drawings of power house substructure/superstructure (1st Stage, 2nd Stage, 3rd Stage & 4th Stage), service bay & Auxiliary Bay have been issued to Project Authorities (Tehri Hydro Development Corporation).

6. Loharinag Pala and Tapovan Vishnugad H.E. Project, Uttarakhand

A Memorandum of Understanding (MoU) for complete design engineering including pre-award engineering & assistance during construction for technical and site related issues for the 600 MW Loharinag Pala and 520 MW Tapovan Vishnugad H.E. Projects had been signed between NTPC and CWC during the year 2004. Complete engineering support covering planning, detailed specifications, drawings, evaluation of quantities etc. in respect of these projects were offered by CWC. Design Consultancy for these projects is being provided by CWC.

7. Water Resources Development Projects in North Eastern Region

CWC has a dedicated design unit for East and North Eastern region to undertake design and consultancy for Multipurpose, Irrigation, Water Supply and Hydro Electric Projects. The scope of work also includes preparation of pre-feasibility and detailed project reports for schemes investigated by the field offices of CWC in North East or projects undertaken by Brahamputra Board, NEEPCO, State Govt. departments etc. Technical appraisal of PFRs and DPRs are also being carried out.

At present, there are 9 projects at construction stage for which design consultancy is being provided by D&R wing of CWC. In addition, there are 6 projects for which DPRs are under preparation.

Detailed hydrological studies and design works in respect of the projects in progress in D&R wing are the listed below:

	Arunachal Pradesh	
1	H.E. Projects on Nuranang Chu River	DPR stage
2	Nyukcharong Chu H.E. Project	DPR stage
3	Kameng H.E. Project	Construction Stage
	Assam	
4	Bharbhag Drainage Dev. Scheme- Sluice Regulator	Construction stage
5	Amjur Drainage Dev. Scheme	Construction stage
	Manipur	
6	Thoubal Multipurpose Project	Construction stage
7	Dholaithabi Barrage Project	Construction stage
	Meghalaya	
8	Myntdu HE Project	Construction Stage
9	Myntdu HE Project Stage - II	DPR stage
10	Kulsi HE Project	DPR stage
11	Ganol HE Project	Construction Stage
12	New Umtru HE Project	Construction Stage
13	Umngot HE Project (DPR)	
	Mizoram	
14	Tuichang H.E. Project	DPR stage
	Tripura	
15	Kalasi Barrage	Construction Stage

5.3.2 Hydrological Studies

The Hydrological Studies Organisation (HSO), a specialized unit under D&R Wing of Central Water Commission, carries out hydrological studies in respect of most of the projects in the country. During the year 2009-10 HSO has dealt with 120 projects from hydrological point of view which includes 8 projects for consultancy and 112 projects for technical examination/study of hydrology. In addition to above, HSO unit is also carrying out other specialized work related to hydrology as detailed below:

(a) Development of flood estimation model for un-gauged catchments

The country has been divided into 7 zones and further into 26 hydro-meteorologically homogeneous sub-zones for this study. So far flood estimation reports covering 24 sub-zones have been published.

(b) Preparation of Generalised Probable Maximum Precipitation (PMP) Atlas

Design storm (PMP/SPS) estimates, which are basic inputs for computing design flood values, are presently calculated on a case -by-case basis for new dams under planning and design. However, reassessment / estimation of design storm depths for a large number of existing projects has been found to be a major bottleneck in design flood studies since necessary data and expertise is available with only a few organizations like IMD and CWC. To overcome this, it was decided to prepare and publish generalized PMP Atlases covering the whole country, to get a first estimate of design storm depths.

Generalised PMP Atlases have been prepared and published so far are as follows:

PMP Atlases prepared under DSARP - I

i) Cauvery and other East flowing rivers
ii) Godavari and other East flowing rivers
iii) Mahanadi and adjoining rivers
iv) Chambal, Betwa, Sone & Mahi Basins
v) Narmada, Tapi, Sabarmati, Banas & Luni systems and rivers of Saurashtra and Kutch region.
vi) West flowing rivers of Western Ghats.

PMP Atlases prepared through IITM in X Plan

i) Indus river basin
ii) Krishna river basin

It is now proposed to prepare PMP Atlases for Ganga and Brahamputra basins and to update the six PMP Atlases prepared under DSARP-I

5.3.3 Review of Safety Aspects of Dams

Dam Safety Organization is looking after issues related to Dam Safety aspects which can be broadly categorized as under:

- Instrumentation in Dams and Power House Caverns, besides other hydraulic structures.
- Special Analysis like Dam Break Modeling and foundation problems.
- Computer Aided Designs.
- Monitoring and Rehabilitation of Large dams.

5.3.3.1 Plan Schemes under Dam Safety Organization:

(i) Dam Safety Studies & Planning under XI Plan

A Plan scheme titled “Dam Safety Studies & Planning“at an estimated cost of ₹10.00 Crore is under implementation for XIth Five Year Plan (2007-2012). The scheme envisages to continue the present Dam Safety activities and to improve the technical expertise of Dam Safety in CWC.

(ii) Infrastructure Development for Director (SMD) under XI Plan

An effort had been initiated by Central Water Commission to adopt advancement in the field of Information Technology through sanctioned plan schemes. The proposed works are essential for full implementation of CWC's IT vision, and involve activities that are in natural progression to the activities initiated under earlier plan scheme.

(iii) Dam Rehabilitation and Improvement Project (DRIP)

The Dam Safety Assurance and Rehabilitation Project (DSARP) assisted by the World Bank was implemented in 4 States, namely Madhya Pradesh, Orissa, Rajasthan and Tamil Nadu, under overall guidance of Central Water Commission during the period 1991 to 1999.

After seeing the performance and benefits accrued from DSARP, it was felt that another project covering some more large dams be implemented through the World Bank assistance on similar terms and conditions. Eleven states, namely Andhra Pradesh, Bihar, Chhattisgarh, Gujarat, Jharkhand, Kerala, Maharashtra, Tamil Nadu, Uttar Pradesh, Uttarakhand and West Bengal were included in this proposal. The states of Madhya Pradesh and Orissa were also subsequently included in the project on specific request from them. Discussions were held with World Bank on several occasions to finalize the dam safety efforts. A preparation brainstorming workshop was organized by the World Bank on 27.7.2005, wherein it was decided to rename the project as Dam Rehabilitation and Improvement Project (DRIP).

The World Bank DRIP Preparation Mission visited India and held discussions with officials of CWC and participating states. The Aide Memoire (November, 2008) circulated by the World Bank indicated inclusion of 5 states viz. Chhattisgarh, Kerala, Madhya Pradesh, Orissa and Tamil Nadu as confirmed states for DRIP implementation on the basis of institutional readiness, government interest and commitment.

The proposed Dam Rehabilitation and Improvement Project (DRIP) would be a six-year project starting around middle of year 2010. Apart from structural and non-structural measures for rehabilitation and improvement of identified dams, the scope of project includes the development of appropriate institutional mechanisms for the safe operation and maintenance of all large dams in participating states. In addition, strengthening of the institutional setup for national level dam safety surveillance and guidance would be taken up in Central Water Commission (CWC) under Ministry of Water Resources (MoWR).

The total cost of project is US $ 437.5 million (₹ 2100 Crore considering 1$ = ₹48/-). The World Bank would provide 80% cost of the project i.e. US$ 350 M (50% to be provided through IDA and 50% through IBRD). The balance 20% is to be provided by the respective states and central government for their own components.

5.3.3.2 Dam Safety Legislation

Government of India constituted a Standing Committee in 1982, under the Chairmanship of Chairman, Central Water Commission to review the existing practices and to evolve unified procedures of dam safety for all dams in India. The Standing Committee in its report of July, 1986 has recommended for unified dam safety procedures for all dams in India and the necessary Dam Safety Legislation. The need for legislation was also repeatedly emphasized by the National Committee on Dam Safety in its several meetings. Initial efforts for dam safety legislation were directed towards enactments of appropriate legislation by respective state governments, and accordingly state of Bihar enacted the Dam Safety Act, 2006. However, some of the states favoured the idea of a uniform Central Dam Safety Act. The states of Andhra Pradesh and West Bengal have adopted resolutions in their respective Assemblies for enactment of dam safety legislation for regulation in their states by an Act of Parliament. In pursuance of the above, the union Government decided to enact a Central Dam Safety Legislation. The Ministry of Law and justice, Govt. of India has already given their concurrence on the proposal of legislation on the

dam safety. Currently the Dam Safety Bill 2010 is under the active consideration of Ministry of Water Resources for taking necessary actions for placing it before the Parliament.

5.3.3.3 National Committee on Dam Safety (NCDS)

Government of India, Ministry of Irrigation constituted a Standing Committee in 1982 to review the existing practices and to evolve unified procedures of dam safety for all dams in India, under the Chairmanship of Chairman, Central Water Commission. Subsequently Government of India, Ministry of Water Resources reconstituted the Standing Committee in 1987 as the National Committee on Dam Safety : a) to monitor the follow-up action on the report on Dam Safety Procedures both at the Centre and at the State level, (b) to oversee dam safety activities in various states and suggest improvements to bring dam safety practices in line with latest state-of art consistent with Indian conditions and (c) to act as a forum of exchange of views on techniques adopted for remedial measures to relieve distress.

It consisted of 18 members drawn from 10 states and various other organizations viz. MoWR, CWC GSI, IMD, and BBMB. Thereafter, the committee was reconstituted in 1989, 1997 and 2002. At present there are 28 members drawn from 16 states and various other organizations. Chairman, CWC is the Chairman of this Committee. 29th meeting of NCDS was held on 12.12.2008 and 30th meeting has been proposed in 2010.

5.3.3.4 Technical examination of seismic and foundation aspects of river valley projects

Detailed Project Reports of 9 river valley projects in states of Arunachal Pradesh (4 Nos.), Uttar Pradesh (2 Nos.), Himachal Pradesh (2 Nos.) and Tamil Nadu (1 No.) were examined in respect of geological investigations related to foundation engineering and seismic aspects and conditionally cleared. DPR of 13 river valley projects have been examined and comments/clearance issued with respect to instrumentation aspects of the projects.

5.3.3.5 Consultancy Services on Instrumentation in Hydraulic Structures

During the year, Planning and preparation of Instrumentation Specification / construction drawings have been carried out for following projects:

(1) Tapovan Vishnugarh H.E. Project (520 MW), Uttarakhand

(2) Loharinag Pala H.E. Project (600 MW), Uttarakhand

(3) Anandpur Barrage Project, Orissa

5.3.3.6 National Committee on Seismic Design Parameters (NCSDP)

National Committee on Seismic Design Parameters (NCSDP), earlier known as Standing Committee to suggest design "Seismic Coefficient of Hydraulic Structures in River Valley Projects" was formed by the then Ministry of Irrigation, Govt. of India in June, 1969 comprising of experts from the different technical institutions and Govt. Organisations. The same was renamed and reconstituted as "National Committee on Seismic Design Parameters (NCSDP)" in October, 1991. Member (D&R), CWC is the Chairman of the Committee. The meetings of this Committee are convened normally once a year to finalise the seismic design parameters for the various river valley projects referred to the NCSDP.

During 2009-10 21st meeting of NCSDP was held on 08.09.2009 at CWC, New Delhi. In this meeting seismic design parameters of 21 projects were discussed and the Committee approved the coefficients and response spectra for 10 projects.

5.3.4 Project Appraisal

Detailed Project Reports of 71 projects submitted by various State Governments and other agencies were technically examined in D&R Wing during the year 2009-10.

5.3.5 Special Studies

- Dam break analysis is carried out to prepare the inundation map and disaster management plan for hypothetical situation of a dam failure. It estimates the maximum discharge, water level at the downstream locations of the dam along with their time estimates in the event of hypothetical failure of the dam. The dam break analysis is being carried out in CWC on consultancy basis. During the current year, integrated dam break analysis of Omkareshwar Project (MP) and Indira Sagar Project (MP) has been completed.
- The Back Water Studies of Demwe Lower H.E. Project and GLOF Studies of Demwe Lower & Upper H.E. Project, Arunachal Pradesh as submitted by the Project Authorities were examined.
- The Crisis Management Plan on "Flood Forecasting, Dam Failures and Construction of Water Bodies" was prepared and submitted to Ministry of Water Resources.

5.4 Central Water Commission Library

CWC Library is one of the most prestigious technical reference library on the subject of Water Resources Engineering and other allied subjects. It has developed multifold over the period of more than five decades with huge collection of over 1.26 lakh books and 3.60 lakh journals/bulletins/news letters/reports etc. and it is growing every year with addition of more and more books/journals and other publications.

During the year 2009-10 the Library subscribed/procured 67 Nos. of journals (Indian as well as foreign) and also received fifty numbers of technical and non-technical Journals/ bulletins/ news letters/ publications from various Govt. / Non-Govt. and educational institutes/societies on complimentary basis. The Library also procured books/ publications requisitioned by other directorates of CWC for their mini libraries.

The Library is functioning from the new building where the stock has been re-arranged in a manner to make retrieval of desired publication fast and easy. Now the Library has adequate space and improved facilities for the users, spread over 3 floors. The Map Record Section is also a part of Library and information Bureau. There is also an auditorium and conference room in the library building for holding seminars, workshops and meetings etc.

Annexure – 5.1

List of Active Consultancy Projects in D&R Wing during the Year 2009-10

S. No.	State/ name of projects	S. No.	State/ name of projects
	Andaman & Nicobar Islands		**Gujarat**
1	Indira Nalla Water Supply Scheme (Const.)	12	Sardar Sarovar Project(Const.)
2	Kamsarat Water Supply Scheme (Const.)	13	Garudeshwar Weir Project(Const.)
3	Chaudhary Nallah Project (Const.)		**Chattisgarh**
	Andhra Pradesh	14	Kelo Irrigation Project(Const.)
4	Indira Sagar (Polavaram) Project (Const.)	15	Sukha Nalla Barrage Project(Const.)
5	Manuguru Flood Protection Embankment (Const.)	16	Karra Nalla BarrageProject(Const.)
6	Rajiv Sagar Lift Irrigation Scheme (Const.)	17	Ghumeria Nalla Barrage Project(Const.)
	Arunachal Pradesh	18	Minimata (Hasdeo) Bango Project (Const)
7	Kameng H.E. Project (Const.)	19	Kutni Bariyarpur Left Canal Project (Const)
8	H.E. Projects on Nuranang Chu River (DPR)		**Meghalaya**
9	Nyukcharang Chu H.E. Project (DPR)	20	Myntdu H.E. Project (Const.)
	Assam	21	Myntdu H.E. Project Stage - II (DPR)
10	Barbhag Drainage Dev. Scheme-Sluice Regulator(Const.)	22	Lahasi Medium Project (Const.)
11	Amjur Drainage Dev. Scheme(Const.)	23	Chambal Dholpur Bharatpur Water Supply Project (DPR)

S. No.	State/ name of projects	S. No.	State/ name of projects
	Bihar		**Orissa**
24	Sone Western-Eastern Link Canal (Const.)	70	Anandpur Barrage Project (Const.)
	Madhya Pradesh	71	Control Structure of Juranala Indravati Project (Const.)
25	Chambal Basin Projects (DPR) – 4 Nos.		**Mizoram**
26	Ban Sagar Project (Const.)	72	Tuichang H.E. Project (DPR)
27	Shakkar Project (DPR)		**Rajasthan**
28	Upper Narmada Project (Const.)	73	Khetri Copper Project(Const.)
29	Pench Diversion Project(Const.)	74	Kutni Feeder Reservoir Project (DPR)
30	Pench Valley Project(Const.)	75	Kushalpura M.P. Project(Const.)
31	Ataria Project (DPR)	76	Sher Project (DPR)
32	Bargi Diversion Project(RBC) Canal Syphon (Const.)	77	Loharinag Pala H.E. Project-NTPC(Const.)
33	Morand Project (DPR)	78	Upper Beda Project(Const.)
34	Mahi Subsidiary Dam(Const.)	79	Halon Project (Const.)
35	Dudhi Project (DPR)	80	Gumani Barrage (Const.)
36	Ataria Project (DPR)		**Manipur**
37	Bargi Diversion Project(RBC) Canal Syphon (Const.)	81	Thoubal M.P. Project(Const.)
38	Jobat Project (Const.)	82	Dholaithabi Barrage Project (Const.)
39	Punasa Lift (DPR)		**Sikkim**
40	Lower Goi Project (Const.)	83	Santaley HE Project (DPR)
41	Raghavpur Small HE Project (DPR)		**Jharkhand**
42	Omkareshwar Project Unit-II Canal (DPR)	84	Megahataburu Iron Ore Project (Const.)
43	Sanjay Sagar (BAH) Project (Const.)	85	Amanat Barrage Project(Const.)
44	Indira Sagar Project(Const.)	86	New Umtru H.E. Project (Const.)
45	Man Project (Const.)	87	Kulsi H.E. Project(DPR)
46	Upper Budhner Project(DPR)	88	Ganol H.E. Project (Const.)
47	Ganjal Project (DPR)	89	Umngot HE Project (DPR)
48	Machchrewa Project (DPR)		**Tripura**
49	Gulab Sagar (Mahan) Project (Const.)	90	Kalasi Barrage (Const.)
50	Rosara Small HE Project(DPR)		**Tamil Nadu**
51	Basania Small HE Project(DPR)	91	Upper Bhawani Project (DPR)
52	Indira Sagar Project, Unit-II Canal(DPR)		**Uttar Pradesh**
53	Belkund Canal Syphon(DPR)	92	Arjun Sahayak Pariyojna (Const.)
54	Yashwant Sagar Water Supply Project (Const.)	93	Matatila Project (Const.)
	Uttarakhand		**Himachal Pradesh**
55	Tehri Dam Project(Const.)	94	Renuka Dam(DPR)
56	Tapovan Vishnugad Project - NTPC (Const.)	95	Rampur H.E. Project (Const.)
57	Koteshwar H.E. Project(Const.)		**Jammu & Kashmir**
	Goa	96	Parnai H.E. Project(Const.)
58	Opa Barrage (Const.)	97	Kirthai H.E. Project- Stage – II (DPR)
	Foreign Projects	98	Ujh M.P. Project (DPR)
	Afghanistan		**Jharkhand**
59	Salma Dam Project(Const.)	99	Balpahari M.P. Project
	Bhutan		
60	Punatsangchu Stage-I HE Project (Const.)		
61	Amochhu Reservoir HE Project(DPR)		
62	Punatsangchu Stage-II H.E. Project(DPR)		
63	Chukha Damchu Highway Project (Const.)		
	Nepal		
64	Naumure MP Project(DPR)		
65	Arun-III HE Project (DPR)		
	Gujarat & Maharashtra		
66	Daman Ganga Pinjal Link Project (DPR)		
	Sp. Problem Projects		
	Andhra Pradesh		
67	Nagarjuna Sagar Project		
68	Srisailam Dam		
	Haryana		
69	Hathnikund Barrage		

CHAPTER-VI

6

WATER MANAGEMENT RESERVOIR SEDIMENTATION AND POST PROJECT EVALUATION

6.1 Monitoring of Reservoir Storage

During the water year 2009-10, Central Water Commission monitored storages of 81 important reservoirs of the country having total live storage capacity of 151.77 BCM as indicated in Table 6.1.

Table 6.1

Storage status of current year vis-à-vis previous year

(Storage in BCM)

Description		Water Year	
		2008-09 (upto March, 31)	2009-10 (upto March, 31)
Number of Reservoirs monitored		81	81
Total designed live storage at FRL		151.77	151.77
As on June, 1 *(Start of water year)*	Storage (BCM)	29.495	17.430
	Storage as percentage at FRL	19	11
	Storage as percentage of 10 years average storage	139	83
As on September, 30 (*End of Monsoon Period*)	Storage (BCM)	114.262	89.835
	Storage as percentage at FRL	75	59*
	Storage as percentage of 10 years average storage	112	88*
As on Dec, 31	Storage (BCM)	80.066	75.143
	Storage as percentage at FRL	53	50
	Storage as percentage of 10 years average storage	104	100
As on March, 31	Storage (BCM)	36.181	30.097
	Storage as percentage at FRL	24	26
	Storage as percentage of 10 years average storage	94	105

* Monsoon rain in Water year 2009-10 continued up to 15th October 2009. % of Storage at FRL for 2009-10 and as % of 10 years average on 15th October 2009 was 63% and 94% respectively.

49 more projects (each having storage capacity of 0.250 BCM or more) have been identified for inclusion in the monitoring system. Inclusion of 49 reservoirs will raise the number of projects under monitoring to 130 and storage capacity from 151.77BCM to 172.32 BCM i.e. about 76.59 % of the total capacity of 225 BCM created so far.

A bulletin on the status of reservoir storages is being issued every week. The weekly bulletin contains current storage position vis-à-vis storage status on the corresponding day of the previous year and average of last 10 years on the corresponding day. The information presented in the bulletin is also used by the Crop Weather Watch Group constituted by Ministry of Agriculture for reviewing the crop planning strategy based on the availability of water in the reservoir

6.2 Cauvery Water Bulletin

Weekly storage position of five important reservoirs in the Cauvery basin is also monitored and a bulletin is issued every week. This bulletin incorporates the designed live storage capacity, live storage of current year, last year and average of last 10 years of the respective week in four

reservoirs of the state of Karnataka (Kabini, Hemavathy, Harangi, Krishnaraja Sagar) and one reservoir in the State of Tamil Nadu (Mettur). Bar Charts (i) indicating Monthly / Weekly flow as per Cauvery Water Dispute Tribunal's (CWDT) award, observed flow at Billigundulu G&D site of CWC, upstream of Mettur reservoir and inflow in Mettur reservoir and (ii) Combined storage position of four reservoirs in the State of Karnataka and that of Tamil Nadu are also supplemented along with the bulletin. Four such bulletins are issued every month. Special bulletin are also prepared at the time of meeting of Cauvery Monitoring Committee headed by the Secretary (WR).

6.3 Watershed Management and Reservoir Sedimentation

6.3.1 Capacity survey of important Reservoirs in the country

Capacity Survey of reservoirs has been a continuing scheme. Upto the end of X Plan, the survey works of total 23 reservoirs were completed in all respect and report finalization of another 3 reservoir was in progress.

During XI Plan, an SFC Memo for covering 20 more reservoirs under Capacity Survey at an estimated cost of ₹ 410.00 lakh, sanctioned by MOWR on 20th February, 2008. The spillway works of 3 reservoirs have been completed. Thus till dates the works of total 26 reservoirs have been completed in all respects. A proposal for 10 new reservoirs for taking up survey out of above 20 reservoirs has been initiated during the year 2009-2010.

6.3.2 Status Report on Watershed Management and Water Harvesting

A status report on Watershed Management and Water Harvesting was published during 2004-05 giving the current status of Watershed Management activities in the country as reported by various State Govt. Departments and field functionaries in the field. The work on second status report on Watershed Management and Water Harvesting is in progress.

6.4 Remote Sensing in Water Resources Development and Management

The Remote Sensing Directorate is having one component each in two different plan schemes during 11th Five Year Plan Period as given below:

“Estimation of sedimentation in Reservoirs using Remote Sensing Technique” under the sanctioned plan scheme “Research & Development Programme in Water Sector”.

“Creation of Watershed Maps and Geographic Information System ”under the scheme “Development of Water Resources Information System”.

The progress of work done during 2009-10 is as under:

1. Satellite Remote Sensing based Reservoir Sedimentation study of Two (02) reservoirs (viz. Tawa and Totladoh reservoir) was undertaken for In-house studies during 2009-10. Draft report of One (01) study of Tawa reservoir has been prepared and remaining one (01) study is under progress. Out of three earlier studies (Spillover 2008-09) viz. Upper Indravati, Idamalayar and Bargi, reports of Idamalayar reservoir and Bargi reservoir have been prepared and circulated to concerned field authorities and final report of Upper Indravati is under preparation.

   Work of estimation of sedimentation in Reservoirs using Remote Sensing Technique of 25 reservoirs was awarded to RRSSC-ISRO, Jodhpur in July 2008. Out of 25 reservoirs study of 12 reservoirs have been prepared and circulated to concerned field authorities. Balance reservoirs were non-feasible.

   Award of work of another 30 new reservoirs to an outside agency is under process.

2. For the development of web enabled Water Resources Information System (WRIS) during 11th plan, the work has been awarded to RRSSC-ISRO, Jodhpur. MoU has been signed between CWC and ISRO for development of Water Resources Information System (WRIS). The balance payment of an amount of ₹ 21.41 Cr. has been released to ISRO in Aug.'2009. The website of INDIA-WRIS has been launched during 5th Asian Regional Conference of ICID at Vigyan Bhawan in Dec.'2009. The URL of the website is www.india-wris.nrsc.gov.in can be seen for more details.

6.5 Identification of Waterlogged, Salinity/Alkalinity Affected Areas Using Remote Sensing Technique

In order to update the Status of the data of Working Group Report, 1991, by Ministry of Water Resources on Water logging, Salinity & Alkalinity, a study on "Assessment of Waterlogged and Salinity and/or Alkalinity affected areas in irrigated Commands of all Major and Medium Projects throughout India using Remote Sensing Technique" has been taken up by Central Water Commission in collaboration with Regional Remote Sensing Service Centre (RRSSC), Jodhpur during the period Oct 2003-June 2008. The study has been completed. Final reports of all the states, consolidated country wide report software (Command Area Information system) prepared during the study and waterlogging and soil salinity maps of all the states in 1:2,50,000 scale have been submitted by RRSSC Jodhpur. Reports have been sent to respective State Governments.

6.6 Performance Evaluation Studies (PES)

CWC is entrusted with Post Project Performance Evaluation Studies covering System Performance, Agro-economic, Socio-Economic and Environmental Impact Assessment Studies of completed Major & Medium irrigation Projects through consultants. Performance Evaluation Studies in respect of nine projects viz. Samrat Ashok Sagar (Madhya Pradesh), Kanchi Weir (Jharkhand), Salki (Orissa), Sukla (Assam), Chandan Reservoir (Bihar), Itiadoh (Maharashtra), Kodayar (Tamilnadu), Loktak (Manipur), and Nanak Sagar (Uttar Pradesh) were taken up. Studies of all these projects were continued during 2009-10. Final Reports of Kanchi Weir & Samrat Ashok Sagar, Itiadoh, Kodayar and Nanaksagar have been received and circulated to State Governemnt/MoWR/Planning Commission. Revised DFR of Sukla and Loktak Projects are awaited. Seven other Irrigation Projects are proposed to be evaluated during XI Plan.

Inception Reports and Draft Final Report (DFR) of PES are discussed and approved in the meeting of Technical Advisory Committee (TAC) of PES, constituted by MoWR. The constitution of TAC is as follows:

1.	Member (WP&P), CWC	Chairman
2.	CE (POMIO), CWC	Vice Chairman
3.	Economic Advisor, MoWR	Member
4.	Representative from Ministry of Agriculture (not below The rank of Deputy Secretary or Equivalent)	Member
5.	Joint Advisor (WR), Planning Commission	Member
6.	Additional Director, Ministry of Environment & Forest	Member
7.	Chief Engineer (Planning), Concerned State Irrigation/ Water Resources Department	Member
8.	Chief Engineer/Superintending Engineer (Head of the Concerned Project Authority)	Member
9.	Director, EIA Directorate, CWC	Member
10.	Director (Economics), CWC	Member
11.	Director (IP South), CWC	Member
12.	Director (EWU), CWC	Member Secretary

A meeting of TAC of PES was organized under the Chairmanship of Member (WP&P), CWC on 12.01.2010 to consider the DFRs of Chandan Reservoir Project (Bihar) and Salki Irrigation Project (Orissa), wherein the DFRs of both the project were discussed and approved by the TAC.

6.7 Benchmarking of Irrigation Projects

Benchmarking in Water Resources Sector is in use in developed countries for quite some time. This concept is now being acknowledged as a management tool in irrigation sector in India as well. Accordingly, a Core Group under the Chairmanship of Member (WP&P), CWC for Benchmarking of Irrigation Systems in India set up by MOWR, is playing an active role as a co-ordinator as well as a facilitator by way of providing technical support to the State Governments. National/ regional/ project level workshops are being organized by CWC in various states to facilitate concerned State Govts to take up Benchmarking of Irrigation Projects in their respective States. First National Workshop on Benchmarking of Irrigation Projects was organized in February, 2002 at Hyderabad and since then, 10 regional workshops and 5 project level workshops have been organized in various parts of the country.

The MoWR has constituted a Core Group for Benchmarking of Irrigation Projects whose 8th meeting was organized on 12.01.2010 under the Chairmanship of Member (WP&P) CWC at New Delhi wherein 5 new members were co-opted in the existing Core Group. The newly constituted Core Group after cooption of 5 new members is as follows:

1.	Member (WP&P), CWC	Chairman
2.	Chief Engineer, POMIO	Member
3.	Commissioner (PP), MoWR	Member
4.	Commissioner (CADA), MoWR	Member
5.	Director IP(S) Dte. CWC	Member
6.	A Representative from National Committee on Irrigation & Drainage (INCID)	Member
7.	Project Director, Water Technology Centre	Member
8.	Director (ICAR-RCER), Patna	Member
9.	Director (CSSRI), Karnal	Member
10.	Director (WTCER), Bhuvaneshwar	Member
11.	Director (WTC, TNAU)	Member
12.	Director, EWU Dte., CWC	Member Secretary

6.8 Study of Water Use Efficiency in Irrigation System

Irrigation Sector is the biggest consumer of fresh water (about 83%) and any improvement in irrigation project efficiency will be like creating a new source of water supply which can be gainfully utilized in various competing demands of water. Water use efficiencies are generally low and it is felt that there is a need to improve the same. It is therefore proposed to construct a data-bank relating to water use efficiency of all major and medium projects.
The objective of the study is to cover:

i) Reservoir Filling Efficiencies (Inflow and release pattern)

ii) Delivery System / Conveyance Efficiency

iii) On farm Application Efficiency

iv) Drainage Efficiency

v) Irrigation Potential Created and Utilised.

It is proposed to carry out aforesaid studies of some selected irrigation projects initially and to gradually cover all the major & medium projects in the country through consultant mainly through Water and Land Management Institutes/Irrigation Management & Training Institutes/ NERIWALAM. In this matter, a Technical Advisory Committee headed by Member (WP&P), CWC was constituted to oversee and guide in conducting the aforesaid studies. So far, 57 Major and Medium Irrigation Projects across the country have been taken up for these studies. Out of 57 study 43 study were found acceptable and approved by MOWR. , 35 Draft Final Reports received from WALMIs/Reserch institutes have been considered by TAC in its 7th meeting held on 12.01.2010 at New Delhi under the Chairmanship of Member (WP&P), CWC. Out of 35 Final Reports received so far, 30 reports have been examined and approved by core group in XIth core group meeting held on 2nd & 3rd Feb, 2009.

6.9 Water Audit and Water Conservation

Water Audit is an important aspect of water management. In view of this "General Guidelines for Water Audit and Water Conservation "have been formulated by CWC taking into consideration, the views of various Central Govt Organisations dealing with Water Resources Development and Management, State Govts, NGOs etc to generate awareness among the people towards the importance of water saving. These guidelines have been placed on the website of CWC (www.cwc.nic.in).

7

CHAPTER-VII

APPRAISAL OF PROJECTS

7.1 Project Appraisal

One of the important activities assigned to CWC is techno-economic appraisal of irrigation, flood control and multipurpose projects proposed by the State Governments. This task is performed and coordinated by the Project Appraisal Organisation (PAO). After establishment of techno-economic feasibility of the project, the Advisory Committee of Ministry of Water Resources (MoWR) on Irrigation, Flood Control and Multipurpose Projects headed by Secretary, Water Resources (WR) considers the project for acceptance and thereafter recommends the same for investment clearance by the Planning Commission. Besides these, the Hydro-power projects proposed by State Electricity Boards / Private Sector Organisations for clearance by Central Electrical Authority (CEA) are also scrutinised in CWC from the view point of hydrology, civil design, inter-State issues and cost angles and thermal projects are scrutinized for establishing water availability for cooling and other purposes. Central Electricity Authority (CEA) accords the techno- economic clearance for these power projects. Technical aspects of water supply schemes are also appraised when referred by State Governments /Ministry of Urban Development.

A similar function is discharged by the Project Preparation Organization (PPO) under a Chief Engineer in respect of Major, Medium Irrigation and Water Resources Consolidation Projects, which are posed for external assistance.

7.2 National Projects

Central Govt. has declared 14 water resources projects indicated in Table 7.1 as National Projects. For these projects, 90% project cost of irrigation, drinking water component is to be provided as Central Grant.

7.2.1 Meeting of the High Powered Steering Committee

The Union Cabinet in its meeting held on 7th Feb. 2008, constituted a “High Powered Steering Committee for Implementation of the Proposals of National Projects” with the Secretary (WR) as Chairman and Chief Engineer (PPO), CWC as Member-Secretary.
The terms of reference of the Committee are as under:

(i) To recommend implementation strategies for National Projects.

(ii) To monitor implementation of National Projects

(iii) To examine the proposal (if any) for inclusion of new projects as national Projects and make appropriate recommendation to the Government.

During the year 2009-10, two meetings of High Powered Steering Committee were held on 6th Aug.,2009 and 17th Feb.,.2010. In the first meeting Indra Sagar Polavaram Project (A.P.) and in the 2nd meeting Bargi Diversion Project (M.P.) were considered for inclusion in the list of National Projects.

Table 7.1

List of National Water Resources projects

Sl. No.	Name of the Project	1) Irrigation (ha.) 2) Power (MW) 3) Storage (MAF)	State
1.	Teesta Barrage	9.23 lakh 1000 MW Barrage	West Bengal
2.	Shahpur Kandi	3,80 lakh 300 MW 0.016 MAF	Punjab
3.	Bursar	1 lakh (indirect) 1230 MW 1 MAF	J&K
4.	2nd Ravi Vyas Link	Harness water flowing across border of about 3 MAF	Punjab
5.	Ujh multipurpose project	0.32 lkh ha 280 MW 0.66 MAF	J&K
6.	Gyspa Project	0.50 lakh ha 240 MW 0.6 MAF	HP
7.	Lakhvar Vyasi	0.49 lakh ha 420 MW 0.325 MAF	Uttranchal
8.	Kishau	0.97 ha 600 MW 1.04 MAF	HP/Uttranchal
9.	Renuka	drinking water 40 MW 0.44 MAF	HP
10.	Noa-Dehang Dam Project	8000 ha 75 MW 0.26 MAF	Arunachal Pradesh
11.	Kulsi Dam Project	23900 ha. 29 MW 0.28 MAF	Assam
12.	Upper Siang	Indidrect 9500 MW 17.50 MAF Flood moderation	Arunachal Pradesh
13.	Gosikhurd	2.50 lakh 3 MW 0.93 MAF	Maharashtra
14.	Ken Betwa	6.46 lakh 72 MW 2.25 MAF	Madhya Pradesh

7.3 Appraisal of Major Irrigation Projects

Major irrigation projects with Culturable Command Area (CCA) of more than 10,000 hectare are examined for various aspects in specialised directorates in CWC and in the Ministries of Water Resources, Agriculture, Environment & Forests and Tribal Affairs. In case of multipurpose projects, examination in Central Electricity Authority is also done for power component. The existing procedure for scrutiny and examination of irrigation and multipurpose projects by Central Water Commission and acceptance by Planning Commission for inclusion in the State Development Plan has been revised and simplified. Now Preliminary Report, prepared in brief,

covering basic planning aspects are examined first and 'In Principle' consent of CWC for DPR preparation is communicated on the basis of soundness of proposals. Clearances for Environment, R&R plans and concurrence of State Finance, etc. are to be obtained and submitted along with DPR so that once cleared by the Advisory Committee of MoWR the investment clearance of the Planning Commission would follow soon and the project can be started without waiting for different clearance from different sources. The revised procedure of two stage clearance is applicable w.e.f. October, 2001. During the year 2009-2010, 98 new major and 59 Revised Major irrigation projects were under appraisal in Project Appraisal Organisation. In principle consent of CWC for DPR preparation was communicated in respect of 2 major irrigation proposals. A Pie Chart showing state wise distribution of new major irrigation projects under appraisal is shown in Fig. 7.1

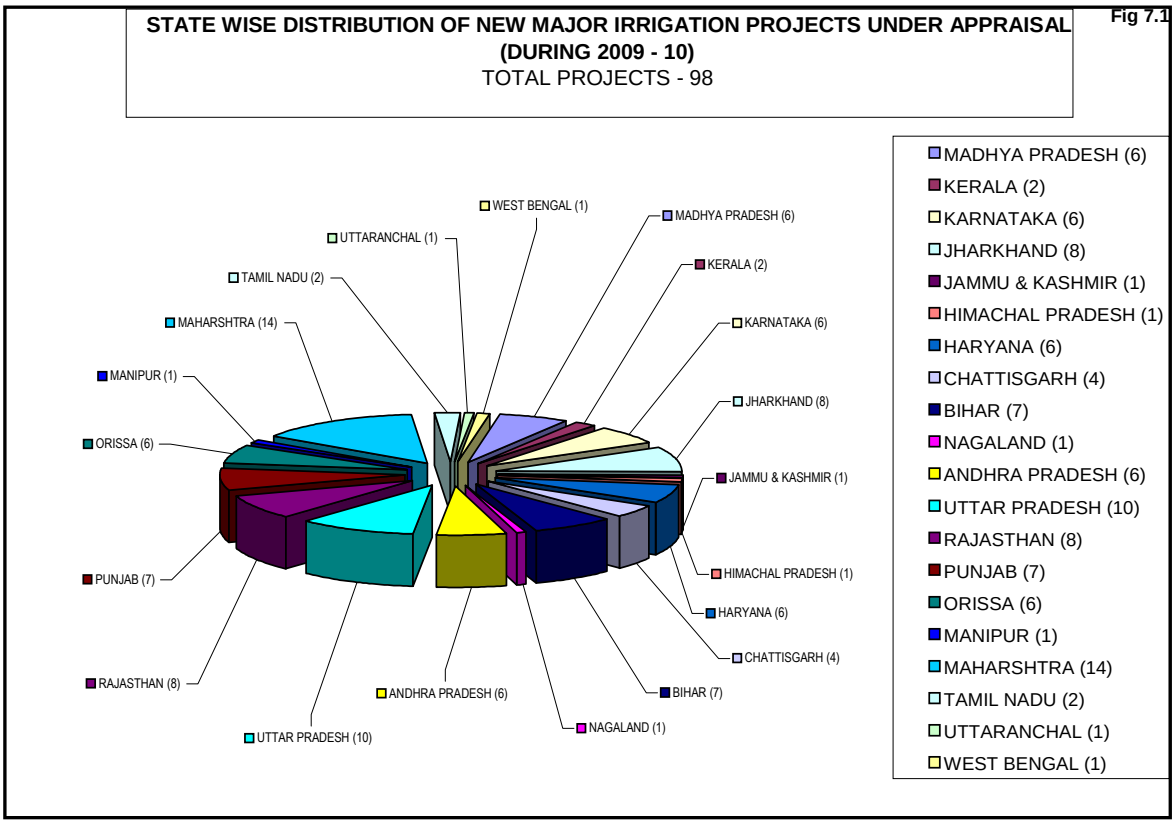


Fig. 7.1 - State wise distribution of New Medium Irrigation Projects under Appraisal

7.4 Appraisal of Medium Irrigation Projects

For medium irrigation projects (CCA 2,000 to 10,000 ha), State Governments are required to submit only a Performa report to the Appraisal and Monitoring Units of the CWC's field formations. The remaining procedure for appraisal remains as stated in 7.3. During the year 2009-10, 90 New Medium Irrigation projects and 27 Revised Medium Irrigation Projects were under appraisal in various Regional Offices of CWC for which necessary assistance was provided by PAO, CWC. After appraisal, projects are put up by the PAO to the Advisory Committee for consideration and acceptance. Pie Chart showing the State wise distribution of new medium irrigation projects is shown in Fig. 7.2.

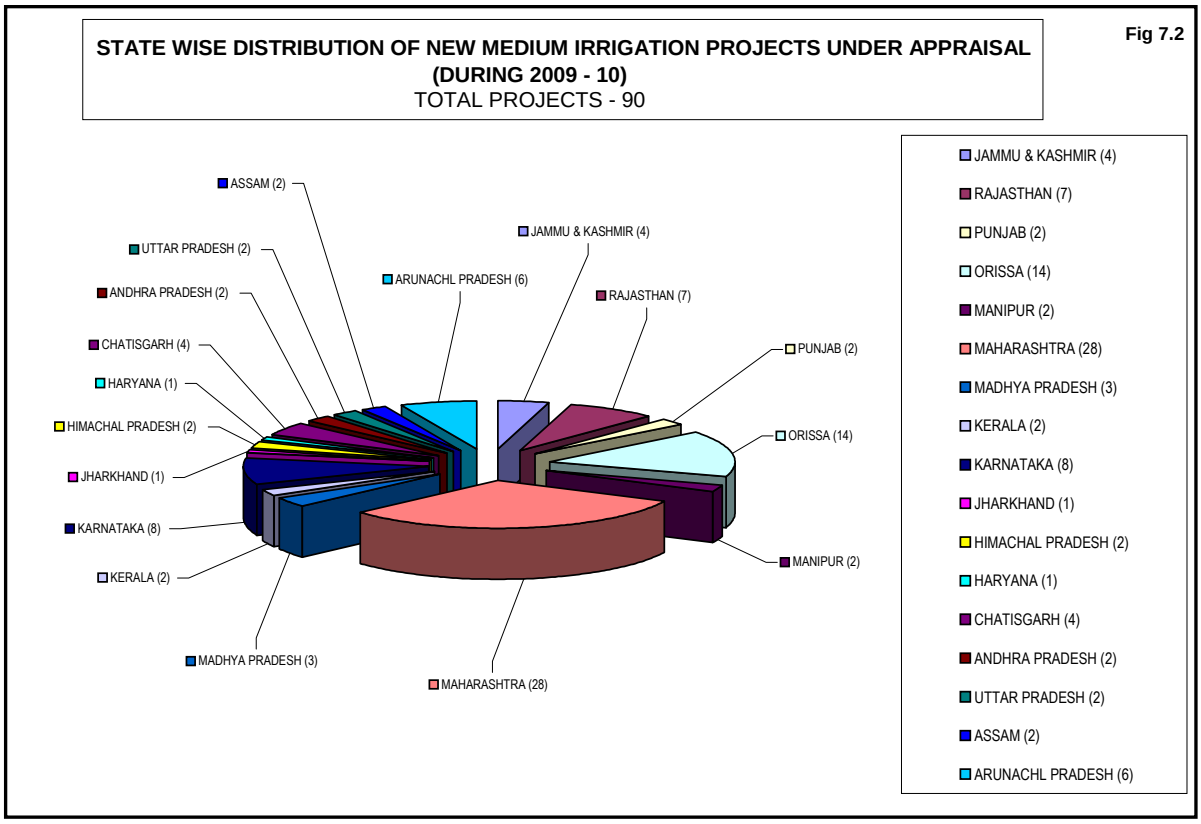


Fig. 7.2 - State wise distribution of New Medium Irrigation Projects under Appraisal

7.5 Interaction with State/Project Authorities

To expedite the appraisal process, Central Water Commission interact frequently with State Govt. Engineers and inter-State review meetings are convened to resolve issues having a bearing on project clearance. The State Governments have also been advised to process the projects through State Central Design Organisation and to set up State Level Multidisciplinary Committees so that the scope and extent of scrutiny at the Centre can be minimized.

7.6 Meeting of the Advisory Committee

In November 1987, Ministry of Water Resources reconstituted the Advisory Committee for Irrigation, Multipurpose and Flood Control Projects with Secretary (WR) as Chairman and Chief Engineer (PAO), CWC as Member Secretary. The Committee is entrusted with the function of examining proposals scrutinised in CWC and conveying the decision on the techno-economic viability of the projects. During year 2009-2010, five meetings of the Advisory Committee were held under the Chairmanship of Secretary (WR) and 98 projects comprising 49 major, 28 medium irrigation and 21 flood control projects wre accepted. The list of the projects is included under table 7.2.

Out of 98 projects accepted by the Advisory Committee during 2009-10, 77 are irrigation projects which will provide additional annual irrigation benefits of 91,38,983 hectare in the States of Andhra Pradesh, Assam, Bihar, Chattisgarh, Goa, Haryana, Jammu & Kashmir, Karnataka, Madhya Pradesh, Maharashtra, Manipur, Orissa, Punjab, Rajasthan,Tripura, Tamil Nadu, Uttar Pradesh & West Bengal . 21 Flood Control Schemes in the state of Assam, Bihar, Haryana, Jharkhand, Kerala, Puducherry,Tamil Nadu, Uttar Pradesh, and West Bengal will provide protection to a total area of 13,09,772 hectare. Pie Chart showing State wise distribution of projects accepted by the Advisory Committee during 2009-10 is shown in Fig. 7.3.

Fig 7.3

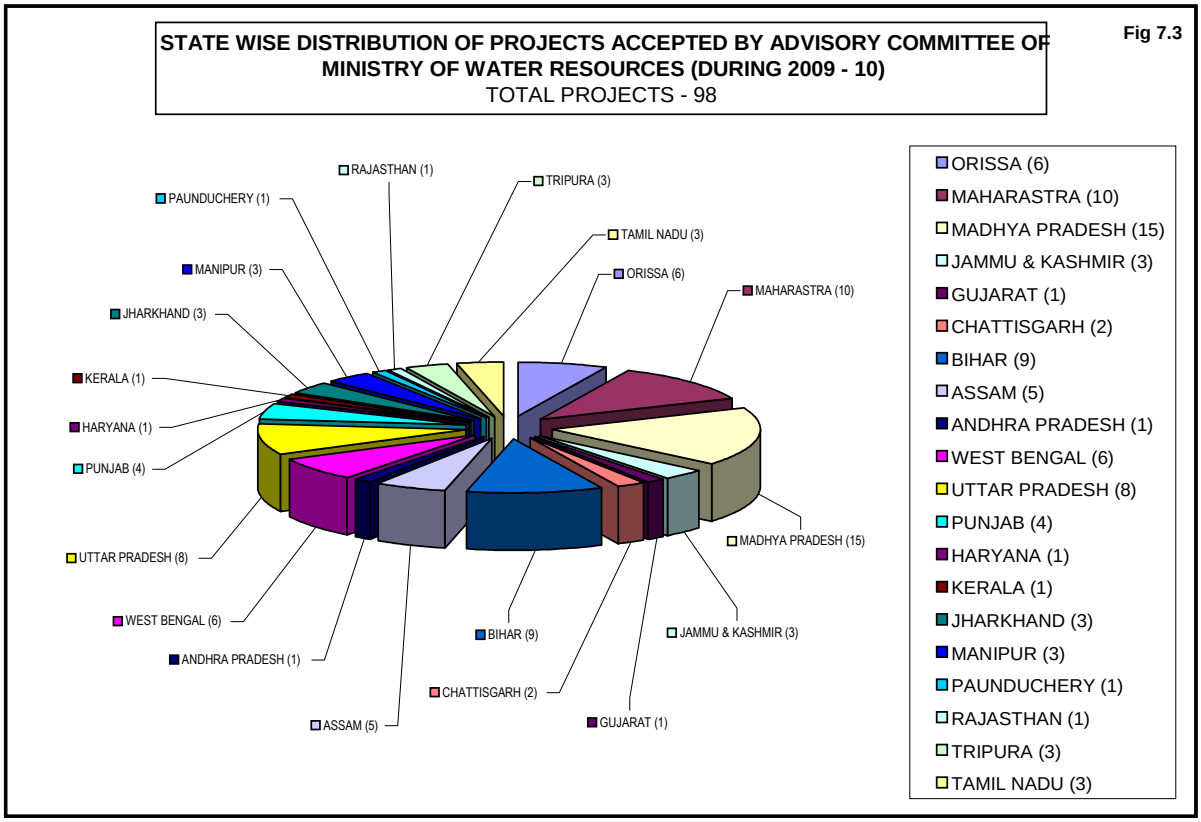


Table 7.2

List of Projects Accepted By Technical Advisory Committee & Approved by Planning Commission

Sl. No	Meeting Number	Date of Meeti	Project Name	Name of the State	Major/ Medium	Estimated ((₹ Cr.)	Benefits in Ha. /MW	Date of Approval by Planning Commission
1	98th	09.07.2009	Flood protection works along the Right bank of river Gandak	Uttar Pradesh	Flood Control	63.7022	145364	
2	98th	09.07.2009	Flood protection works along the Left & Right bank of river Ghaghra	Uttar Pradesh	Flood Control	110.00	48612	
3	98th	09.07.2009	Minimata (Hasdeo) Banga Multipurpose Scheme	Chhattisgarh	Major	1660.88	433000	07.12.2009
4	98th	09.07.2009	Renovation and Restoration of Bheema Samudra Tank	Karnataka	Medium	9.375	2530	
5	98th	09.07.2009	Punasa Lift irrigation Scheme	M.P	Major	488.08	36758	18.09.2009
6	98th	09.07.2009	Dongargaon Tank Project	Maharashtra	Medium	67.039	3942	16.09.2009
7	98th	09.07.2009	Krishna-Koyna Lift Irrigation Scheme	Maharashtra	Major	2224.76	121256	13.10.2009
8	98th	09.07.2009	Kanupur Multipupose Project	Orissa	Major	1067.51	47709	02.12.2009
9	98th	09.07.2009	Upper Indravati Irrigation Project	Orissa	Major	564.77	41794	24.02.2010
10	98th	09.07.2009	Lower Indra Irrigation Project	Orissa	Major	1182.23	38870	02.12.2009
11	98th	09.07.2009	Subarnarekha Irrigation Project	Orissa	Major	4049.93	187462	05.02.2010
12	98th	09.07.2009	Relining of Rajasthan feeder from RD 179000 to 496000-ERM	Punjab	Major	952.10	93117	23.11.2009
13	98th	09.07.2009	Relining of Sirhind feeder from RD 119700 to 447927-ERM	Punjab	Major	489.165	34548	23.11.2009
14	98th	09.07.2009	Eastern Ganga Canal Project	Uttar Pradesh	Major	892.44	105000	22.01.2010

Sl. No	Meeting Number	Date of Meeting	Project Name	Name of the State	Major/ Medium	Estimated Cost (₹ Cr.)	Benefits in Ha. /MW	Date of Approval by Planning Commission
15	99th	24.08.2009	Krishna Delta Modernization Scheme including Pulichintala Dam Project	Andhra Pradesh	Major	3684.50 (2411.25+1273.25)	575000	
16	99th	24.08.2009	Eastern Kosi Canal Project (New ERM)	Bihar	Major	750.75	735500	
17	99th	24.08.2009	Koserteda Irrigation Project (Revised)	Chattisgarh	Medium	154.65	11120	
18	99th	24.08.2009	Gondarinala Irrigation Project (Revised)	Karnataka	Medium	240.00	11655	
19	99th	24.08.2009	Indira Sagar Multipurpose Project (Revised)	Madhya Pradesh	Major	3182.77	16900/ 1000 MW	
20	99th	24.08.2009	Omkareshwar Multipurpose project (Revised)	Madhya Pradesh	Major	2504.80	283324	
21	99th	24.08.2009	Mahi Irrigation Project (Revised)	Madhya Pradesh	Major	490.39	26429	
22	99th	24.08.2009	Upper Beda Irrigation Project (Revised)	Madhya Pradesh	Medium	224.41	13400	
23	99th	24.08.2009	Gul River Project (Revised)	Maharashtra	Medium	96.62	3025	29.01.2010
24	99th	24.08.2009	Shahpurkandi Dam Project (Revised)	Punjab	Major	2285.81 (Irr.653.97	37173/ 168MW	08.02.2010
25	100th	09.10.2009	Modernization of Lahchura dam (Revised Major)	Uttar Pradesh	Major	299.36	46485	23.11.2009
26	100th	09.10.2009	Upper Sankh Reservoir Scheme	Jharkhand	Medium	141.19	7,069	
27	100th	09.10.2009	Panchkhero Reservoir Scheme	Jharkhand	Medium	75.69	2,601	
28	100th	09.10.2009	Surangi Reservoir Scheme	Jharkhand	Medium	41.17	2,601	
29	100th	09.10.2009	Ghataprabha Stage-III Project,	Karnataka	Major	1210.51	1,77,822	15.12.2009
30	100th	09.10.2009	Malaprabha Project	Karnataka	Major	1383.48	1,96,132	
31	100th	09.10.2009	Bhima Lift Irrigation project	Karnataka	Major	551.93	24,292	15.12.2009
32	100th	09.10.2009	Karanja Irrigation Project	Karnataka	Major	532.00	44,574	15.12.2009
33	100th	09.10.2009	Upper Krishna Project Stage-I	Karnataka	Major	6891.59	4,59,000	22.01.2010
34	100th	09.10.2009	Upper Krishna Project Stage-II	Karnataka	Major	3959.80	2,27,000	
35	100th	09.10.2009	Guddada Mallapua Lift Irrigation scheme	Karnataka	Medium	115.40	5,261	15.12.2009
36	100th	09.10.2009	Bargi Diversion project	M.P	Major	5127.22	3,77,000	17.12.2009
37	100th	09.10.2009	Sagar Medium Irrigation Project	M.P	Medium	239.99	17,061	
38	100th	09.10.2009	Dolaoithabi Barrage project	Manipur	Medium	215.52	7,545	01.01.2010
39	100th	09.10.2009	Ghuga Irrigation Project	Manipur	Medium	381.28	14,755	
40	100th	09.10.2009	Gumti Irrigation Project	Tripura	Medium	83.01	9,800	
41	100th	09.10.2009	Manu Irrigation Project	Tripura	Medium	98.71	7,600	
42	100th	09.10.2009	Khowai Irrigation Project	Tripura	Medium	91.64	9.320	
43	100th	09.10.2009	Arjun Sahayak Pariyojna	Uttar Pradesh	Major	806.50	59,485	23.11.2009
44	100th	09.10.2009	Bank Protection works along both banks of river Bhagirathi at Sundarpur & Basantpur, Kazipara to Nabagram & Saharbati to Uttarasan	West Bengal	Flood Control	23.67	529	
45	100th	09.10.2009	Bank Protection works along right bank of river Ganga-Padma at Ichalipara, Moya, Galadarya, Paschim Beechpara	West Bengal	Flood Control	28.14	300	
46	101st	30.11.2009	Raising and strengthening to Puthimari embakment on both banks from RG Railway line to RA Pailway line(from ch 21st km to Ch 36th km on right bank and from chainage 18th km to 35th km on Left bank)	Assam	Flood Control	30.23	A.P-15,000	
47	101st	30.11.2009	Anti erosion measures to protect Bramhputra Dyke on left Bank from Gumi to Kalatoli at Goroimari- Major top area in between ch 27.8 km to ch 31.9 km.	Assam	Flood Control	27.97	A.P-5,000	

Sl. No	Meeting Number	Date of Meeting	Project Name	Name of the State	Major/ Medium	Estimated C (₹Cr.)	Benefits in Ha. /MW	Date of Approval by Planning Commission
48	101st	30.11.2009	Protection of Gakhirakhaitee and its adjoining area from the erosion of river Brahmaputra	Assam	Flood Control	19.06	A.P-20,000	
49	101st	30.11.2009	Flood protection works in Kollidam (Coleroon)	Tamil Nadu	Flood Control	375.90	A.P-2,53,09	15.01.2010
50	101st	30.11.2009	Flood protection works in Yanam.	Puducherry	Flood Control	139.67	A.P-81	22.01.2010
51	101st	30.11.2009	Nepal Benefit Scheme-2009 Gandak Project	Bihar	Major	171.84	69,600	
52	101st	30.11.2009	Batane Reservoir Project	Bihar	Major	113.81	12,126	
53	101st	30.11.2009	Punpun Barrage Project	Bihar	Major	658.12	13,680	
54	101st	30.11.2009	Modernisation of Ranbir Canal Project	Jammu & Kashmir	Major	176.89	55,418	
55	101st	30.11.2009	Bariyarpur Left bank canal Project	M.P	Major	477.26	43,850	
56	101st	30.11.2009	Bansagar Canal Project - Unit-II	M.P	Major	2143.65	2,49,359	25.02.2010
57	101st	30.11.2009	Sindh Piver Project Phase - II	M.P	Major	2045.74	1,62,100	
58	101st	30.11.2009	Singhpur Irrigation Project	M.P	Medium	200.52	6,000	
59	101st	30.11.2009	Bah Irrigation Project	M.P	Medium	250.33	17,807	
60	101st	30.11.2009	Dhom Balkawadi Tunnel Irrigation Project	Maharasthra	Major	848.89	12,670	09.02.2010
61	101st	30.11.2009	Tillari Irrigation Project	Maharasthra & Goa, joint venture	Major	1612.15	30,733	23.02.2010
62	101st	30.11.2009	Thoubal Multipupose Project	Manipur	Major	982.00	33,449	
63	101st	30.11.2009	Lower Suktel Irrigation Project	Orissa	Major	1041.81	29,845	
64	101st	30.11.2009	Telengiri Irrigation Project	Orissa	Medium	474.05	13,789	
65	101st	30.11.2009	Tatko Irrigation Project	West Bengal	Medium	19.76	2,494	
66	101st	30.11.2009	Patloi Irrigation Project	West Bengal	Medium	17.28	2,158	
67	102nd	28.01.2010	Emergent Measures for Protection of Rohmoria in Dibrugarh District, Assam.	Assam	Flood Control	59.91	18,000	15.02.2010
68	102nd	28.01.2010	Raising & Strengthening of Existing Left & Right Embankments in Lower Reach of Mahananda River, Bihar	Bihar	Flood Control	149.69	85.090	
69	102nd	28.01.2010	Raising, Strengthening of Left Burhi Gandak EmbankmentU/s of Akharaghat Bridge from Minapur to Vijay Chapra & in D/s from Akharaghaat Bridge to Samastipur District Border(0 to 45.5 km), Bihar	Bihar	Flood Control	22.41	30,000	
70	102nd	28.01.2010	Anti Erosion Work along the left bank of river Ganga (1) at Ramdiri-Sihama Erosion Site near Gupta Embankment (2) near Gupta Lakhminia Embankment (3) near Sanaha Gorgama Embankment & (4) Raising and strengthening of Gogari Narayanpur Embankment, Nayagaon ring Bundh & Akha-Khajraitha Ring Bundh, Bihar	Bihar	Flood Control	29.33	25,000	
71	102nd	28.01.2010	Construction of Embankment along river Jhim and Jamura (Adhwara Group) From Sonbarsa Bajar to Sonbarsa vllage on Left Bank (25.71 Km) and Right Bank (26.06Km), Bihar.	Bihar	Flood Control	64.52	17,400	

Sl. No	Meeting Number	Date of Meeting	Project Name	Name of the State	Major/ Medium	Estimated Cost (₹Cr.)	Benefits in Ha. /MW	Date of Approval by Planning Commission
72	102nd	28.01.2010	Extension of Embankment on Left and Right bank of River Kamala Balan in lengths of 11.42km and 5 km with Brick soling road on top in left over reaches and protection work at two points on extended portion of right Kamla Balan embankment, Bihar.	Bihar	Flood Control	56.12	3,16,000	
73	102nd	28.01.2010	Comprehensive flood management works to Vellar basin in Cuddalore and Villupuram districts of Tamil Nadu.	Tamil Nadu.	Flood Control	164.32	24,498	
74	102nd	28.01.2010	Comprehensive flood management works to Panduti and Cuddalore towns from ivers Pennaiyar, Gadilam, Uppanar, Paravanar and south Malattar in Cuddalore district of Tamil Nadu.	Tamil Nadu.	Flood Control	68.41	19,347	
75	102nd	28.01.2010	Project for proposed flood protection works along left and right bank of river Ganga in District J.P. Nagar, Shahajahnpur, Meerut and Bulandshahr, U.P	Uttar Pradesh	Flood Control	32.42	14,360	
76	102nd	28.01.2010	Project for reconstruction, remodeling and improvement of embankments in Sundarban and adjoining areas in the districts of North & south 24 Parganas, damaged by severe cyclone “AILA”, West Bengal	West Bengal	Flood Control	5032.00	2,100 Sq.km	
77	102nd	28.01.2010	Scheme for Kaliaghai-Kapaleswari-Baghai Drainage Basin, West Bengal.	West Bengal	Flood Control	650.38	621 Sq.km	09.03.2010
78	102nd	28.01.2010	Mitigation of Flood in Group – I, 14 Padasekharans in Kuttanad of Kerala	Kerala	Flood Control	24.70	--	
79	102nd	28.01.2010	Bansgar Dam (Unit I) Project, Madhya Pradesh	M.P	Major (Revised)	1582.94	4,93,000	
80	102nd	28.01.2010	Khadakpurna River Project, Maharashtra.	Maharashtra	Major (Revised)	917.95	24,864	05.03.2010
81	102nd	28.01.2010	Tarali Irrigation Project, Maharashtra.	Maharashtra	Major (Revised)	870.90	19,498	
82	102nd	28.01.2010	Upper Penganga Project, Maharashtra	Maharashtra	Major (Revised)	3038.42	1,16,728	
83	102nd	28.01.2010	Lower Dudhana Irrigation Project, Maharashtra.	Maharashtra	Major (Revised)	1349.50	44,482	24.02.2010
84	102nd	28.01.2010	Umarhut Pump Canal Phase-II, Uttar Pradesh	Uttar Pradesh	Major (New-ERM)	73.69	49,948 (19,820 Rtr)	
85	103rd	11.03.2010	Champamati (Barrage) Irrigation project (Revised)	Assam	Major	309.22	24,994	
86	103rd	11.03.2010	Sardar Sarovar Narmada project (Revised)	Gujarat	Major	39240.45	1,792,000	
87	103rd	11.03.2010	Rehabilitation, Modernisation of drains to recharge the Ground water (ERM)	Haryana	Major	67.28	159311 (Restoratio n 28822)	
88	103rd	11.03.2010	Modernisation of Chadrampalli project (ERM)	Karnataka	Medium	14.93	8446 (Restoation 1935 ha)	
89	103rd	11.03.2010	Modernisation of Hattikuni project (ERM)	Karnataka	Medium	6.75	2145 (Restoratio n 956 ha)	

Sl. No	Meeting Number	Date of Meeting	Project Name	Name of the State	Major/ Medium	Estimated Cost (₹ Cr.)	Benefits in Ha. /MW	Date of Approval by Planning Commission
90	103rd	11.03.2010	Modernisation of Upper Mullamari project (ERM)	Karnataka	Medium	8.21	3279 (Restoration 1500 ha)	
91	103rd	11.03.2010	Mahan (Gulab Sagar) Irrigation Project (Revised)	M.P	Major	486.96	19,740	
92	103rd	11.03.2010	Jobat Medium Irrigation project (Revised)	M.P	Medium	230.61	12,507	
93	103rd	11.03.2010	Ghugshi Barrage Medium Irigation Project	Maharashtra	Medium	170.15	6,660	
94	103rd	11.03.2010	Extensiion, Renovation and modernisation of Canal being fed from River Sutlej- ERM	Punjab	Major	734.46	6,67,000 (Restoration 198,924 ha) additional 8144 ha	
95	103rd	11.03.2010	Narmada Canal Project (Revised)	Rajasthan	Major	2481.49	151,000	
96	103rd	11.03.2010	Saryu Nahar Pariyojana (Revised)	Uttar Pradesh	Major	7270.32	144,000	
97	103rd	11.03.2010	Tral Lift Irrigation scheme (Revised)	Jammu & Kashmir	Medium	140.76	6,000	
98	103rd	11.03.2010	Rajpora Medium Irrigation scheme (Revised)	Jammu & Kashmir	Medium	70.2	2,429	

7.7 APPRAISAL OF POWER PROJECTS

During 2009-10, 57 numbers of Hydroelectric Power Projects were apprised, out of which **3** numbers of Hydel Projects having total installed capacity of **4570 MW** were finally cleared by CEA.

7.8 Appraisal and Clearance of Flood Management Projects

The Flood Management Organisation under Chief Engineer (FM) with 5 (five) Directorates dealing with all the relevant aspects of Flood Management of the Country is functioning under River Management Wing of Central Water Commission. One of the important responsibilities assigned to Flood Management Organisation is the examination of proposal formulated and submitted by State Govts. concerning Flood Management Schemes and Multi purpose Projects having flood control aspects to establish their techno-economic feasibility.

During 2009-10, a total of 153 Flood Management Schemes from States of Andhra Pradesh, Assam, J&K, Karnataka, Delhi, Orissa, Punjab, Tamilnadu, Tripura, Uttar Pradesh and the U.T. of Puducherry were received in Central Water Commission. Out of which, 58 schemes have been cleared by CWC, 31 schemes are under correspondence. Project Reports for 32 schemes were not technically sound and 32 schemes are under appraisal in CWC.

8

CHAPTER - VIII

MONITORING OF PROJECTS

8.1 MONITORING OF MAJOR AND MEDIUM IRRIGATION PROJECTS

A three tier system of monitoring at Centre, State and Project level was introduced in 1975. At Central level, this work was entrusted to CWC. The main objective of monitoring of Major and Medium irrigation Projects is to ensure the achievement of physical and financial targets and achieve the targets of creation of irrigation potential. Monitoring system is also expected to contribute in identification of the inputs required, analysis of the reasons for any shortfalls/bottlenecks and suggest remedial measures, etc., with a view to complete the projects in a time bound manner.

As per the present arrangement in CWC, Inter-State, Externally Assisted and Centrally Sponsored irrigation projects are being monitored by monitoring units at Headquarters (HQ) and the other projects by the respective Regional Offices. During 2009-10, a total of 86 irrigation projects were monitored by CWC **(Table 8.1).** The list of monitored Projects is reviewed on yearly basis.

Out of 86 Major, Medium and ERM projects taken up for monitoring by CWC during 2009-2010, 14 projects (8 major & 6 ERM) were being monitored from CWC , HQ and remaining 72 projects (50 Major, 19 Medium and 3 ERM) were monitored by its Regional offices.

In the year 2003-04, 30 Major pre-Fifth / Fifth Plan ongoing projects were identified for completion by the end of X Plan and were put on vigorous monitoring by CWC field units requiring more than one visit in a year. The task of vigorous monitoring was assigned to the specific field officers to ensure their completion as stipulated. Out of these 30 projects, 15 projects were completed by the end of 2008-09 and remaining 15 projects were included in the list of 86 projects which were monitored during 2009-10.

All the projects identified for monitoring are visited by CWC officers once a year. Thereafter, based on field visit to the project and discussions with the State Govt Officials, a detailed status report is prepared highlighting various constraints impeding construction & suggestions for remedial measures, etc. for attention of the State Govts. to expedite progress for early completion of the project etc. Chart showing the State-wise distribution of monitoring of ongoing Major, Medium and ERM projects by CWC Headquarters or Regional offices are given in Figures 8.1, 8.2, & 8.3.

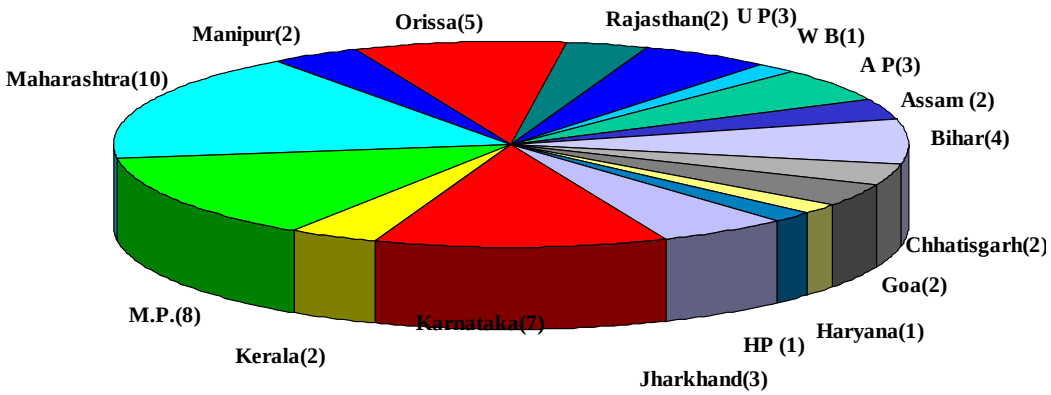
Table 8.1 - State-wise Number of Projects Monitored by CWC (2009 - 10)

S.No.	State	NUMBERS OF PROJECTS MONITORED BY CWC								
		Major			Medium			ERM		
		HQ	RO	Total	HQ	RO	Total	HQ	RO	Total
1	ANDHRA PRADESH	1	2	3	-	-	0	1	-	1
2	ASSAM	-	2	2	-	1	1	-	-	0
3	BIHAR	-	4	4	-	-	0	-	-	0
4	CHHATTISGARH	-	2	2	-	-	0	-	-	0
5	GOA	1	1	2	-	-	0	-	-	0
6	GUJARAT	-	-	0	-	1	1	1	-	1
7	HARYANA	-	1	1	-	-	0	-	-	0
8	HIMACHAL PRADESH	1	-	1	-	1	1	-	-	0
9	JAMMU & KASHMIR	-	-	0	-	-	0	-	-	0
10	JHARKHAND	1	2	3	-	3	3	-	-	0
11	KARNATAKA	-	7	7	-	4	4	-	2	2
12	KERALA	-	2	2	-	1	1	-	-	0
13	MADHYA PRADESH	-	8	8	-	1	1	1	-	1
14	MAHARASHTRA*	1	9	10	-	1	1	1	-	1
15	MANIPUR	-	2	2	-	-	0	-	-	0
16	MEGHALAYA	-	-	0	-	1	1		-	0
17	ORISSA	1	4	5	-	-	0	-	-	0
18	PUNJAB	-	-	0	-	-	0	-	1	1
19	RAJASTHAN	1	1	2	-	-	0	1	-	1
20	TAMIL NADU	-	-	0	-	-	0	-	-	0
21	TRIPURA	-	-	0	-	1	1	-	-	0
22	UTTAR PRADESH	1	2	3	-	-	0	1	-	1
23	WEST BENGAL	-	1	1	-	4	4	-	-	0
	TOTAL	**8**	**50**	**58**	**0**	**19**	**19**	**6**	**3**	**9**
	G. TOTAL	58 (Major) +19Medium) + 9 (ERM) = 86								

***RO**-Regional Office, **HQ**-Head Quarter*

Fig 8.1

MAJOR PROJECTS MONITORED BY CWC (Field Units & Head Quarter)



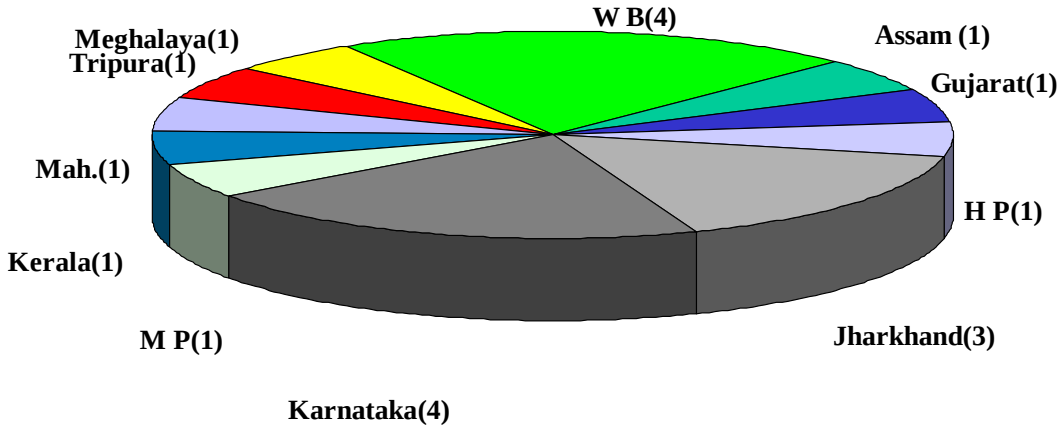
TOTAL NUMBER - 58

Monitored From HQ-08 Monitored From Field Units- 50

Figure 8.1- Major Projects monitored by CWC Regional office & HQ

Fig 8.2

MEDIUM PROJECTS MONITORED BY CWC (Field Units)



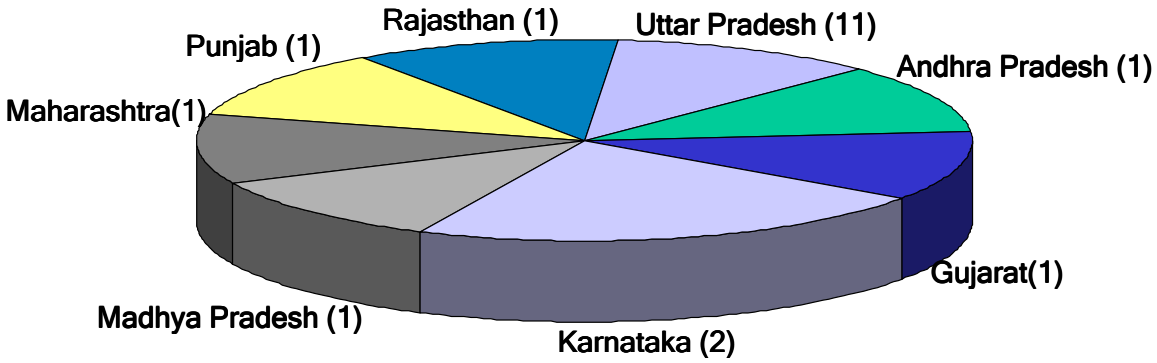
No Medium Project is Monitored by HQ.

TOTAL NUMBER - 19

Figure 8.2- Medium Projects monitored by CWC Regional Offices

Fig 8.3

ERM PROJECTS MONITORED BY CWC (Field Units & Head Quarter)



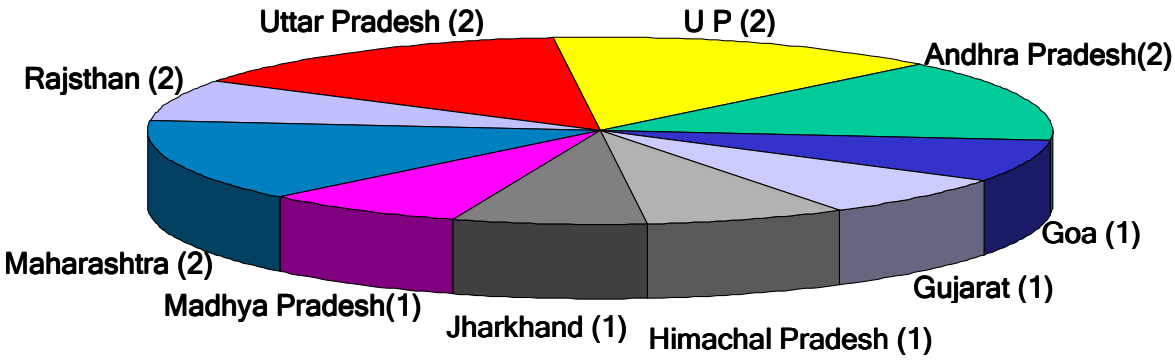
TOTAL NUMBER - 9

Monitored From HQ-6 Monitored From Field Units- 3

Figure 8.3 - ERM Projects monitored by CWC Regional Office & HQ

Fig 8.4

MAJOR/ERM PROJECTS MONITORED BY CWC (Head Quarter)



TOTAL NUMBER - 14

8.2 Assessment of Utilization of Irrigation Potential

To supplement the existing Monitoring mechanism by providing authentic and objective data base on existing irrigation infrastructure it was felt necessary to utilize the Remote Sensing Technique for the assessment of Irrigation Potential Creation in AIBP assisted projects. At the instance of Planning Commission, pilot studies of two projects i.e. Upper Krishna in Karnataka and Teesta Barrage in West Bengal were carried out successfully using Satellite Data by NRSA Hyderabad. The study results of the assessment were found satisfactory and compared well with ground realities.

In view of importance and utility of results arising out of pilot study, it was decided by Planning Commission to take up the projects on a National Scale covering about 10 million Ha. of Irrigation Potential spread across different states in India. In first phase, the assessment of Irrigation potential Creation through mapping of irrigation infrastructures to monitor the progress was assigned to NRSA, Hyderabad in respect of 53 Ongoing AIBP assisted projects covering area of 5447.743 th ha during 2007-08. The study has been completed during 2009-10. It not only provides the potential created but also gives critical gap areas for further effective monitoring.

It is proposed to take up similar assessment in respect of another 50 projects in second phase covering an area of 851.428 th ha.

8.3 Monitoring of Externally Assisted Projects

World Bank through its soft lending affiliate, International Development Association (IDA) & International Bank of Rural Development (IBRD) has been providing credit assistance to Major/Medium irrigation Projects since long. Japan Bank for International Co-operation (JBIC) has also been funding few major/medium irrigation projects. While these projects are executed by the States, monitoring of all externally aided irrigation projects has been entrusted to CWC in order to evaluate achievements of construction and investment targets as per the criteria laid down by the external funding agencies and to remove bottlenecks, if any, encountered during construction.

8.4 Accelerated Irrigation Benefits Programme

Central Govt., during 1996-1997, launched the Accelerated Irrigation Benefits Programme (AIBP) to provide Central Loan Assistance (CLA) to major/medium irrigation projects in the country, with the objective to accelerate the implementation of those projects which are beyond resource capability of the States or are in an advanced stage of completion. While selecting the projects, special emphasis was to be given to Pre-fifth and Fifth Plan projects. Priorities were also given to those projects which were benefiting Tribal and Drought Prone Areas. Under the revised Guidelines from the year 1999-2000 onwards, Central Loan Assistance under AIBP can also be extended to minor surface irrigation projects of special category states (N.E. States & Hilly States of H. P., Sikkim, Jammu & Kashmir, Uttarakhand and projects benefiting KBK districts of Orissa). However, later w.e.f. 1.4.2005, non-special category states could also include minor surface irrigation schemes with potential of more than 100 ha with preference to tribal areas and drought prone areas which fully benefit dalits and adivasis. Grant component was introduced under the programme during 2004-05 and Centre provided both loan portion and grant component of Central assistance. However, as per the present policy, Centre is providing the grant component only from 2006-07 and the States are authorised to raise loan component by market borrowing.

The Government has further relaxed the criteria for Central assistance under the AIBP since Dec, 2006. The earlier guidelines stipulating completion of an ongoing project under AIBP for including a new project under AIBP has been relaxed for projects benefiting a) drought prone areas, b) tribal areas, c) States with lower irrigation development as compared to National average, and d) districts identified under the PM's Package for agrarian distress districts. Figure 8.5 gives details of state wise Major, Medium & ERM projects presently under AIBP. Table 8.2 gives State wise list

of Major & Medium projects completed under AIBP.

A grant of ₹ 5528.626 crore has been released to 92 major / medium irrigation projects under AIBP during 2009-10 till 31.3.2010. The cumulative total Central Loan Assistance / Grant provided to States under AIBP since inception of the programme till 31.03.2010 for Major, Medium and ERM Projects is ₹36372.7352 Crore for 282 projects. Details are given in Table 8.3 & Figure 8.6.

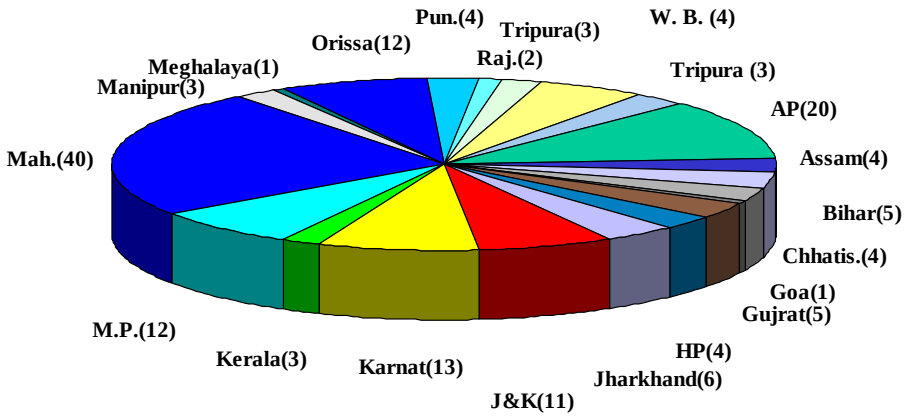
The number of States benefited from the programme is 24 till 31.03.2010. Out of 282 projects, 113 projects have been completed up to 31.03.2010 and 4 projects were deferred. As reported by the State Governments, 5.99 million hectare of additional irrigation potential has been created under AIBP since the start of the scheme till March, 2010.

The Accelerated Irrigation Benefits Programme is being implemented by MOWR. Central Water Commission has been assigned the responsibility to comprehensively monitor the projects receiving CLA/Grant. Presently, there are 162 ongoing projects under AIBP which are getting grant and are being monitored by CWC. The projects under AIBP are monitored twice a year by CWC officers and thereafter the status reports are prepared and issued to all concerned.

Fig 8.5

ONGOING MAJOR , MEDIUM , ERM PROJECTS UNDER AIBP

(as on 31.03.10)



TOTAL NUMBER - 165

Figure 8.5 - Major, Medium & ERM Projects under AIBP

Table 8.2

State wise Major & Medium projects completed under AIBP

Sl. No.	State	Project	Sl. No.	State	Project
1.	Andhra Pradesh	Sriramsagar St.I	8.		Maddigeda
2.		Cheyyeru (Annamaya)	9		Alisagar
3.		Priyadarshini Jurala	10.		Veligallu
4.		Somasila	11.		Guthpa LIS
5.		Nagarjunsagar	12.		Vamsdhara St.II Ph.I
6.		Madduvalasa	13.		Swarnamukhi
7.		Gundalavagu			

Sl. No.	State	Project	Sl. No.	State	Project
14.	**Jharkhand**	Latratu	62.		Madan Tank
15.		Tapkara Res.	63.		Kasarsai
16.	**Chhattisgarh**	Shivnath Div.	64.		Khadakwasla
17.		Hasdeo Bango	65.		Upper Tapi
18.		Jonk Diversion	66.		Wan
19.		Barnai	67.		Vishnupuri (Works)
20.	**Haryana**	Gurgaon Canal	68.		Bahula
21.		WRCP	69.		Kumbhi
22.	**Goa**	Salauli	70.		Surya
23.	**Tamil Nadu**	WRCP	71.		Bhima
24.	**Kerala**	Kallada	72.		Patgaon
25.	**Karnataka**	Hirehalla	73		Shivna Takli
26.		Maskinallah	74.		Amravati
27.		Votehole	75.		Krishna
28.	**Punjab**	Ranjit Sagar	76.		Kukadi
29.		Remodelling of UBDC	77.		Hetwane
30.	**Madhya Pradesh**	Bansagar Unit I	78.		Chaskaman
31.		Upper Wainganga	79.		Upper Wardhan
32.		Sindh Ph I	80.		Purna
33.		Urmil	81.		Chamdarbhaga
34.		Banjar	82.	**Assam**	Rupahi
35.	**Orissa**	Upper Kolab	**83.**		Hawaipur lift
36.		Potteru	84.		Kolanga
37.		Sason Canal	85.		Integrated Irrigation Scheme in Kollang Basin
38.		Salki Irrigation	86.		Mod. Of Jamuna Irr.
39.		Naraj	87.		Pahumara
40.		Salandi Left Main Canal - Ambahata	88.		Bordikarai
41.	**J & K**	Mod. of Zaingir Canal	89.	**Gujarat**	Damanganga
42.		Marwal Lift	90.		Deo
43.		Lethopora Lift	91.		Harnav-II
44.		Koil Lift	92.		Jhuj
45.		Mo of Kathua Canal	93.		Karjan
46.		Igophey	94.		Sipu
47.	**Bihar**	Bilasi	95.		Sukhi
48.		Orni Reservoir	96.		Umaria
49.		Upper Kiul	97.		Watrak
50.		Sone Modernisation	98.		Mukteshwar
51.	**Rajasthan**	Gambhiri Mod.	99.	**Uttar Pradesh**	Gunta Nala
52.		Jaisamand Mod	100.		Gyanpur Pump Canal
53.		Chhapi	101.		Urmil
54.		Panchana	102.		Bansagar Unit I
55.		Chauli	103.		Sindh Ph I
56.		Mahi Bajaj Sagar	104.	**West Bengal**	Kangsabati
57.		Bisalpur	105.		Mod. of Barrage and Irrigation System of DVC
58.	**Maharashtra**	Jawalgaon	106.		Hanumata
59.		Jayakwadi Stage-II			
60.		Kadvi			
61.		Kasari			

Table 8

Year wise CLA/Grant Disbursement under Normal and Fast Track AIBP
for major/medium irrigation projects
(upto March, 2010)

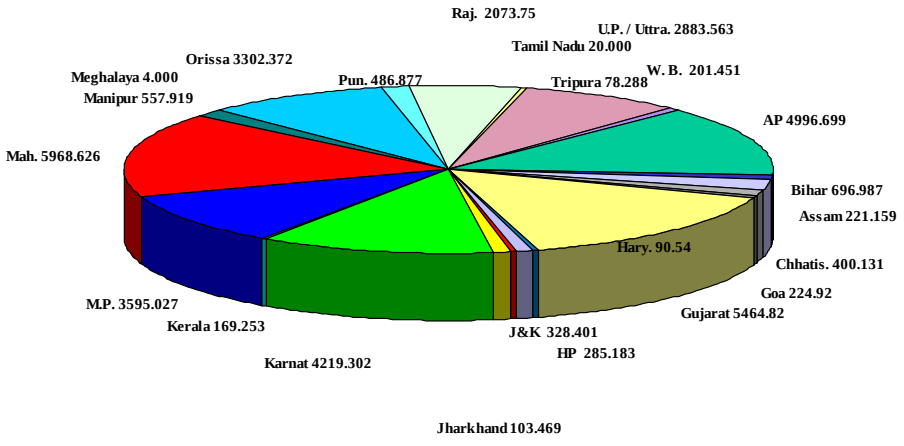
(₹crore)

Year	Total CLA/Grant Disbursed
1996-97	500.000
1997-98	952.190
1998-99	1119.180
1999-2000	1392.065
2000-01	1791.605
2001-02	2554.226
2002-03	3015.138
2003-04	3023.284
2004-05	2773.129
2005-06	1709.225
2006-07	1884.221
2007-08	4483.947
2008-09	5645.900
2009-10	5528.626
Total	**36372.735**

Fig 8.6

STATEWISE CUMULATIVE CLA & GRANT RELEASED UNDER AIBP

(Upto 31 March 10)



TOTAL CLA/ GRANT Released
36372.7352 Crore

Figure 8.6 – State Wise Cumulative CLA released for Major, Medium under AIBP

8.5 State-wise Status Reports of Irrigation Development

The Project Monitoring Organisation prepares State-wise yearly status reports bringing out the irrigation development through Major and Medium projects in the State. These reports give an overview of the surface water resources of the State, ultimate irrigation potential, plan-wise irrigation development in terms of potential created / potential utilised & expenditure incurred, land use classification, projects benefiting drought prone and tribal areas, inter-State/externally aided/centrally aided projects in the state, major projects monitored by CWC along with critical issues requiring attention of the State Govt. and other related aspects.

8.6 Management Information System

CWC maintains information / data received through quarterly progress reports, which are furnished by the State/Project authorities for monitored projects and by the regional units of CWC for projects under AIBP. This ensures continuous interaction with the implementing agencies to monitor the follow- up action taken by them on the critical activities of construction as highlighted in the CWC monitoring status reports such as construction planning, project staffing, land acquisition problems, quality control aspects, etc. However, an elaborate Management Information System is still to be developed.

8.7 Monitoring of Centrally Sponsored CAD Projects

The Coordination and other related works of monitoring of CAD Programme in respect of 136 projects in 28 states was carried out by CWC. During the year 2008-09, 35 Nos & during the year 2009-10, 19 nos of half yearly status reports were received from the field units and these reports were examined and comments/ observations were made wherever necessary.

9

CHAPTER-IX

CONSTRUCTION EQUIPMENT PLANNING AND MANAGEMENT

Central Mechanical Organisation of CWC is actively involved in various aspects of construction equipment planning and management which involves techno-economic appraisal of project reports from plant planning angle, consultancy in equipment planning, monitoring the equipment performance, assistance in procurement of equipment and spare parts, contract management, costing/estimating, rehabilitation of spare parts and data processing.

9.1 Project Appraisal

During the year, 56 project reports of Irrigation, Power and Multipurpose projects of various States of the country were technically examined from plant planning angle. Out of this, 23 project reports were accepted with provision worth ₹ 6178.425 lakhs in respect of construction equipment. In respect of the remaining 33 project reports, the observations / comments were conveyed to the project authorities for compliance and further review.

9.2 Consultancy

(i) In connection with preparation of detailed project report of Kirthai-II HE Project, J&K, the work of preparation of a chapter on "Construction Equipment Planning & Methods" including carrying out equipment planning, scheduling and preparation of construction programme is being under taken by CWC Directorate

(ii) Committee meeting of Punasangchu-I H.E. Project, Bhutan on 14-15th September, 2009, regarding procurement of construction equipment.

(iii) A meeting with project officials from WAPCOS on Punatsangchhu-II H.E. Project, was held on 30th October, 2009 at CWC, New Delhi and provision under Sub Q-Spl T&P and plant planning aspect was discussed.

(iv) Clarification regarding technical specification in respect of procurement of other draglines were furnished to Mechanical Division-I, Irrigation & Flood Control wing of Govt. of NCT of Delhi.

9.3 Monitoring Programme and Utilisation of Equipment

In order to monitor the utilisation of heavy earthmoving and construction equipment available in river valley projects, CWC collects the data on a quarterly basis on equipment performance. The data is analysed in P&M Dte. of CMO unit with a view to identify reasons for low performance/utilisation of equipment.

3 No. quarterly returns were received during the year 2009-10 from Punjab State.

9.4 Disposal of Surplus Equipment and spare parts in water resources sector

Director (P&M) visited Chenab Division, CWC, Jammu to attend the disposal committee meeting on 27.07.2009 & 28.07.2009 to fix the reserve price of unserviceable / survey reported Govt. vehicle/machines amounting to ₹ 1,20,000/-.

9.5. Manpower Planning

A special study on "Employment Generation in the Operation & Maintenance stage in Major and Medium irrigation projects" has been launched by Central Water Commission. The purpose of the study is to know the trend of Employment potential, Employment norm on investment of per

crore of rupees on O&M, actual cost of O&M per 1000 hacrare of CCA. Expenditure of Manpower, equipment & machines and other items in Operation and Maintenance stage irrigation projects during five years period from 2000-01 to 2004-05. 66 Major and Medium irrigation projects were selected for the study, out of which the information received from 50 Major & Medium projects so far. 46 projects information has been scrutinized and basic data statements were prepared. Compilation and analysis of data for the preparation of report is in progress.

CHAPTER-X

10

INTER-STATE MATTERS

10.1 Inter-State River Water Disputes

CWC provides technical assistance to MoWR to settle inter-State water disputes among the States amicably through negotiation. During the year, assistance was rendered in respect of the following:

10.1.1 Cauvery Water Disputes Tribunal

The Cauvery Water Disputes Tribunal (CWDT) was constituted by the Government of India on 2 June, 1990 to adjudicate the water dispute regarding inter-State river Cauvery and the river valley thereof. The Tribunal submitted its report with decision on 05.02.2007.

CWDT has apportioned the 50% dependable yield of Cauvery of 740 TMC at lower Coleroon anicut at the delta and has apportioned between states as follows:

Tamil Nadu	:	419 TMC
Karnataka	:	270 TMC
Kerala	:	30 TMC
UT of Pondicherry	:	7 TMC
Environmental protection	:	10 TMC
Inevitable escape into sea	:	4 TMC

However, the final decision of the CWDT has not been notified by the Government of India as the party states have sought clarifications from the Tribunal under section 5(3) of the ISWD Act, 1956 besides filing separate SLPs in the Supreme Court. Final award of the CWDT is awaited.

10.1.2 Krishna Water Disputes Tribunal

The Krishna Water Disputes Tribunal (KWDT) was constituted on 2nd April, 2004 for adjudication of the dispute relating to sharing of waters of inter-State river Krishna and river valleys thereof.

The Tribunal by its order dated 09.06.2006 had declined to grant interim relief on the prayers of all basin States who had filed seven interim applications seeking to restrain other basin states from going ahead with certain projects. Final order of the tribunal is awaited.

10.1.3 Mandovi River Water Disputes

Mondovi is an inter-State river originating in Karnataka and after flowing in Goa drains in Arabian Sea. A small portion of the catchment area lies in Maharashtra also. The Government of Karnataka in the past prepared proposal for diversion of Mandovi water outside the basin. Ministry of Water Resources in April, 2002 conveyed 'in principle' clearance for diversion of 7.56 TMC of water from Mandovi basin to the adjoining Malaprabha sub-basin (Krishna basin) for drinking water purposes. In view of the strong protest from the Government of Goa, MoWR during September, 2002 kept the 'in principle' clearance in abeyance. The Government of Goa also sought for constitution of a tribunal for adjudicating the disputes.

Subsequently, Union Minister for Water Resources took an inter-State meeting in December, 2002 during which it was decided that Government of Goa and CWC officials could make joint efforts rectify to rectify discrepancies in the data and yield figures and the assessment of yield should be completed by March, 2003. Since Government of Goa wanted to scrutinize the runoff data of CWC site from original records, as a special case, MoWR during July, 2003 permitted to give all the raw gauge data of Gangim site of CWC to Government of Goa.

Based on a representation received from MPs/MLCs, Hon`ble Minister (WR) desired that Secretary (WR) & Chairman, CWC hold talks with the officials of Goa and Karnataka. A meeting of Chief Secretaries of basin states was taken by Secretary (WR) on 16.01.2006. But no settlement of the issue could be reached. Subsequently, a meeting was taken by Hon'ble Union Minister (WR) with the Chief Ministers of the basin states on 4.4.2006. Again, negotiated settlement could not be reached. As desired in this meeting, an official level meeting was proposed by Chairman, CWC on 26.4.2006, which was postponed since Government of Goa informed their non-participation in the meeting. The State of Goa insists on constituting Tribunal to adjudicate the dispute.

10.1.4 Vamsadhara River Water Disputes

During February 2006, Government of Orissa made a request under Section-3 of the Inter state River Water Disputes Act, 1956 to constitute a Water Dispute Tribunal to adjudicate the water dispute in respect of Inter-state river Vamsadhara and its valley between the state of Orissa and Andhra Pradesh. Issues raised in the request include fresh assessment of available water in the Vamsadhara and its valley at Katragada and Gotta Barrage and whether states of Orissa and Andhra Pradesh share equally the entire quantity of water available in the river Vamsadhara and its valley as agreed to earlier in the agreement dated 30.09.1962

To resolve the dispute through negotiations, Secretary (WR), Government of India, convened an Inter State meeting with Secretaries of Irrigation/WR Department of Government of Andhra Pradesh and Orissa on 24.04.2006. It was agreed in the meeting that CWC will reassess the yield of Vamsadhara Basin. States of Orissa and A.P. also agreed to share the yield of the river on 50:50 basis as already agreed on 30.09.1962. It was also agreed that the aspect of shifting of river course due to construction of side weir at Katragada shall be studied by CWC/CWPRS. Subsequently CWC with the help of joint working Group comprising 2 members each from Government of Andhra Pradesh and Orissa has reassessed the 75% dependable yield of Vamsadhara basin as 105 TMC at Gotta barrage.

Attempts were made by MOWR to arrive at an amicable settlement of the issue. Meanwhile Hon'ble Supreme court in it's order dated February 2009 has directed GOI to constitute a Water Dispute Tribunal with in six months and refer the issue to the Tribunal. Further, the Hon'ble Supreme Court, on the request of GOI, in its order dated 24th November 2009 has given an extension of six months for implementing the order dated 6th February 2009.

10.1.5 Palar Water Dispute

Palar is an inter-state river flowing through Karnataka, Andhra Pradesh and Tamil Nadu. Government of Tamil Nadu had complained to the Central Government in February, 2006 that Government of Andhra Pradesh is proposing a reservoir on Palar river without their consent which would affect the established utilization in the state and is against provisions of 1892 agreement. Tamil Nadu also filed a suit in the Supreme Court in the same month. As such, MOWR took the stand that since the matter was sub-Judice, it may not be appropriate for the Ministry to intervene.

Supreme Court heard the suit on 7.1.2008 and ordered that the Central Government can consider the representation of Tamil Nadu and try to arrive at a settlement of the issue. Accordingly, the first inter-state meeting was held on 11.3.2008 in which it was decided that

both States would make available relevant data for further discussions. The second inter-state meeting was held on 26.8.2008. It was decided that HSO, CWC would carry out studies jointly with both states to arrive at water availability at various points in the basin. Study Group for carrying out the Hydrological studies was constituted. The Group held three meetings, and data required for the study has been collected and exchanged between the two States. The study is targeted to be completed by the end of April, 2010.

10.2 Drinking water supply for Jagdalpur town in Chhattisgarh

It was reported by the Government of Madhya Pradesh (now Chhattisgarh) in 1999 that during the past years post monsoon flows in the Indravati river were progressively dwindling due to peculiar phenomenon of diversion of Indravati river through "Journallah" a small rivulet which joins Kolab-Sabari River and consequently causing drinking water supply problems in Jagdalpur town and downstream villages in Chhattisgarh.

As per the provisions of the Godavari Water Disputes Tribunal (GWDT) Award vide Annex-IV under Annex-'A' i.e. Agreement dated 9.12.1975 between the States of Orissa and Madhya Pradesh, Orissa is to ensure at its border with Madhya Pradesh a flow of 45 TMC in the Indravati and its tributaries at 75% dependability for use by Madhya Pradesh. However there is no specific stipulation regarding monthly quantum to be made available.

Member (WP&P) took four inter-state meetings of Secretaries of Orissa, Chhattisgarh and Regional Chief Engineers of CWC up to April, 2003. During an inter-state meeting at the level of Engineer-in-Chief, Governments of Chhattisgarh and Orissa It was decided that CWC would be requested to take up the design work and Chhattisgarh would pay the consultancy charges to CWC. The specification drawings for the control structures across Indravati and Jouranalla river were prepared by CWC and sent to the Government of Chhattisgarh during November, 2007. Engineer- in- Chief, Water Resources Department, Government of Chhattisgarh had intimated in July 2008 that Government of Orissa has not started construction work. CWC has accordingly requested Government of Orissa for an early action in the matter and to intimate the status to CWC. The CWC vide letter 28.07.09 again requested Orissa to take immediate action for construction of the Structures.

10.3 River Boards Act, 1956

Under Entry 56 of List-I of the Constitution, the River Boards Act, 1956 was enacted for the establishment of River Boards for the regulation and development of inter-State River and River Valleys. The Central Government can constitute a River Board under the provision of the River Boards Act, 1956 with the concurrence of the State Governments. The Central Govt. has not been able to constitute any River Board under this Act, so far. The role of the River Boards as envisaged in the said Act is only advisory in nature. The National Committee for Integrated Water Resources Development Plan has recommended the enactment of a new Act called the "Inter State Rivers and River Valley (Integrated and Participatory Management) Act" in place of existing River Board Act, 1956.

10.4 Control Boards for Inter-State Projects

10.4.1 Bansagar Control Board

In pursuance of an interstate agreement among the Chief Ministers of Madhya Pradesh, Uttar Pradesh and Bihar, the Bansagar Control Board was constituted vide resolution of earst-while Ministry of Agriculture & Irrigation in January, 1976 for efficient, economical and early execution of Bansagar Dam and connected works. The head quarter of the Board is located at Rewa (Madhya Pradesh).

The Union Minister of Water Resources is the Chairman of the Board and the Union Minister of Power, Union Minister of State for Water Resources, Chief Minister and Minister in charge of Irrigation and Finance of the concerned three states and Minister-in-charge of Electricity of Madhya Pradesh are its members. Chairman, CWC is the Chairman of the Executive Committee of Bansagar Control Board.

Bansagar Dam on Sone River, a joint venture of the states of Madhya Pradesh, Uttar Pradesh and Bihar is being executed by Water Resources Dept., Madhya Pradesh under the directions of the Bansagar Control Board. Execution of the canal works in respective territorials jurisdiction are being carried out by the concerned states independently and work of Power Houses is being executed by MPEB. The benefits and cost of the dam including land acquisition and rehabilitation are to be shared by Madhya Pradesh, Uttar Pradesh and Bihar in the ratio of 2:1:1(MP : UP : Bihar). The latest estimated cost of project is Rs. 1525 crores at 2009 price level. The total expenditure for an amount of Rs. 1476.826 crore upto October, 2009 has been incurred on the project.

The work on the Dam including Crest Gates have been completed in June 2006 and the reservoirs has been filled up EL 330.03 m against FRL 341.65 m in October, 2009. Power generation was 529 million unit up to Oct.2009 in the financial year 2009-10.

10.4.2. Betwa River Board

In accordance with the inter-State agreement of 1973 between Governments of U.P. and M.P., decision was taken to constitute a Control Board for the execution of the Rajghat Dam Project, an inter-State project of M.P and U.P. Accordingly, Betwa River Board was constituted under the Betwa River Board Act – 1976 for efficient, economical and early execution of the project. The headquarters of the Board is at Jhansi (U.P.).

The Union Minister of Water Resources is the Chairman of the Board and Union Minister of Power, Union Minister of State for Water Resources, Chief Ministers and Ministers-in-charge of Finance, Irrigation and Power of the two states are Members.

Chairman, CWC is the Chairman of Executive Committee (EC) of Betwa River Board. As per Betwa River Board Act 1976 subject to the general superintendence and control of the Board, the management affairs of the Board shall vest in the Executive Committee. The Executive Committee may exercise any power and do any act or thing which may be exercised or is done by the Board subject to the rules and the directions of the Board. Chairman, Executive Committee has been delegated with emergency powers to take decision on urgent proposals, subject to ratification by the Executive Committee in its next meeting.

The Rajghat dam Project has been completed in June, 2005. Now O&M stage of the project has started. The Executive Committee desired that a model set up for the Joint River Board may be formulated on the lines of Tungabhadra Board. Accordingly a draft MOU was prepared and sent to Party States for their comments/views. The comments views are still awaited from the party States.

The Rajghat Dam with appurtenant structure has been constructed across River Betwa to provide Irrigation facilities to 1.38 lakh hectares in Uttar Pradesh and 1.21 lakh hectares in Madhya Pradesh with power generation of 45 MW through Rajghat Hydro Electric Project at the toe of dam on left flank. The cost as well as benefits of the project is to be shared equally by both the States. Construction work of Dam and Power House is almost completed.

The reservoir (FRL 371.00 m) was filled up to 370.35 m during the year2009-10. The three units of Power House have been tested and commissioned during 1999-2000. Power generation was 92 million units during 2009-10 (up to Feb 2010).

So far 83 meetings of the Executive Committee of BRB have taken place. The 83rd meeting of Executive Committee was held on 24.12.2009. The committee discussed/decided the financial, technical and administrative matters of the Board.

10.5 Inter-state Committees

Brief description of activities of some of the important inter-State committees is given below.

10.5.1 Ghaggar Standing Committee

The Ghaggar Standing Committee was constituted in February, 1990 to examine and coordinate irrigation, flood control and drainage works in the Ghaggar basin and to lay down priority for their implementation and to accord clearance to individual schemes in the Ghaggar basin from the inter-State angle. The Members of the Committee are from the Ministry of Water Resources, Northern Railway, Central Water Commission and Irrigation Department of the States of Punjab, Haryana and Rajasthan.

22nd Meeting of Ghaggar Standing Committee was held on 10.08.2009 under the chairmanship of Member (RM). Chairman of the Committee emphasised the importance of the Master plan in a holistic manner so that optimal use of water can be derived from the basin. It was felt by the Members of the committee that Master plan may be accepted as a "Master Plan for Flood Control in Ghaggar Basin" and which was agreed to by the Chairman of the committee.

10.5.2 Yamuna Standing Committee

The Yamuna Standing Committee was constituted to safeguard the interest of Haryana, U.P. and Delhi against adverse effects of flood control works in any of these areas and to ensure that adequate water way is provided for any new structure built across the Yamuna river.

The Members of the Committee are from GFCC, Northern Railway, Central Water Commission, Ministry of Surface Transport and Irrigation Departments of the States of Haryana, U.P. and NCT of Delhi. 76th meeting of Yamuna Standing Committee was held on 07.08.2009 under the chairmanship of Member (RM), CWC.

10.5.3 Sahibi Standing Committee

After the unprecedented flood in the Sahibi basin during 1977, affecting large areas in the States of Rajasthan and Haryana and NCT of Delhi, the CWC prepared an integrated Master Plan of Sahibi Nadi-Najafgarh Nallah drainage basin. Sahibi Standing Committee with Member (RM), CWC as Chairman and Director (FM-I) as Member-Secretary along with representatives of Haryana, Rajasthan, Delhi as members was constituted by Department of Irrigation, under erstwhile Ministry of Agriculture and Irrigation, in 1978 to oversee the implementation of all the elements of the Master Plan of Sahibi Nadi-Najafgarh Nallah and to ensure the regulation of flows at control points for the best interest of all concerned States. There have been no major floods in the basin since 1978.

10.5.4 Committee on Special Remedial Works for Flood Protection Embankments of Sutlej and Ravi.

A committee on special remedial works for the flood protection embankment of the rivers Sutlej and Ravi was constituted in December, 1989 by the Ministry of Water Resources under the chairmanship of Chief Engineer (FM), CWC to technically examine proposals for counter protective works on the river Sutlej and Ravi submitted by the Govt. of Punjab after verification of developments in the field and to monitor the utilisation by Punjab of the Central Assistance for such works by periodic inspection of ongoing and completed works. The Members of the Committee are from Ministry of Water Resources, CWPRS, Pune, Central Water Commission, Ministry of Defence and Irrigation Department of the States of Punjab. The committee was

enlarged during 1996 by coopting members from BSF, CPWD and Ministry of Home Affairs at the request of Ministry of Home Affairs.

The 30th meeting of Committee was held at Amritsar from 10-11-09 to 14-11-09. The report has been finalised and circulated among the members.

10.6 Damodar Valley Reservoir Regulation Committee

The Damodar Valley Reservoir Regulation Committee under the Chairmanship of Member (RM), CWC provides necessary directions for operation of the Damodar Valley Reservoirs. Instructions for day to day operations of the reservoirs are provided by the Superintending Engineer, CWC stationed at Maithon.

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CHAPTER XI

ENVIRONMENTAL MANAGEMENT
OF WATER RESOURCES PROJECTS

11.1 Environmental Management

11.1.1 National Environmental Monitoring Committee for River Valley Projects (NEMCRVP)

National Environmental Monitoring Committee for River Valley Projects (NEMCRVP) was constituted in February, 1990 to monitor the implementation of environmental safeguards of irrigation, multipurpose and flood control projects. The Committee is entrusted with the work to review the mechanism established by the State Governments and project authorities to monitor the implementation of environmental safeguards and to suggest additional compensatory measures in respect of selected 85 projects located in 21 states (fig.11.1). Out of these 85 selected projects, 17 are under close monitoring (Fig.11.2).

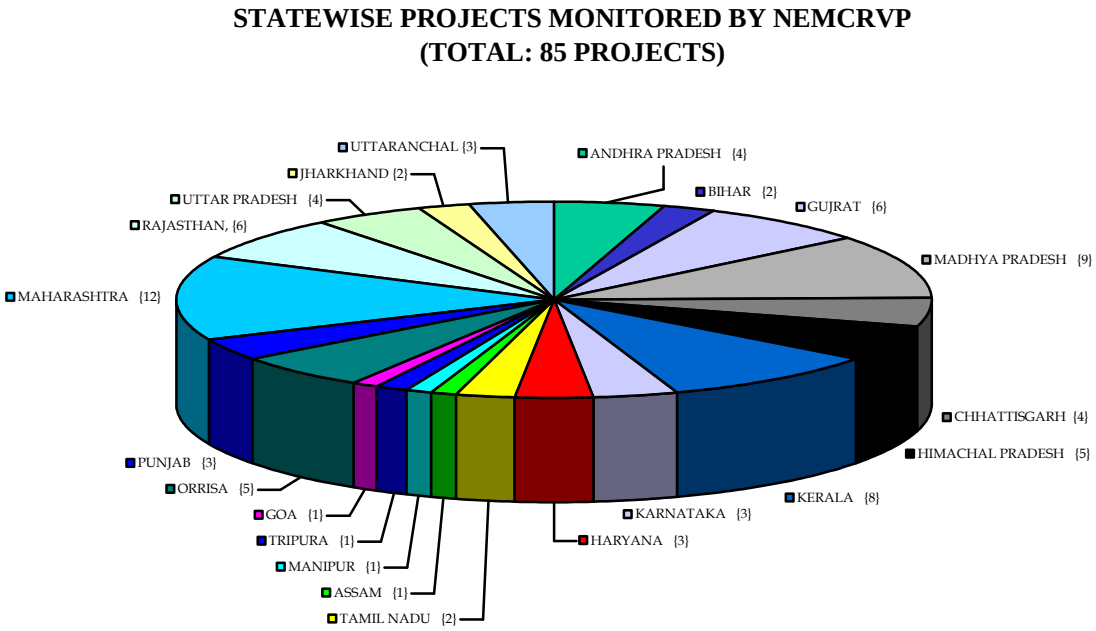

Figure 11.1 - State Wise Projects monitored by NEMCRVP

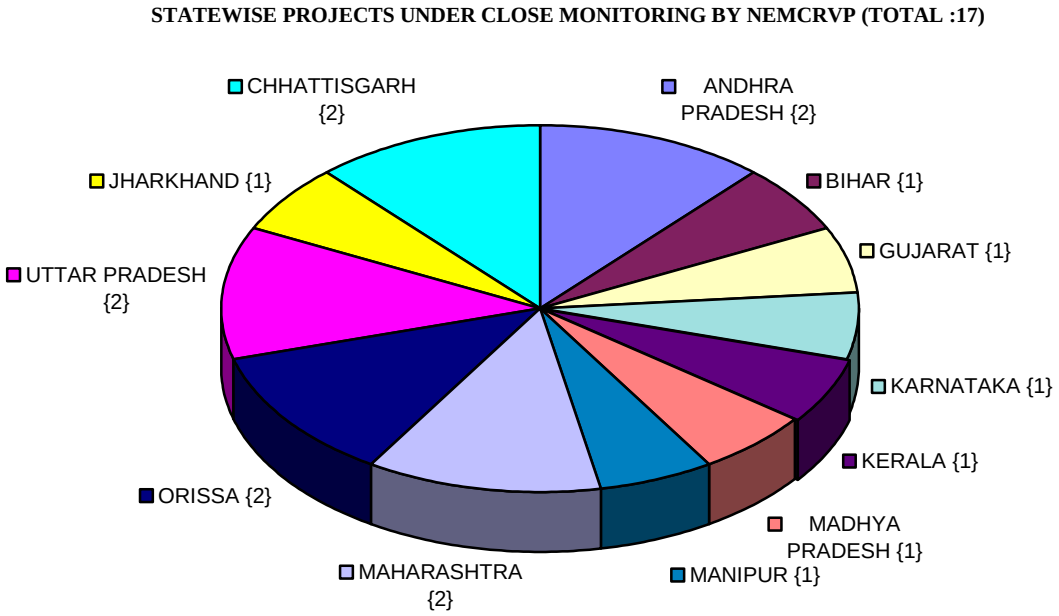

Figure 11.2 - State Wise Projects under close monitoring by NEMCRVP

11.1.2 Constitution of NEMCRVP

Member (WP&P), CWC is the Chairman of NEMCRVP. The representatives from Ministries of Agriculture & Cooperation, Environment & Forests, Water Resources, Tribal Affairs, Planning Commission and CWC are members of the committee. The Chief Engineer (EMO), CWC is the Vice-Chairman and Director (EM), CWC is the Member-Secretary. Environment Management Directorate, CWC functions as Secretariat of NEMCRVP.

11.1.3 Functions of the Committee

The NEMCRVP visits the projects and holds meetings with the State Governments and Project Authorities for implementation of environmental safeguards as stipulated in environmental and forest clearances. The Committee has visited 57 projects which include all the closely monitored projects during last 19 years. It has held 61 meetings since 1990.

It encourages constitution of State Environmental Monitoring Committees (SEMCs) and Project Environmental Management Committees (PEMCs) and monitors the activities of these committees. As a result of the above, 20 states have already constituted SEMCs under the Chairmanship of Secretary, State Water Resources/Irrigation Department. PEMCs have been constituted in 68 out 85 projects selected by NEMCRVP. In addition to this, 48 additional PEMCs have also been constituted for other projects. PEMCs play a vital role in the implementation of environmental safeguards stipulated for the Project. Chief Engineer (EMO)/Director (EM), CWC is the Member of the SEMCs whereas Regional Chief Engineer, CWC is the Special Invitee to these Committees. Director (Appraisal & Monitoring) of Regional office represents CWC in PEMCs.

The progress achieved by the NEMCRVP is being brought out annually in Annual Reports giving details of visits and meetings. The directions given to concerned State and project authorities for implementing the environmental safeguards are highlighted in the Annual Report. Status Reports on environmental and related aspects is also presented in the Annual Report.

Various publications have been published for creating balanced scientific awareness in public about river valley projects & environmental concerns in India. It is working to establish the BIS standards with respect to the Environmental Management of the river valley Projects.

11.1.4 Activities of NEMCRVP during 2009-10

National Environmental Monitoring Committee of River Valley Projects held its 61st meeting under the Chairmanship of the Member (WP&P), CWC at New Delhi on 29.4.2009. The Committee examined the draft revised Guidelines for Environmental Monitoring of River Valley Projects and found the same to be generally in order.

New hydel and Irrigation Projects cleared recently by MOEF will be taken up under the purview of Environmental Monitoring of Central Water Commission and reports on compliance of environmental safeguards shall be prepared.

11.2 Environmental Impact Assessment

11.2.1 Environmental Impact Assessment (EIA)

Studies on environmental (including social) impacts of completed water resources projects have been taken up by EIA Directorate through consultants, under an R&D Scheme of the Ministry of Water Resources. Studies on two projects viz. Jayakwadi Stage-I (Maharashtra) and Barna (M.P) have been completed and final reports submitted and for third one i.e. Salandi (Orissa) study is under final stage of completion for which draft final report has been submitted which is under examination. Four more studies of a similar nature in respect of Mahanadi Delta Project (Orissa), Mahi Bajaj Sagar Projeact (Rajasthan), Singur Irrigation Project (A.P.) and Ram Ganga Dam (U.P.) have been taken up during 2008-09 in XI Plan for which agreement with consultant had already been signed and study is in progress and inception report/interim report-I has been submitted by the consultant.

11.2.2 Appraisal of EIA Reports

EIA/EMP reports of 107 projects referred to CWC by Ministry of Environment & Forests have been examined and comments forwarded to the Ministry. 12 Meetings of Expert Committee for River Valley & HE projects have been held and the Committee has recommended 39 projects for environmental/prior environmental clearance.

Feasibility reports/DPRs of 4 projects have been examined from an environmental angle for grant of “In Principle” consent by CWC.

11.3 Rehabilitation & Resettlement

The Rehabilitation and Resettlement (R&R) aspects of displaced/affected persons of Water Resources Projects are monitored by the Rehabilitation and Resettlement Directorate of Central Water Commission. In this regard data on R&R measures being taken by the Project Authorities is being compiled, Norms/Acts/Policies adopted by the State Govt. on R&R of displaced affected persons of major/medium Irrigation and Multipurpose Projects are collected and analyzed. In respect of 251 existing /ongoing major & medium reservoir and projects, data on rehabilitation measures have been collected and a data base has been generated updated.

14 nos. half yearly progress reports in respect of on going/completed water resources projects, received from the Project authorities have been examined and observations sent to concerned project authorities for clarifications.

The examination of Lendi Irrigation Project – a joint venture of Govt. of Andhra Pradesh and Govt. of Maharashtra, Upper Penganga Project (Maharashtra) and Baideshwar Meg Lift Irrigation

Project (Orissa) has been done from R&R angle and clearance accorded.

Draft status report on implementation of R&R Action Plan in respect of Major & Medium Irrigation Projects in India has been prepared and circulated for comments/suggestions if any.

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CHAPTER-XII

EXTERNAL ASSISTANCE

12.1 External Assistance for Development of Water Resources

External assistance flows to the country in various forms; as multilateral or bilateral aid, loan, grants and commodity aid from various foreign countries and other donor agencies. The main source of external assistance in irrigation sector has been the International Bank of Reconstruction and Development (IBRD) commonly known as the World Bank and its soft lending affiliate, the International Development Association (IDA). In addition to the World Bank, other funding agencies such as Japan Bank of International Cooperation (JBIC) and Asian Development Bank (ADB) have also been providing assistance for implementation of irrigation projects. The Ministry of Water Resources and its organizations assist the State Governments in tying up the external assistance from different funding agencies to fill up the resources gaps, both in terms of funds and technological update for rapid development of country's water resources.

12.1.1 Role of Central Water Commission

The important activities of Central Water Commission in externally aided projects are:-

(a) Providing assistance to the State Govts. for preparation of project proposal for getting external assistance for water sector projects.

(b) Techno-economic examination of the projects posed for external assistance and coordination with State and concerned departments/ministries such as CGWB, MoEF, etc.

(c) Monitoring of physical and financial progress of externally aided projects and fixing of arbitrators for resolving disputes in the execution of projects.

12.1.2 Techno- economic appraisal & clearance of projects

Three major projects proposed for World Bank funding and 15 medium projects for JBIC assistance and one major project for Asian Development Bank assistance were under appraisal in CWC during 2009-10. Details of the project are given in table 12.1, 12.2 and 12.3.

Table 12.1

Major projects proposed for World Bank Assistance

Sl No	Name of project	Estimated cost (₹ crore)
1.	Andhra Pradesh Water Sector Improvement Project	4444.41
2.	Master Plan for Drainage Development in Coastal Belt of Orissa	856.43
3.	Mahanadi Basin Development Plan Orissa	3493.10

Table 12.2

Project proposed for JBIC Assistance

AP Irrigation and Livelihood Improvement Project					
	(Sub –Projects)		River/Basin	District	Estimated Cost
1	Wyra	Medium	Wyra / Krishna	Khammam	46.00
2	Taliperu	Medium	Taliperu / Godavari	Khammam	13.20
3	Sathnala	Medium	Sathnala /Godavari	Adilabad	48.39
4.	Swarna	Medium	Swarna / Godavari	Adilabad	14.50
5.	Lankasagar	Medium	Kattaleru/ Krishna	Khammam	12.00
6	Malluruvagu	Medium	Malluruvagu / Godavari	Warangal	12.00
7	Dindi	Medium	Dindi / Krishna	Nalgonda,	15.00
8.	Gajulladinne	Medium	Hundri / Krishna	Kurnool	55.00
9.	Pakhal lake	Medium	Muneru / Krishna	Warangal	45.60
10	Lower Sagileru	Medium	Sagileru (Pennar)	Kadapa	19.00
11	Swarnamukhi Anicut	Medium	Swarna mukhi	Chittoor	27.55
12.	Gandipalem	Medium	Pillaperu	Nellore	29.30
13.	Paleru Bitragunda anicut	Medium	Paleru	Prakasam	19.00
14.	Cumbum tank	Medium	Gundlakamma	Prakasam	16.00
15.	Rallapadu project	Medium	Manneru	Prakasam	34.60

Table 12.3

Major projects proposed for Asian Development Bank Assistance

Sl No	**Name of project**	**Estimated cost (₹ crore)**
1.	Orrisa Integrated Irrigation Agriculture and Water Management Investment programme	829.00

12.2 World Bank Assistance

The World Bank continues to be the primary source of external assistance in the water resources sector. The World Bank assistance is in the form of credit or loan. The World Bank financing policies for irrigation projects change from time to time. Initially it financed individual irrigation projects and then changed to financing composite projects in which a group of Major, Medium and Minor irrigation projects were financed under a single credit/loan agreement. It then started financing Water Resources Consolidation Projects in which irrigation sector of the whole State was involved under one credit/loan agreement. Now the policy of World Bank has shifted to finance Water Sector Restructuring Projects in which the emphasis is on irrigation sector reforms of the whole State.

12.2.1 Water Sector Restructuring Projects

Water Sector Restructuring Project is the latest concept in water resources development and management and are the latest generation irrigation projects being financed by World Bank. Water Sector restructuring projects are planned with the objective to take care of water sector reform, proper implementation of state water policy, creation of apex water institutions and strengthening of multi sector water resources and environment capacity. At present four such projects are being taken up with the assistance of the World Bank in the state of Rajasthan, Madhya Pradesh, Uttar Pradesh and Maharashtra.

The main objectives of WSRP are:-

1. To set up an enabling institutional and policy frame work for water sector reform in the state for integrated water resources management.
2. To strengthen the capacity for strategic planning and sustainable development and management of the surface and ground water resources.
3. To initiate irrigation and drainage sub-sector reforms in the state to increase the productivity of irrigated agriculture through improved surface irrigation system performance and strengthened agriculture support services involving greater participation of users and the private sector in service delivery.

12.2.2 Closed Credit/Loan Agreements

Out of 41 World Bank aided projects, 38 projects have been closed and the assistance utilised is as shown in Table 12.4

Table 12.4
Details of the Closed Agreements

Sl. No.	State	No. of Projects	Assistance in Million US Dollar	
			As per SAR	Utilised
1.	Andhra Pradesh	6	995.30	802.62
2.	Bihar	2	142.00	158.61
3.	Gujarat	7	921.50	805.82
4.	Haryana	3	519.00	505.98
5.	Karnataka	2	451.00	291.96
6.	Kerala	1	80.00	79.08
7.	Madhya Pradesh	2	360.00	318.18
8.	Maharashtra	4	453.00	480.75
9.	Orissa	5	544.90	457.55
10.	Punjab	2	294.00	290.06
11.	Tamil Nadu	3	340.90	268.36
12.	Uttar Pradesh	1	125.00	126.76
	Total	**38**	**6051.6**	**5217.33**

12.2.3 On-going Credits / Loans Agreements

There are four projects under World Bank funding. The assistance utilized is as given in Table 12.5:-

Table 12.5

External Assistance to Projects (World Bank)

Sl. No	Name of Project	Credit No/Loan No.	Agency	Time Slice		Est. Cost (₹ Million)		Assistance (US $ Million)	
				Starting Month	Closing Month	Total (As per SAR)	Latest	Total	Utilized ending 12/09
1	2	3	4	5	6	7	8	9	10
1.	**Maharashtra** Water Sector Improvement Project*	Ln4796-IN	IBRD	09-2005	3-2012	18595.58	18595.58	325.00	120.39
2.	**Rajasthan** Water Sector Restructuring Project	Cr.3603-IN	IDA	03-2002	03-2008	8305.07	8305.07	140.00	105.35
3.	**Uttar Pradesh** Water Sector Restructuring Project	Cr.3602-IN	IDA	03-2002	10-2008	8351.00	8351.00	149.20	85.93
4.	**Madhya Pradesh** Water Sector Restructuring Project	Ln.4750-IN	IBRD	01-2005	03-2011	20402.23	20402.23	394.02	109.02
	Total								**420.69**

* Project not cleared by CWC/TAC as DPR of the project is still awaited.

12.3 Japan Bank of International Cooperation Assistance

In water resources sector JBIC provides financial assistance to major, medium and minor Irrigation Projects in the form of loans with the objective of increasing production of agriculture by mainly funding construction of civil works in the irrigation system. The main components of these projects are as follows:-

- Construction of civil works
- Training
- Consulting Services
- Agriculture Intensification Programme
- On-farm development

12.3.1 On-going Agreements

There are three ongoing projects under JBIC funding. The assistance utilized is given in Table 12.6

Table 12.6

External Assistance to Project (JBIC)

SL No	Name of Project	Loan Agreement No.	Loan period		Estimated cost	Total Assistance (M Yen)	Assistance utilized ending 12/08 (M yen)	Remarks
			Starting date	Closing date	As per agreement (₹ Million)			
1	Rengali Irrigation Project Left Bank Canal-II Phase-I, Orissa	ID-P-135 & ID-P154	6/04	6/2011	6580	7760	6844.23	Closed
						6342	4041.50	On-going
2	K..C.Canal Modernisation Project, Andhra Pradesh	ID-P-113 & ID-P155	3/04	3/09	11070	16049	15728.65	Closed
						4773	2811.78	On-going
3	AP Irrigation and Livelihood Improvement Project	IDP 181	3/07	07/13	11377	23974	38.00	On-going
	Total					**58898**	**29002.88**	

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CHAPTER-XIII

INTERNATIONAL COOPERATION WITH NEIGHBOURING COUNTRIES

13.1 Introduction

The three major river systems of India namely Ganga, Brahmaputra and Indus cross international borders. The Ministry of Water Resources is responsible for strengthening international cooperation on matters relating to these rivers by way of negotiations with neighbouring countries in regard to river waters, water resources development projects and operation of international treaties relating to water.

13.2 Cooperation between India and Nepal

Most of the rivers, which cause floods in the States of UP and Bihar originate from Nepal. These rivers are Ghaghra, Sarda, Rapti, Gandak, Burhi Gandak, Bagmati, Kamla, Kosi and Mahananda. In order to make flood forecasting and advance warning in the flood plains of the above rivers, a scheme namely, "Flood Forecasting and Warning system on rivers common to India and Nepal" which includes 42 meteorological / hydrometric sites in Nepal and 18 hydrological sites in India has been in operation since 1989. The data collected is helpful for formulating the flood forecasts and issue of warnings in the lower catchment. The scheme is being reviewed regularly from time to time.

With a view to discussing important issues pertaining to cooperation in the field of Water Resources, including implementation of existing agreements and understanding, a Nepal – India Joint Committee on Water Resources (JCWR) headed by Water Resource Secretaries of both countries has been functioning with the mandate to act as an Umbrella Committee for all committees and groups. During the first meeting of Nepal-India committee on water resources held on October 1-3rd 2000, a committee on flood forecasting (CFF) has been set up to review the existing flood forecasting system and to prepare a comprehensive flood forecasting master plan.

In order to prevent spilling of flood waters from Lalbekeya, Bagmati, Khando and Kamla rivers from Nepal side into Bihar, India and Nepal have agreed to extend the embankments along these rivers. Financing of works in Nepal is done through MEA and on the Indian side, through MOWR. In this connection, a Standing Committee on Embankment Construction (SCEC) has been constituted which is responsible for planning, design and construction of these embankments

A Treaty on Integrated Development of Mahakali (Sharda) River including Sharda Barrage, Tanakpur Barrage and Pancheshwar Multipurpose Project was signed between Government of India and Government of Nepal in February 1996, which came into force in June, 1997 (Mahakali Treaty). The Treaty is valid for a period of 75 years.

Pancheshwar Multipurpose Project

Pancheshwar Multipurpose Project is the Central piece of Mahakali Treaty. Required field investigations for the Pancheshwar Multipurpose Project having an installed capacity of 5600 MW at Pancheshwar with irrigation and incidental flood control benefits and a re-regulating structure to primarily meet irrigation requirements downstream in Uttar Pradesh, have been completed. The Detailed Project Report (DPR) is to be finalized after mutually resolving the pending issues.

The matter was reviewed in the 3rd meeting of JCWR and current status of discussions on the issues related to location of re-regulating dam, unit size and installed capacity of power plant, assessment of project benefits in terms of irrigation and power to India and Nepal and sharing of the project costs was discussed. It was also decided to set up Pancheshwar Develoment Authority (PDA) at the earliest in accordance with Article 10 of Mahakali Treaty.

During the 5th meeting of JCWR held on 20-22 November, 2009 at Pokhara, Nepal, the Committee finalized the TOR of Pancheshwar Development Authority (PDA) and discussed several issues pertaining to PDA. The Indian side again reiterated its request to the Nepalese side to provide sufficient security arrangements at all sites, so that the investigations may be resumed immediately.

13.2 Cooperation between India and China

Provision of Hydrological Information of river Yaluzangbo/ Brahmaputrra by China to India -In 2002, the Government of India had entered into an MOU with China for sharing of hydrological information on Yaluzangbu/ Brahmaputra river. In accordance with the provisions contained in the MOU, the Chinese side is providing hydrological information (Water level, discharge and rainfall) in respect of three stations, namely Nugesha, Yangcun and Nuxia located on river Yaluzangbu/Brahmaputra from 1st June to 15th, October every year, which is utilized in the formulation of flood forecasts by the Central Water Commission. On expiry of the above MOU in 2007, the revised MOU was signed on 5-6-2008.

Provision of Hydrological Information of river Langquin Zangbo/ Sutlej by China to India – An MOU was signed during the visit of the Chinese Premier to India in April, 2005 for supply of hydrological information by China to India in respect of Langquin Zangbo/ Sutlej river in flood season. Accordingly, the Chinese side provided hydrological information to India beginning from monsoon 2006. The Implementation Plan in this regard was signed was signed in April 2008.

Joint Expert Level Mechanism (JELM) – In accordance with India-China Joint Declaration of November, 2006, both sides have set up an Expert Level Mechanism to discuss interaction and cooperation on the provision of flood season hydrological data, emergency management and other issues regarding trans-border rivers. The Indian side of Joint Expert Level Mechanism (JELM) is headed by Commissioner (B&B), MOWR and Chief Engineer (FM), CWC is member of JELM. The JELM has so far met three times.

13.3 Cooperation between India and Bangladesh

Indo-Bangladesh Joint Rivers Commission (JRC) - An Indo-Bangladesh Joint Rivers Commission (JRC) is functioning since 1972 with a view to maintain liaison in order *to* ensure the most effective joint effort in maximizing the benefits from common river systems which is headed by Water Resource Ministers of both the countries.

So far, 37 meetings of JRC have been held and its last meeting was held on March 17-20, 2010 at New Delhi.During 37th JRC meeting, the bilateral issues related to agreement for sharing of the Teesta waters, sharing of waters of common rivers, drinking water supply / minor lift irrigation schemes, long term sharing of waters of Feni River, implementation of 1996 Treaty, river bank protection works / construction of embankments along common / border rivers, flood management in south-west Bangladesh including dredging of river Ichamati, cooperation in flood forecasting and warning, Tipaimukh Dam Project and India's proposed River-Linking Project were discussed. During the meeting, the Bangladesh side appreciated the role of India in transmitting flood related data from number of stations in India which provided flood forecasts towards minimizing loss of lives and properties in Bangladesh.

The flood data of on request of Bangladesh side - the Indian Side has agreed to provide flood data of Sahibganj side on continuous basis during flood season on Ganga/Ganges to Bangladesh to enable Bangladesh side to enhance warning and forecast time.

Treaty on Sharing of Ganga / Ganges Water at Farakka - A Treaty was signed by the Prime Ministers of India and Bangladesh on 12th December 1996 for the sharing of Ganga/Ganges waters for a period of thirty years to be renewable by mutual consent. A Joint Committee has been set up for implementing, joint inspection and monitoring of the sharing arrangements at Farakka in India and at Hardinge Bridge in Bangladesh for the dry season (Jan to May) every year.

Cooperation in Flood Forecasting – Under bilateral arrangements, India provides the flood data of Farakka for Ganga and flood data of Pandu, Goalpara and Dhubri for Brhamaputra and Silchar for Barak during monsoon period to Bangladesh for use by their flood forecasting and warning arrangements besides data of river Teesta, Manu, Gumti, Jaldhaka and Torsa etc. The transmission of flood forecasting information from India during the monsoon which is being supplied free of cost, has ebanled the civil amd military authorities in Banglades to take precautionary measures and shift the population affected by flood to safer places. In addition to above, India has agreed to provide flood data of above sites to Bangladesh on continuous basis for use of data in development of flood forecasting models by Bangladesh.

13.4 Cooperation between India and Bhutan

A scheme titled "Comprehensive Scheme for Establishment of Hydro-meteorological and Flood Forecasting Network on rivers common to India and Bhutan" is in operation since 1979. The network consists of 33 hydro-meteorological / meteorological stations located in Bhutan maintained by Royal Government of Bhutan (RGoB) with funding from India. Central Water Commission utilizes the data received from these stations for formulating the flood forecast. A Joint Team of Experts (JTE) consisting of officials from the Government of India and Royal Government of Bhutan regularly reviews the progress and other requirements of the scheme.

The matter relating to problem of floods created by the rivers originating from Bhutan and coming to India was taken up with the Royal Government of Bhutan. A Joint Group of Experts (JGE) on Flood Management has been constituted between India and Bhutan to discuss and assess the probable causes and effects of the recurring floods and erosion in the southern foothills of Bhutan and adjoining plains in India and recommend appropriate and mutually acceptable remedial measures to both Governments.

The India side of JGE is headed by Commissioner(B&B), MOWR. The JGE has so far met two times. The 2nd meeting of JGE was held at New Delhi on 26-27 Februray,2008 wherein the report of JTT was discussed and reconstitution of JTT has been agreed in principle besides discussions on the issues of construction of bullheads on river Manas in Assam and studies required for flood management in the bordering areas.

CWC is also providing technical assistance for development of hydro power potential in Bhutan. Bhutan Investigation Division, Phuentsholing is coordinating with RGoB and carrying out necessary field works in this respect. In the recent past, nine Mini Hydel Projects executed by CWC were handed over to RGoB. Field investigations for permanent remedial measures for Chukha dam and its associated structures were completed and its design/drawings are under progress. Apart from this, seismological data at various places in Bhutan under Sankosh Basin is also collected by BID, CWC as part of Sankosh Multipurpose Project.

13.5 Cooperation between India and Pakistan

- Under the Indus Waters Treaty 1960, India and Pakistan have created permanent posts of Commissioners for Indus Waters, one each in India and Pakistan. Each Commissioner is representative of his Government for all matters arising out of the Treaty and serves as the regular channel of communication on all matters relating to implementation of the Treaty. The two Commissioners together form the Permanent Indus Commission.

- In fulfillment of the requirements of Indus Water Treaty, the daily data of 280 hydrological sites on six basins, The Indus, The Jhelum, The Chenab, The Ravi, The Beas and The Sutlej of Indus system was sent to Pakistan every month.

- Flood warning communications were made by India to Pakistan for their benefit through priority Telegrams, Telephones and Radio Broadcasts during the period from 1st July to 10th October, 2009, for Indus system of rivers.

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CHAPTER-XIV

COMPUTERISATION AND MODERNISATION

14.1 Computerisation Activities in CWC

Software Management Directorate of CWC is operating the Plan Scheme "Infrastructure Development for Dir(SM)" costing ₹ 6.0 crore which is part of a larger EFC namely "Infrastructure Development Scheme in Ministry of Water Resources" costing Rs.115.0 crore.

In the course of operation of the plan scheme, SMD has procured hardware, software and networking items. It has also provided for maintenance of IT items at CWC Hq. by outsourcing. During the year 2009-10 an expenditure of ₹ 39.42 lakh was incurred till March, 2010.

14.2 Water Resources Data

14.2.1 Hydrological Data

Hydrological data for non-classified basins collected from the observation sites of CWC, are compiled in Hydrological Data Directorate of ISO for inclusion in the publication entitled "Integrated Hydrological Data Book". The publication consist the following information:

(i) Description of Different River Basins

(ii) Sedimentation Statistics

(iii) Water Quality Statistics

(iv) Land use Statistics

The publication for the year 2009 containing data upto 2006-07 has already been up-loaded on the web site of CWC and the preparation of the publication for the data upto the year 2007-08 is under progress.

14.2.2 Water and Related Statistics

Database containing information on water and related subject matters such as rainfall in different meteorological sub-division of the country, water resources potential in the river basins of India, basin-wise and State-wise storages in India, State-wise ultimate irrigation potential, basin-wise hydrological and sediment observation and Water Quality Stations of Central Water Commission and Flood Damage- Area Affected has been created in CWC. In addition to above, information/data indicated below has also been included in the database.

- Resources utilisation including Plan-wise/State-wise potential created, potential utilised, achievements of irrigation potential of major & medium irrigation projects (surface water)
- Production related Performance & Economic Efficiency
- State-wise and Plan-wise financial expenditure on major & medium irrigation as well as minor Irrigation etc.
- Social and environmental performance of major and medium irrigation projects covered under Tribal Sub – Plan area (All India- financial progress and physical benefits) has been compiled and being updated regularly.

14.2.3 The publication on 'Pricing of Water in Public System in India' was last brought out in 2004 containing the following information upto 1999-2000:

(i) Water Rates, Revenue and Operational Expenses.

(ii) Fixation of Water Rates / charges in States/UTs.

(iii) Assessment and Collection of Revenue.

(iv) Remission of Water Revenue.

(v) Financial Performance of Irrigation Projects in India – An overview.

(vi) Water Rates by Crops

(vii) Water Rates by States/UTs.

The water rates for domestic & industrial use and lift & flow irrigation as prevailing during 2008 across the country is being compiled for the publication "Water Rates in Public System in India".

14.2.4 The publication on "Financial Aspects of Irrigation Projects in India" is brought out with an intention to provide data on various financial parameters in particular having bearing on the operation and management of the system in a form usable by the researchers, analysts, programme administrators and managers. The publication contains States/UTs wise the following information:

(i) Financial Aspects of Major & Medium Irrigation Projects – Commercial, Non- Commercial and all

(ii) Financial Aspects of Minor Irrigation Schemes

(iii) Financial Aspects of Command Area Development Programmes.

The publication has been updated with the information for the year 2005-06 and placed on the website. The publication for the year 2006-07 is at final stage.

14.2.5 Documentation of Data

Hand Book on Water & Related Information, March, 2009 is uploaded on the Sangam intranet portal of CWC for official use.

Water and Related Statistics – 2008 is available on CWC website under the hyperlink "Water Resource Statistics"

14.3 Information Support to Management

Water Resources Sector at a Glance – 2010 is under finalization.

The publications are intended to cater the needs of water resources planners, managers, administrators, researchers and the public at large.

14.4 Data Bank

A new plan scheme "Development of Water Resources Information System" has been initiated in the XI Five-Year Plan. Under the scheme, it is intended to set up a data bank as mandated by the ISRWD Act, 1956 for maintaining data on each river basin including data regarding water resources, land, agriculture and related matters. The data bank at CWC head quarters will be connected to the source agencies in the States for online collection and exchange of information.

CHAPTER - XV

15

TRAINING

15.1 Training

In order to develop knowledge, technical and managerial skills of CWC personnel, Training Directorate arranges and co-ordinates training programmes/ seminars/ workshops in water related fields for in-service officers of CWC and other Central/State Govt. Departments and their Organisations. These programmes are held both within and outside the country, and officers of CWC are deputed to various National and International seminars, conferences, workshops etc. It also provides support to other professional organisations and societies and co-sponsors some of the National level seminars, conferences, workshops etc. Training Directorate also arranges Apprenticeship Training for fresh engineering graduates/ diploma holders/ vocational certificate holders in collaboration with Board of Apprenticeship Training, Kanpur. A few students of engineering degree courses are given practical training in CWC every year. The training programmes organised during the year are given in Annexure XV-1(a) & XV-1(b).

15.2 Induction Training/Orientation Programme

Induction training to Assistant Directors recruited through UPSC is also conducted by Training Directorate and National Water Academy at Pune. 23nd ITP was conducted at NWA, Pune from 9th of Sep'2009 to 26th of Nov' 2009, in which 17 officers participated.

15.3 National Water Academy

National Water Academy is imparting training to in-service engineers from Central and State Organizations in various aspects of water resources development planning and management and also developing institutional capabilities at the national level for imparting training in new emerging fields in water resources sector on continued basis.

The training and other related activities have increased manifold with the development of infrastructure like installation of additional computers, setting up of library with modern facilities, lodging and boarding facilities for trainee officers and faculties. NWA conducts long term as well as short-term training courses on regular basis and also holds national level seminars and workshops on the emerging technical areas in the field of water resources development and management. The Academy is also one of the nodal agency for conducting training programmes under World Bank aided Hydrology Project.

During the year 2009-10, in all 37 number of training programmes including Workshop/Seminar have been conducted. During the year 954 number of officers from various states/central Govt. organizations, PSUs were trained by NWA with a total number of manweeks accomplished to the tune of 1093.7.

Out of 37 training programmes conducted by NWA, following programmes/ Workshops were introduced for the first time.

- Training Programme for School Teachers (21st July 2009)
- Training Programme for NGOs and Media Personnel (28-30 July 2009)
- Brain Storming Programme on "Strategic Issues in Water Sector" (10-12 August 2009)
- River Basin Planning for Govt. of Rajasthan officials (21-25 Sept. 2009)

- Orientation Programme for WAPCOS officers (17-26 November 2009)
- Design Flood Estimation (8-12 Feb. 2010)
- Irrigation Sector Reforms (For officers of Govt. of Tamil Nadu)

In the year 2009-10, NWA took following initiatives

(i) Short term training programmes for media personnel.

(ii) Customized off-campus training programmes for state Governments.

(iii) Regular training programmes – off campus - at Guwahati for engineers from North-Eastern states in association with Brahmaputra Board and IIT, Guwahati. This was also the first programme in association with an IIT.

(iv) Conducting a web based survey to assess hydraulic information needs.

(v) Guiding/ Assisting Govt. of Maharashtra in "Purpose Driven Study" (PDS) under Hydrology Project-II on "Perspective Planning of Water utilization of "Nath Sagar Reservoir" using RIBASIM software.

(vi) Integrated simulated studies of Mahanadi-Gundar Link System for National Water Development Agency.

Reconstituted Advisory Board under the Chairmanship of Chairman, CWC consists of the Chairman, CWC, as the Chairman, Commissioner (PP), MoWR, Financial Adviser, MoWR, Director General, WALAMTARI, Govt. of A.P., Chief Engineer (HRM), CWC, New Delhi, Director, Central Water & Power Research Station, Pune, Head, Civil Engg. Department, IIT, Mumbai, Director, Indian Space Research Organisation, Bangalore, Representative of Planning Commission, Director WRDTC, Roorkee, Director, Gujarat Engg. Research Institute, Vice Chairman, Action for Agriculture Renewal in Maharashtra (AFARM) and Vice Chancellor, University of Pune. The Chief Engineer, NWA, Pune is Member Secretary. The board oversees overall functioning of NWA and advises on matters related to the training activities. 16th meeting of the Advisory Board was held on 5th February 2010.

Various training courses, workshops and seminars organized by NWA at Pune during 2009-10 are given at **Annexure -XV-I(C)**

Sr. No.	Training Programme	Dates	Duration (Weeks)	No. of participants	Man-weeks
1.	Preparation of Detailed Project Report (At Gandhinagar)	8th March 2010	1 Day	39	7.8
2.	Management Development Programme at Anand (Gujarat)	8-11 March 2010	4 Days	25	20
3.	Web Based Financial Management Reporting system	11-12 March 2010	2 Days	40	16
4.	Irrigation Sector Reforms (For officers of Govt. of Tamil Nadu)	15-19 March 2010	1 Week	25	25
5.	19th Training Programme on Application of RS-GIS in Water Resources Sector	16-26 March 2010	2 Weeks	28	56
	Total			**954**	**1093.7**

15.4 Other Training Programmes/ Conferences/Seminars, etc.

The consolidated details of CWC officers deputed on training, seminars, workshops, conferences etc, within the country and abroad during the year 2009 – 2010 are given below in Table 15.1.

Table 15.1 Officers deputed for training

Sl. No	Name of activities	No. of Participants
1	Sponsoring officers for training, attending seminars/ workshops, etc. in India organised by other organisations	104
2	Sponsoring officers for training, attending seminars/ workshops, etc. abroad	19

15.5 Other Activities

(i) CWC engages certain number of graduate/diploma/10+2 passed vocational trainees for a period of one year under Apprenticeship Act. 1961. During the year 2009-2010, 16 graduate engineers / Diploma holders/Vocational Certificate holders were imparted training.

(ii) As part of interaction with academic institutions, on the job practical training of 4 to 6 weeks, 61 engineering and secretarial practices students from various institutions were imparted practical training.

(iii) Lectures were organised on various subjects for the benefits of CWC officers under study circle.

Annexure XV-1(a)

Courses organized by Central Water Commission during the year 2009-10

S.No	Training Programme	Duration of the Course	Venue	No. of Participants
1.	Level 'B' Training Programme for Assistants with 8 yers approved services of the CSS	13 April to 15 May , 2009	New Delhi	1
2.	5th Level 'E' Training Programme for Deputy Secretaries/Under Secretaries with 5 years approved services of the CSS	4 May to 19 June, 2009	New Delhi	1
3.	Workshop on "Result on the Ground-AM&E Learning and Design"	8 June to 12 June, 2009	New Delhi	3
4.	Workshop on "Fixation of Pay" for the Officers dealing with pay fixation	22 June to 24 June, 2009	New Delhi	1
5.	Training Programme on "Urban Drainage Management-State of the Art 2009 (The climate change and urban flooding)	30 July to 1August, 2009	Bombay	1
6.	8 International Association of Hydrological Sciences (IAHS) Scientific assembly and 37th International Association of Hydrologists (IAH) Congress	6-12 September, 2009	Hyderabad	1

S.No	Training Programme	Duration of the Course	Venue	No. of Participants
7.	Workshop on the Future water security under climate change	14 September, 2009	New Delhi	3
8.	Training Course on "Seismic Aspects of Geotechnical Characterization	23-24 September, 2009	New Delhi	7
9.	Workshop on Investigation & Disciplinary Proceedings	23-25 september, 2009	Ghaziabad	1
10.	International workshop on climate change, Global retreat and Livelihood Assess Regionally Act Locally	12-14 October, 2009	Srinagar	1
11.	Participation in ISEG-Geotech ical Orientation Programme-2009	28-30 October, 2009	New Delhi	1
12.	Participation in conclave on Model contract Documents for Development of Hydropower Projects	1st October, 2009	New Delhi	1
13.	Training on "Soft Computing Technique on Hydrology and Water Resources"	2-6 November, 2009	Mumbai	1
14.	Seminar on "Geospatial Technologies for Utilities and Ingfrastructure"	20-21 November, 2009	New Delhi	1
15.	International Conference on climate change and sustainable management of natural resources	10-12 November, 2009	Gwalior	2
16.	Training Programme under India WRIS Project	9-13 November, 2009	Jodhpur	20
17.	Training Programme "Coastal Hydrology"	14-26 December, 2009	Vishakha Patnam	1
18.	Participation in a Conference "NSDI9" on G-Governance"	22-24 December, 2009	IMD-Pune	1
19.	Participation in the 5th Asian Regional Conference of ICID	9-11 December, 2009	Vigyan Bhawan, New Delhi	56
20.	National workshop on "Rock Mechanics-Tools and Tachniques"	15-17 January, 2010	Nagpur	3
21.	Training workshop on "Hydrological analysis in ungauged Catchment: Special Reference to Flood Estimation	18-22 January, 2010	Roorkee	1
22.	23rd Induction Training Programme for Newly recruited Assistant Director	4-20 January, 2010	New Delhi	17
23.	Training on "Effective Communication for Managerial Success"	2-4 February, 2010	I.I.M., Lucknow	3
24.	Participating in national level training on "Management Development Programme for Senior Officers of Water Resources Sector"	8-11 March, 2010	Gandhinagar	2

Annexure XV-1(b)

List of officers deputed abroad for various training/ seminar/ symposia/ conferences, etc. during 2009-2010

S.No.	Training Programme	Duration of the Course	Venue	Name of the Participant
1.	4th International Hydro-Power Convention on "Hydro-Power for progress of Nepal"	25-26 April, 2009	Kathmandu (Nepal)	Sh. A.K. Bajaj, Chairman, CWC
2.	Group Meeting of ISO/TC113 and Its Committee	18-22 May, 2009	Birmingham (U.K.)	Sh. A.K. Ganju, Member (WP&P), CWC
3.	Accompanied MoS, MoWR to Kathmandu for inspection of Kosi Afflox Bund	11-12 July, 2009	Kathmandu (Nepal)	Sh. A.K. Bajaj, Chairman, CWC
4	Visit to Stockholm in connection with World Water Week organized by Stockholm International Water Institute (SIWI)	16-22 August, 2009	Stockholm, Sweden	Sh. A.K. Bajaj, Chairman, CWC
5.	Participating in Expert Meeting on "Water Economics and Financing" organized by OECD	15-17 March, 2010	Paris	Sh.A.K.Bajaj, Chairman, CWC

Annexure- XV-1 (C)

Training cources organised by NWA, Pune during the year 2009-10

Sr. No.	Training Programme	Dates	Duration (Weeks)	No. of participants	Man-weeks
1.	Workshop on WISDOM Software	8-9 April 2009	2 Days	21	8.4
2.	MDP for Senior Directors / CEs	21-23 April 2009	3 Days	10	6
3.	SWDES and Its Validation	28th April to 8th May 09	2 Weeks	18	36
4.	Hydroinformatics and Soft Computing	4-8 May 09	1 Week	9	9
5.	FEM Course	11-22 May 09	2 Weeks	18	36
6.	DSS Planning for IWRDM	19-29 May 09	1.8 weeks	23	41.4
7.	Preparation of DPR	2-12 June 09	1.8 Weeks	11	19.8
8.	Workshop on FMR under HP-II	18-19 June 09	2 Days	35	14
9.	Watershed Management using Geoinformatics	22-26 June 09	1 Week	18	18
10.	Hydrological Design Aids	29th June - 3rd July 09	1 Week	16	16

Sr. No.	Training Programme	Dates	Duration (Weeks)	No. of participants	Man-weeks
11.	River Basin Planning (At Janipur)	13-17 July 09	1 Week	38	38
12.	Dam Safety & Instrumentation	13-17 July 09	1 Week	34	34
13.	Training Programme for School Teachers.	21st July 09	1 Day	18	3.6
14.	A Two day workshop under HP-II	22-23 July 2009	2 Days	27	10.8
15.	NGOS and Media Perfsonnel	28-30 July 09	3 Days	35	21
16.	Brain Storming Programme	10-12 August 09	3 Days	33	19.8
17.	23rd Induction Training Programme	9th Sept. – 26th Nov. 09	12 Weeks	15	180
18.	River Basin Planning at Rajasthanb	21-25 Sept. 09	1 Week	28	28
19.	MDP for Non Engineering Officers	9-13 Nov. 09	1 Week	17	17
20.	Orientation Programme for WAPCOS Officers.	17-26 Nov. 09	2 Weeks	37	74
21.	Preparation of Detailed Project Report.	1-6 Dec. 09	1.2 Weeks	24	28.8
22.	Hydrological Review of Existing Projects	7-11 Dec. 09	1 Week	37	37
23.	Environmental Aspects of WRP	14-18 Dec. 09	1 Week	26	26
24.	SWAT Modelling at New Delhi	18 Dec. 09	1 Day	60	12
25.	Web Based BIS	23-24 Dec. 09	2 Days	15	6
26.	Pension Rules	29th Dec. 09	1 Day	19	3.8
27.	Orientation programme for Newly Promoted AD-II of CWC	4-22 Jan 2010	3 Weeks	27	81
28.	Hindi Workshop	21 Jan. 2010	1 Day	11	5.5
29.	Application of Modelling Software	25th Jan. to 5th Feb. 2010	2 Weeks	35	70
30.	Workshop under Hydrology Project – II	28th Jan. 2010	1 Day	17	3
31.	Design Flood Estimation	8-12 Feb. 2010	1 Week	33	33
32.	Water Quality Management for Lake and Reservoir	22-26 Feb. 2010	1 Week	32	32

CHAPTER-XVI

16

VIGILANCE

16.1 Disciplinary Cases

The Vigilance/ Disciplinary cases and complaints received against officers & staffs of CWC were given proper and prompt attention. During the year 2009-10, 8 complaints were received and taken up for investigation. Final decision was taken in respect of 10 cases out of which in 6 cases, the officials found guilty were awarded major/minor penalties. The break-up of vigilance/disciplinary cases in respect of different category of officers and staff is as follows:-

S. No.	Particulars	Category of officers/staff			
		Gr. A	Gr. B	Gr. C	Gr. D
a)	No. of cases pending at the beginning of the year	15	12	13	04
b)	No. of cases added during the year	07	01	-	-
c)	No. of cases disposed of during the year	03	02	02	03
d)	No. of cases pending at the end of the year (a+b+c)	19	11	11	01

Vigilance Awareness Week was observed at CWC headquarters from 3rd to 6th November, 2009.

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CHAPTER-XVII

REPRESENTATION OF CENTRAL WATER COMMISSION IN VARIOUS COMMITTEES

17.1 Committees Represented by CWC Officers

Chairman and Members of CWC represent CWC in various Technical Committees of other Organisations either as the Chairman or as a Member. List of such Committees is given below:

Sl. No.	Name of Committees/Boards/Panel of Experts/Technical Groups, etc.	Representation of CWC	
		Officer	Position in the Committee
1	2	3	4
1.	Technical Advisory Committee to the Governing Council for Central Water and Power Research Station, Pune.	Chairman, CWC	Chairman
2.	Technical Advisory Committee of National Institute of Hydrology.	Chairman, CWC Member (D&R)	Chairman Member
3.	Technical Advisory Committee of National Water Development Agency	Chairman, CWC Member (WP&P) Member (D&R)	Chairman Member Member
4.	Group to speed up the process of arriving at consensus amongst the States on the proposals of inter-basin water transfer of NWDA	Chairman, CWC Member (WP&P)	Chairman Member
5.	National Committee on Dam Safety (NCDS)	Chairman, CWC Member (D&R)	Chairman Vice Chairman
6.	Water Resources Division Council (WRDC) of BIS	Chairman, CWC	Chairman
7.	Committee of Technical Experts for advising on the problems relating to O&M of Bhakra Nangal & Beas Project (Irrigation Wing)	Chairman, CWC	Chairman
8.	Working Group of National Water Board	Chairman, CWC Member (WP&P)	Chairman Vice-Chairman
9.	Indian National Committee on Hydrology (INCOH)	Chairman, CWC	Chairman
10.	Indian National Committee on Irrigation and Drainage (INCID)	Chairman, CWC Member (WP&P)	Chairman Member
11.	Selection Committee for i) JAIN-INCID Sookshma Sinchai Puraskar ii) JAIN-INCID Krishi Sinchai Vikas Puraskar	Chairman, CWC	Chairman
12.	Executive Committee of Betwa River Board	Chairman, CWC Member (WP&P)	Chairman Member
13.	Executive Committee of Bansagar Control Board	Chairman, CWC Member (WP&P)	Chairman Member
14.	Committee of International Commission on large dams, India	Chairman, CWC	Vice President
15.	Regulation Committee of Bansagar Reservoir	Chairman, CWC Member (WP&P)	Chairman Vice Chairman
16.	Standing Committee on Education & Training	Chairman, CWC	Chairman
17.	Committee for expediting Environment/Forest clearance of TAC cleared projects	Chairman, CWC	Chairman
18.	Advisory Board of NWA, Pune	Chairman, CWC Member (WP&P)	Chairman Member
19.	Office Council of CWC	Chairman, CWC Member (WP&P) Member (D&R) Member (RM)	Chairman Member Member Member

Sl. No.	Name of Committees/Boards/Panel of Experts/Technical Groups, etc.	Representation of CWC	
		Officer	Position in the Committee
1	2	3	4
20.	Joint Panel of ICAR-CWC with the problems relating to optimizing the return from the investment in Irrigation	Chairman, CWC Member (WP&P)	Chairman/ Associate Chairman Member
21.	Joint Group of Experts on Pancheshwar Multipurpose Project	Chairman, CWC Member (RM)	Team Leader Spl. Invitee
22.	Steering Committee for the preparation of Status Report on Water Resources Requirements and its availability for urban areas.	Chairman, CWC Member (RM)	Co-Chairman Member
23.	Governing Council for Central Soil & Materials Research Station, New Delhi.	Chairman, CWC	Member
24.	International Commission on Irrigation & Drainage (ICID)	Chairman, CWC	Vice-President
25.	ICID Working Group on comprehensive approaches to Flood Management (WG-CAFM)	Chairman, CWC	Member
26.	Departmental Council of MoWR	Chairman, CWC	Member
27.	Governing Council for the Central Water and Power Research Station, Pune	Chairman, CWC	Member
28.	National Institute of Hydrology Society	Chairman, CWC Member (D&R)	Member Member
29.	Governing Body of National Institute of Hydrology	Chairman, CWC	Member
30.	Monitoring Committee for the National River Conservation Plan (NRCP)	Chairman, CWC	Member
31.	Steering Committee of National River Conservation Plan (NRCP)	Chairman, CWC	Member
32.	Water Quality Assessment Authority (WQAA)	Chairman, CWC	Member
33.	High Powered Review Board of Brahmaputra Board	Chairman, CWC Member (RM)	Member Permanent Invitee
34.	Indo-Nepal Joint Committee on Water Resources	Chairman, CWC	Member
35.	Farakka Barrage Control Board	Chairman, CWC	Member
36.	Sardar Sarovar Construction Advisory Committee	Chairman, CWC Member (WP&P)	Member Invitee
37.	Society of National Water Development Agency	Chairman, CWC Member (D&R) Member (WP&P)	Member Member Member
38.	Governing body of National Water Development Agency	Chairman, CWC Member (D&R) Member (WP&P)	Member Member Member
39.	National Water Board (NWB) of the National Water Resources Council	Chairman, CWC Member (WP&P)	Member Member-Secretary
40.	High Powered Committee (HPC) on Maintenance of Minimum Flow of River Yamuna	Chairman, CWC	Member
41.	Cauvery Monitoring Committee (CMC)	Chairman, CWC	Member
42.	Standing Committee on Water Resources (SC-W) of Planning committee of National Natural Resources Management System (PC-NNRMS) of Planning Commission	Chairman, CWC	Member
43.	Advisory Committee for consideration of Techno Economic viability of Major & Medium Irrigation, Flood Control and Multipurpose project proposals	Chairman, CWC Member (WP&P) Member (RM) Member (D&R)	Member Special Invitee Special Invitee Special Invitee
44.	Ganga Flood Control Board	Chairman, CWC	Invitee
45.	Narmada Control Authority	Chairman, CWC	Invitee

Sl. No.	Name of Committees/Boards/Panel of Experts/Technical Groups, etc.	Representation of CWC	
		Officer	Position in the Committee
1	2	3	4
46.	Review Committee of Narmada Control Authority	Chairman, CWC	Invitee
47.	Upper Yamuna River Board	Member (WP&P)	Chairman
48.	National Environmental Monitoring Committee	Member (WP&P)	Chairman
49.	Joint Operation Committee for Rihand Dam	Member (WP&P)	Chairman
50.	Contracts Works Sub-Committee of Betwa River Board	Member (WP&P)	Chairman
51.	Sub-Committee for processing tenders and proposals for purchase of stores & equipments of Bansagar Control Board	Member (WP&P)	Chairman
52.	Sub-Committee of officers to consider the claims of M/s HSCL in Earth Dam- Lot of Rajghat Dam Project	Member (WP&P)	Chairman
53.	Committee for settlement of claims of M/s N.P.C.C. Ltd of Betwa River Board	Member (WP&P)	Chairman
54.	Sub-Committee to examine and process claim cases of contractors of Bansagar Control Board	Member (WP&P)	Chairman
55.	Monitoring committee for non-structural aspects of the proposed Tipaimukh Multipurpose Project	Member (WP&P)	Chairman
56.	Technical Advisory Committee on Socio-Economic, Agro-economic and Environmental Impact studies	Member (WP&P)	Chairman
57.	Screening Committee for selection of arbitrators on Arbitration Boards.	Member (WP&P)	Chairman
58.	Joint regulation committee of Chandil Dam and Galudih Barrage	Member (WP&P)	Chairman
59.	Joint Regulation Committee of Kharkai Dam	Member (WP&P)	Chairman
60.	Sub-Committee on Irrigation, Performance Assessment History, Education, Training, Research & Development	Member (WP&P)	Chairman
61.	Standing Project Appraisal Committee of Central Water Commission	Member (WP&P)	Chairman
62.	Water Resources Planning Management and evaluation Sectional Committee-WRD-06 (BIS)	Member (WP&P)	Chairman
63.	Recommendation of National Commission for Integrated Water Resources Development (NCIWRDP) Task Force for reporting guidelines for reporting figures of Irrigation Potential created and utilized in a uniform manner	Member (WP&P)	Chairman
64.	Task Force for Flood Management in the country (North Western Region)	Member (WP&P)	Chairman
65.	Committee for Cost Sharing of Hathnikund Barrage	Member (WP&P)	Chairman
66.	Sub-Group-1 for Research topics under invited reserved Category	Member (WP&P)	Chairman
67.	Sub-Group-II Rain Water Harvesting	Member (WP&P)	Chairman
68.	Committee for the Re-organised UP/Uttaranchal States	Member (WP&P)	Chairman
69.	Committee for Re-organised Bihar/ Jharkhand States	Member (WP&P)	Chairman
70.	Upper Yamuna Review committee	Member (WP&P)	Member-Secretary
71.	Working Group of INCID on capacity building	Member (WP&P)	Member
72.	Working Team on Socio-Economic Impacts & Policy Issues (ICID)	Member (WP&P)	Member
73.	Standing Committee for overall National Perspective Water Planning and Coordination in relation to diverse use of water	Member (WP&P)	Member

Sl. No.	Name of Committees/Boards/Panel of Experts/Technical Groups, etc.	Representation of CWC	
		Officer	Position in the Committee
1	2	3	4
74.	Standing Committee on Rural Development (SC-R) of Planning Committee of National Natural Resources Management System (PC-NNRMS) of Planning Commission	Member (WP&P)	Member
75.	Committee for Eastern River Waters of Indus System of River	Member (WP&P)	Member
76.	National Watershed Committee	Member (WP&P)	Member
77.	Central Loan Assistance under Accelerated Irrigation Benefits Programme	Member (WP&P)	Member
78.	Steering Committee of Indian National Committee on Hydrology (INCOH)	Member (WP&P)	Permanent Invitee
79.	High Powered Committee-Yamuna Action Plan of Ministry of Environment and Forests	Member (WP&P)	Invitee
80.	Technical Advisory Committee for Flood Control, Drainage and Anti-Sea Erosion Schemes (Goa)	Member (RM)	Chairman
81.	Subernarekha Embankment Committee (Orissa, West Bengal & Bihar)	Member (RM)	Chairman
82.	Working Group to advise WQAA on the minimum flow in the rivers	Member (RM)	Chairman
83.	Setting up of HISMG (Data and Data dissemination) for Implementation of the World Bank assisted Hydrology Project Phase –II.	Member (RM)	Member
84.	Setting up of HISMG (Technical) for Implementation of the World Bank assisted Hydrology Project Phase –II.	Member (RM)	Chairman
85.	Steering Committee for the Preparation of Status Report on Water Resources requirements and its availability for Urban Areas	Member (RM)	Chairman
86.	Coastal Protection and Development Advisory Committee (CPDAC)	Member (RM)	Chairman
87.	National Coastal Zone Management Authority (NCZMA)	Member (RM)	Chairman
88.	Ghaggar Standing Committee	Member (RM)	Chairman
89.	Yamuna Standing Committee	Member (RM)	Chairman
90.	Sahibi Standing Committee	Member (RM)	Chairman
91.	Apex Committee constituted under the Chairmanship of Hon`ble Chief Minister of Delhi to recommend, supervise and co-ordinate flood control measures in the NCT of Delhi	Member (RM)	Chairman
92.	Flood Control Board set up by the Irrigation and Flood Control Department of Govt. of NCT of Delhi	Member (RM)	Chairman
93.	Committee for Flood Control Works in Brahmaputra Valley	Member (RM)	Chairman
94.	Standing Committee to Brahmaputra Board	Member (RM)	Chairman
95.	West Bengal State Committee of Engineers	Member (RM)	Chairman
96.	Kosi High Level Committee	Member (RM)	Chairman
97.	Damodar Valley Reservoir Regulation Committee	Member (RM)	Chairman
98.	WRD 01 Sectional Committee of BIS for Fluid Flow Measurements	Member (RM)	Chairman
99.	WRD-22 River and Diversion Works Sectional Committee	Member (RM)	Chairman
100	Sub-Committee-III (Flood Management, Drainage and Environment Impacts) of INCID	Member (RM)	Chairman

Sl. No.	Name of Committees/Boards/Panel of Experts/Technical Groups, etc.	Representation of CWC	
		Officer	Position in the Committee
1	2	3	4
101.	Joint Group of Experts on Pancheshwar Multi-purpose project	Member (RM)	Special Invitee
102.	Joint Team of Experts (JTE) on Sapta Kosi Project	Member (RM)	Team Leader
103.	Committee for examination of technical issues regarding Baglihar Hydro-Electric projects on the Chenab Main in J&K	Member (RM)	Chairman
104.	TAC to Assam State Brahmaputra Valley Flood Control Board	Member (RM)	Chairman
105.	TAC to Cachar Flood Control Board (Assam)	Member (RM)	Chairman
106.	High Level Committee to Study the Regulation of Releases from various Hydro-Electric Projects Constructed Along Teesta	Member (RM)	Chairman
107.	Committee to study Erosion Problem of Bhutani Diara (West Bengal) and Majauli Island (Assam)	Member (RM)	Chairman
108.	Standing Committee to prepare guidelines and prioritization of schemes for Flood Control and anti Erosion works to be taken up by Brahmaputra Board.	Member (RM)	Chairman
109.	Standing Technical Advisory Committee (STAC) to the Governing Council for CSMRS, New Delhi.	Member (D&R)	Chairman
110.	Technical Committee for procurement of Instruments and working models for Instrumentation Centre (IDC)	Member (D&R)	Chairman
111.	Governing Body of National Institute of Rock Mechanics (NIRM)	Member (D&R)	Member
112.	General Body of National Institute of Rock Mechanics (NIRM)	Member (D&R)	Member
113.	Research Advisory Committee (RAC) of National Council for Cement and Building Materials.	Member (D&R)	Member
114.	Board of Consultants for Koyna Dam and its appurtenent works and Generating Equipment/Machinery including Koyna Power House	Member (D&R)	Member
115.	Indian National Committee on Hydraulic Research (INCH)	Member (D&R)	Chairman
116.	R&D Implementation and Monitoring Committee(RIMC)	Member (D&R)	Chairman
117.	National Committee on Seismic Design Parameters of River Valley Projects (NCSDP)	Member (D&R)	Chairman
118.	Standing Advisory Committee (SAC) for R&D Pgogramme	Member (D&R)	Chairman
119.	National Level Steering Committee (NLSC) for Dam Rehabilitation and Improvement Project (DRIP)	Member (D&R)	Member
120.	Technical Committee (TC) for Dam Rehabilitation and Improvement Project (DRIP)	Member(D&R)	Chairman
121.	Technical Advisory and Review Committee (TARC) for preparation of PMP Atlas	Member (D&R)	Chairman
122.	Steering Committee of INCOH	Member (D&R)	Chairman
123.	World Meteorological Organization	Member (D&R)	Principal Representative
124.	Board of Directors of Tehri Hydro Development Corporation	Member (D&R)	Part Time Director
125.	Group of Implementation of Hydro-Electric Projects in J&K State	Member (D&R)	Member

Sl. No.	Name of Committees/Boards/Panel of Experts/Technical Groups, etc.	Representation of CWC	
		Officer	Position in the Committee
1	2	3	4
126.	Section Committee of Bureau of Indian standards, WRD-15	Member (D&R)	Chairman
127.	Committee to access Quantum on Excess River Water Flowing Across International Boarder and suggest its diversion	Member (D&R)	Chairman
128.	Technical Advisory Committee of the Farakka Barrage Project.	Member (D&R)	Chairman
129.	Committee of CEA to accord of techno-economic appraisal of Power Schemes.	Member (D&R)	Permanent Special Invitee
130.	NHPC Performance Review Committee	Member (D&R)	Member
131.	Tender Committee of Farakka Barrage Project	Member (D&R)	Chairman
132.	Programme Advisory Committee (PAC) for Fly Ash Unit constituted by Department of Science and Technology	Member (D&R)	Member
133.	Committee to finalize the Action Plan on full utilization of Eastern River flowing across international Boarder	Member (D&R)	Chairman
134.	Committee for monitoring structural aspects of proposed Tipaimukh Multipurpose Projects	Member (D&R)	Chairman
135.	Committee for monitoring progress of Farakka Barrage Project	Member (D&R)	Chairman
136.	Committee for examination of technical/legal issues regarding Baglihar H. E. Project (J&K)	Member (D&R)	Chairman

7.2 Activities of Some Important Committees

17.2.1 Technical Advisory Committee (TAC) of NWDA

Chairman, CWC is the Chairman of the Technical Advisory Committee (TAC) of NWDA and Member (D&R), CWC and Member (WP&P), CWC are the members.

37th TAC meeting was held on 12th September, 2008 and the technical aspects of the following reports have been discussed:

(i) Finalisation of Water Balance Studies of NWDA in Consultation with Central Water Commission

(ii) Status of Studies pertaining to the Peninsular Rivers Development Component of NPP

(iii) Feasibility Report of 9 link System of Mahanadi-Godavari-Krishna-Pennar-Cauvery-Vaigai-Gundar Linkage

(iv) Status of Studies pertaining to Himalayan Rivers Development Component of NPP

(v) Pre-feasibility Report of Jogighopa-Tista-Farakka Link Project

(vi) Intra-State link proposals

17.2.2 Technical Advisory Committee of NIH

The research programmes and other technical activities of NIH are monitored and guided by Technical Advisory Committee of NIH headed by Chairman, CWC. Member (D&R) and Chief Engineer, Hydrological Studies Organization are its Members.

TAC gets feedback from 3 Working Groups on Surface Water, Ground Water and Hydrological Observation and Instrumentation. Chief Engineer, HSO and Chief Engineer, BPMO are the

Members of the Surface Water Group and Chief Engineer (P&D) is the Member of the Hydrological Observations and Instrumentation Group.

The 60th and 61st meeting of TAC was held on 28.04.2009 and 10.11.2009 at New Delhi respectivcely.

17.2.3 Technical Advisory Committee of CWPRS

The TAC was constituted mainly for the purpose of providing an overall perspective and technical guidance in the area of hydraulic research. The TAC is composed of 17 members drawn from various public Institutions and is headed by Chairman, CWC. Member (D&R), CWC is one of the Members of TAC. The 31st Meeting of TAC was held on 22nd July, 2009 at New Delhi under the Chairmanship of Chairman, CWC.

17.2.4 Technical Advisory Committee of Farakka Barrage Project

The TAC of Farakka Barrage Project is headed by Member (D&R), CWC, which generally meets once every year and takes decisions about various works to be executed for efficient and safe functioning of the project. Various problems, special studies and related design work were referred to D&R wing from time to time. Member (D&R) held discussions with the Farakka Barrage Project authorities from time to time and chaired the Technical Advisory Committee meeting of Farakka Barrage Project. The jurisdiction of Farakka Barrage Project has also been extended 40 km on up stream and 80 km on down stream of Farakka Barrage for carrying out the erosion protection works of River Ganga.

The 105th meeting of TAC of Farakka Barrage Project headed by Chairman, CWC was held on 28.01.2010 at Farakka (W.B).

17.2.5 Standing Technical Advisory Committee of CSMRS

The STAC was constituted mainly for providing an overall perspective and guidance in technical scrutiny of research schemes being done at CSMRS. The STAC is composed of 11 members drawn from various public sector institutions and is headed by Member (D&R), CWC. The last meeting (26th) of STAC was held on 28.07.2009 at New Delhi under the Chairmanship of Member (D&R), CWC.

17.2.6 Indian National Committee on Hydraulic Research (INCH)

The R&D activities in the Ministry of Water Resources (MoWR) are planned and monitored through Science and Technical Advisory Committee (STAC); Standing Advisory Committee (SAC) assisted by Indian National Committees on (a) Hydrology, (b) Irrigation and Drainage, (c) Hydraulic Research, (d) Geo-Technical Engineering, (e) Construction Material and Structures. One of the five Indian National Committees(INC) dealing with Hydraulic Research has been constituted by the Ministry of Water Resources to promote research work in the field of management of floods, hydraulic structure and river hydraulics, environment hydraulics, drainage and reclamation, coastal and estuarine hydraulics and hydraulic machinery, city water supply, ports and harbours. INCH is entrusted with the promotion and funding of research work in the above fields. Member (D&R), CWC is the Chairman of this committee.

INCH includes eminent experts in the field of hydraulics including representatives from various Central and State Research Institutes. The Secretariat of INCH, earlier located at CWC, New Delhi has now been shifted to CWPRS, Pune with effect from September, 2008. During the year 2008-09, 20 research schemes were under implementation, out of which 2 have been completed.

17.2.7 Indian National Committee on Hydrology (INCOH)

The Indian National Committee on Hydrology (INCOH) was constituted by the Ministry of Water Resources in the year 1982. It is an apex body with the responsibility of coordinating the various activities concerning hydrology in the country. The Chairman, Central Water Commission is the Chairman of the Committee with the members drawn from Central and State Governments as well as experts from academic and research organizations besides a few members drawn from non-Governmental professional associates. The committee gets a feed back from States and coordinates activities at State level through State co-ordinators.

INCOH plays an active role for implementation of UNESCO sponsored International Hydrological Programme (IHP). During the year intensive discussions were held to develop a strategy for an affective participation by India in IHP VII (2008-13)

The 35th meeting was held on 28.08.2009 at Sewa Bhawan, New Delhi. The 36th meeting was held on 11.02.2010 at IIT Chennai to review the progress on ongoing R&D Projects.

(a) Research Sub-Committee (Surface Water) - Two meeting of the Research Sub committee of INCOH are normally held in a year. Director, Hydrology (DSR) is the member of the sub-committee.

(b) Steering Sub-committee –Two meeting of the Steering Sub-committee are held in a year. Member (D&R) is the Chairman and CE (HSO) is the member of the sub committee.

17.2.8 Indian National Committee on Irrigation and Drainage (INCID)

Indian National Committee on Irrigation and Drainage (INCID) was constituted in 1990 by Ministry of Water Resources. The Chairman, CWC is the Chairman of INCID and Member (WP&P), CWC is one of its members. The Secretariat of INCID is located in CWC at New Delhi. INCID pursues the mission and activities of International Commission on Irrigation and Drainage (ICID) in India. It also looks into the R&D activities in irrigation and drainage sectors. To promote research schemes and for their expeditious processing and monitoring, following four Sub-Committees of INCID have been constituted:

(i) Irrigation Performance Assessment, History, Education, Training, Research and Development;

(ii) Crops, Water Use and Drought Management, Micro and Mechanized Irrigation

(iii) Flood Management, Drainage and Environmental Impacts, and

(iv) Construction, Rehabilitation and Modernisation, Operation, Maintenance and Management.

In addition, two Sub-Groups and one Working Group to deal with initial research have been constituted.

The activities of INCID during the year are given below:

- The Ministry of Water Resources through INCID is funding 30 research projects of various research institutes in the field of agriculture and irrigation during financial year 2009-10. Appraisal and monitoring of the schemes has been carried out.
- INCID had organised the 60th International Executive Council (IEC) meeting and 5th Asian Regional Conference (ARC) of International Commission on Irrigation and Drainage (ICID) from 6th to 11th December 2009 at New Delhi. In this Conference around 800 delegates, including 190 foreigners, from 41 countries participated.

The theme of the conference was **"Improvement in Efficiency of Irrigation Projects through Technology Up gradation and Better Operation and Maintenance"**

The various sub-themes for the Conference were as follows:

I Modernization of Public/State Operated Irrigation System and Services

II Public-Private Partnership in Irrigation Development and Management

III Integrated Approach in Agricultural Drainage

IV Capacity Development for Modern Irrigation Management

V Impact of Climate Change on Water Resources Availability and Crop Productivity

VI Legal Aspects in Sharing of Water Resources

During the conference the following activities took place:

i) Meetings of various Work - Groups of IEC on different subjects were held from 6th to 9th December 2009 and the main IEC meeting, was held on 10th December 2009. Sh. A. K. Bajaj, Chairman CWC, has been elected as Vice-President of ICID for a term of three years.

ii) 5th Asian Regional Conference was held from 9th to 11th December 2009 where presentations of papers were made on the sub - themes. Hon'ble Prime Minister of India, Dr. Manmohan Singh, inaugurated the Conference on 10th December 2009.

iii) During the conference full day workshops on **Micro – irrigation and Drainage** and **Groundwater** were held.

iv) Seven special sessions on various themes were held.

v) A special technical publication on **"Irrigation Development in India"** was brought out and was released by Hon'ble Minister of State for Water Resources after the Inaugural Session on 10th December 2009.

vi) An exhibition was organized during the event in which various Government agencies & private agencies participated. The exhibition was inaugurated by Hon'ble Minister for Water Resources on 9th December 2009.

vii) A **'Special Postal Cover'** was released by Hon'ble Minister of State for Communication and IT during Valedictory Session on 11th December 2009. Hon'ble Finance Minister was the Chief Guest of the Valedictory Session on 11th December 2009.

For organizing this event, an Advisory Committee under the Chairmanship of Secretary, MoWR, an Organizing Committee under the Chairmanship of Chairman, CWC/INCID and a Scientific Committee under the Chairmanship of Member (D&R), CWC were constituted.

The 26th Meeting of newly constituted INCID was held under the Chairmanship of Chairman INCID/CWC on 10/03/2010 at CWC, New Delhi.

17.2.9 World Water Council

The World Water Council (WWC) is an International Organisation, which makes and approves the Policy on water. The CWC is a Member of this organisation. A centre of WWC has been set up in New Delhi to promote the activities of WWC in India. Global Water Partnership (GWP) is an International Organisation, which is semi-official in nature and discusses the policy papers on water at global level and then puts it to WWC for further consideration. Indian

National Committee on Irrigation and Drainage (INCID) is a Member of GWP from India. There is one regional water partnership for South Asia Region with a Technical Advisory Committee for South Asia Region (SASTAC). At country level, a Non-Governmental Organisation has been formed which is named as India Water Partnership (IWP). CWC is represented in the Steering Committee. The Chairman, CWC is one of the Members of this Steering Committee. Irrigation Planning (South) Directorate functions as a nodal directorate for all the works related to World Water Council.

One of the important activities of the New Delhi Centre of World Water Council is organisation of brainstorming sessions. 61st brainstorming session of the New Delhi Centre of WWC held on 12th March 2009 under the chairmanship of Mr. M. Gopalkrishnan.

17.2.10 International Commission on Irrigation and Drainage

International Commission on Irrigation and Drainage (ICID) is a non-governmental organisation with representation from more than 80 countries, with headquarters at New Delhi. India is one of the founding Members of the ICID. The mission of the ICID is to stimulate and promote the development of arts, science, techniques of engineering, agriculture, economics, ecology and social sciences in managing irrigation, drainage, flood control and river training applications including research and development and capacity building, adopting comprehensive projects and promote state-of-the-art techniques for sustainable agriculture in the world. Irrigation Planning (S) Directorate is the nodal unit for ICID.

Various Committees/Working Groups have been constituted by ICID in which CWC officers are represented to promote the above activities. The representation of CWC in the committees/ working groups of ICID is as under:

Sl. No.	Name of the Committee	Member
1.	Permanent Committee on Strategy Planning and Organisational Affairs (PCSPOA)	Chairman, CWC & INCID
2.	Permanent Committee for Technical Activities (PCTA)	Chairman, CWC & INCID
3.	Working Group on Comprehensive Approaches to Flood Management (WG-CAFM)	Chairman, CWC & INCID
4.	Working Group on Capacity Building, Training and education (WG-CBTE)	Chairman, CWC & INCID
5.	Committee on Public Relations and publications	Member, WP&P, CWC
6.	Working Group on History of Irrigation, Drainage and Flood Control (WG-HIST)	Chief Engineer, (POMIO),CWC

17.2.11 ICAR – CWC Joint Panel

Central Water Commission is represented in the Crop Weather Watch Group meetings of Ministry of Agriculture in which the water storage status of 81 important reservoirs being monitored by CWC is appraised.

The ICAR- CWC Joint Panel was constituted for the first time in March, 1979 by the ICAR for a period of three years mainly to deal with the problems relating to efficient water use management and suggest measures for maximizing the return from investment on irrigation in areas covered under major, medium, minor and other irrigation programmes. The functions of the Panel include providing adequate and efficient agricultural research, education and extension services in irrigation commands. The Panel also reviews the work done by Agricultural Universities/ Research Institutes, Command Area Development Authorities, Central and State Ground water Organisations and others with a view to optimize the yield per unit of water. The Joint Panel, after expiry of its term of three years, was further reconstituted eight times so far. Director General, ICAR is chairman of the panel for first and third year and

Chairman, CWC is the Chairman of the Panel in the second year. Joint Panel of CWC-ICAR was reconstituted in January, 2007. The second meeting of the newly constituted eighth panel was held on 14th August, 2008.

17.2.12 Bureau of Indian Standards (BIS)

Central Water Commission being an apex technical body in the water resources sector, has been playing an important role in formulation of standards in field of water resources development and management and allied areas through its participation in activities of Water Resources Division (WRD) and Civil Engineering Division (CED) of BIS. Chairman, Central Water Commission is presently the Chairman of Water Resources Division Council (WRDC). FE&SA is the nodal directorate in CWC dealing with works of WRDC of Bureau of Indian Standards at CWC.

There are 18 Sectional Committees of WRDC and on these, CWC is represented by its officers of the rank of Chief Engineer and Director.

Since Chairman, CWC is the Chairman WRDC and Director (FE&SA) is Nodal Director for related works, the approval of draft codes for adoption and printing/approval of amendments to IS Codes are processed in FE&SA Dte. and approval of Chairman is communicated to BIS.

(a) In 2009-10, 2 draft standards and 6 amendments to IS Codes have been approved by the Chairman for adoption and printing.

(b) 12th Meeting of WRD – *05 "Geological Investigation and Sub-Surface Exploration"* was held on 21.08.2009.

(c) Bureau of Indian Standards (BIS) is preparing a Safety Code for Construction, Operation and Maintenance of River Valley Projects: Dam Safety. The basic document for the same has since been prepared by DSR Dte. of CWC. Director, DSR, CWC attended the 8th meeting of the Safety in Construction, Operation and Maintenance of River Valley Projects Sectional Committee, WRD-21 held on 25.02.2010 at Manak Bhawan, Bureau of Indian Standards, New Delhi.

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CHAPTER - XVIII

PUBLICITY AND PUBLICATION

18.1 PRINTING AND PUBLICATION

The offset press in the Publication Division of Technical Documentation Dte. carried out various printing jobs for CWC & MOWR. About 7028 number composed pages and 48,826 numbers of copies of various publications / forms were printed during the year. The press also carried out binding/ trimming works for publications and reports etc.

Printing and Binding jobs completed during the period from 1.4.2009 to 31.03.2010.

Sl. No.	Name of the Job	No. of composed pages	No. of copies
(1)	(2)	(4)	(5)
1.	Theme Paper on Trans boundry Water and World Water Day-2009 celebrations.	40	400
2.	Final Report of Review of Back Water Levels for Sardar Sarovar Project – June 2008.	40	1
3.	Final Report of the Task Force for Flood Management/Erosion Control	254	60
4.	Bhagirath English April-June 2007	68	2300
5.	Mahi Project Main Earth Dam	30	1
6.	Terms of Reference for Comprehension Environments Impact Assessment Study of proposed par Tapi Narmada Link projects	16	2
7.	Vidarbha Irrigation Development Corporation Nagpur, Kanhan River Project (Kodi Barrage) Distt. Nagpur	14	1
8.	Annual Report of CWC for the year 2007-08	134	455
9.	Flood Forecasting and Warning Network Performance Appraisal 2004	96	50
10.	Evaluation of Performance of Development of Water Resources Information System : Schemes Implemented by CWC during XI Plan	26	9
11.	Bhagirath (Hindi) April-June 2008	52	2300
12.	Small Hydro Stations	200	2
13.	Evaporation Control in Reservoirs	114	300
14.	Working Group Report: Guidelines for preparation of detailed project Report for Irrigation & Multipurpose projects Vol.I, II and Vol.III – 1980	75	2
15.	Agenda Notes for 12th meeting of National Water Board of National Water Resources Council	32	20

Sl. No.	Name of the Job	No. of composed pages	No. of copies
	Summary Record of the 12th Meeting of National Water Board of National Water Resources Council (5.1.2007)	16	30
	The Inter State River Water Disputes Act, 1956	12	30
	River Board Act, 1956	12	30
	Planning Commission Guideline	98	2
	Data Dissemination and Pricing Policy	26	3
	Integrated Hydrological Data Book, September, 2009	404	5
	Annual Report of CWC for the year 2007-08 (Hindi)	130	100
	Summary Report on Water Use Efficiency (WUE) Studies for 30 Irrigation Projects	146	72
	Annual Performance Appraisal Report for AD/AD-II/Sub.Divisional Engineer (CWC-3)	12	600

In addition following items of regular nature were also published:

- CWC Administrative News Bulletins Nov.-Dec. 2008 Vol. X, No. 6 (Hindi)
- ACR form of officers and staff of CWC
- Other printed stationary required for administration and official purpose

18.2 MICROFILMING

With a view to preserve important drawings and other documents for future references, the microfilming unit of TD Dte. records documents in microfilms after proper indexing and coding. During the year 2009-2010, 344 Nos. of important engineering drawings / documents were microfilmed.

18.3 JOURNALS

T.D. Dte. of CWC publishes several technical and semi-technical journals and publications in the field of Water Resources development 'Bhagirath' a quarterly semi-technical journal, both in English and in Hindi were published separately during the year. In addition, 'Administrative News Bulletin' on monthly basis was also published during the year 2009-2010 bilingually.

18.4 AZO PRINTS

Nearly 3296 number of Azo prints were developed from the tracings of drawings / documents pertaining to various Directorates of CWC / MOWR at Ferro-printing Units of T.D. Directorate.

18.5 PUBLICITY AND MASS AWARENESS

Publicity & Mass Awareness programmes on Water Resources are arranged. In this regard, daily screening of newspaper/ magazine/ tabloids and submission of news clippings, preparation of pamphlets/ Posters (as and when required)/ Radio/ TV talks were carried out.

18.6 T.D. Directorate is co-coordinating the works of Information, Education & Communication (IEC) activities of MOWR. (Rs.110 lakhs were earmarked) on the following IEC activities in CWC during 2009-10:

i) Printing and distribution of printed material like posters, banners, pamphlets, booklets, electronic sign-boards etc.

ii) Advertising through Mass Media, transport vehicle, Bus back panel hoardings, Metro Stations, Airports etc.

iii) Murals and displays at prominent places like Airports, Bus stops, Railway Stations etc.

iv) Organizing Classical Musical concerts and shows.

v) Organizing exhibitions in prominent places viz. Parliament Annex, Rail Museum, Pragati Maidan, Nehru Planetarium and similar other places in other states.

18.7 Media Plan 2009-2010 of MoWR

As per Media Plan 2009-10 of Ministry of Water Resources, CWC participated in the following exhibitions along with other departments of MoWR.

- IITF'2009: IITF 2008 at Pragati Maidan, New Delhi from 14- 27 November, 2009.
- Assam Trade fair 2010 at Guwahati, Assam from 27.12.2009 to 30.01.2010.
- 60th IEC & 5th Asian Regional Conference of ICID was organised at Vigyan Bhavan, New Delhi from 09-11 December, 2009.
- Participated in 9th SAARC Trade fair at Thimpu (Bhutan), from 11-14 September, 2009.

18.7.1 Engineering Museum

Central Water Commission is maintaining an Engineering Museum at B-5, Kalindi Bhavan, Qutub Institutional Area, New Delhi-16, which is fully devoted to water resources development in the country. Various aspects of the development in the field of water resources in India are illustrated through self-explanatory working models. The museum was visited by a large number of visitors during the year 2009-10, which included students, professionals and people from all walks of life.