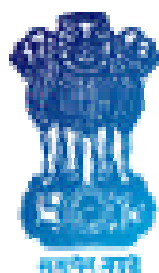


ANNUAL REPORT

2004-05



**GOVERNMENT OF INDIA
MINISTRY OF WATER RESOURCES
NEW DELHI**

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OVERVIEW

The Ministry of Water Resources in the Government of India is responsible for laying down policy guidelines and programmes for the development and regulation of country's water resources. The following are its main functions:-

- (a) Development, conservation and management of water as a national resource; overall national perspective of water planning and coordination in relation to diverse uses of water.
- (b) General Policy, technical assistance, research and development training and all matters relating to irrigation, including multi-purpose, major, medium, minor and emergency irrigation works; hydraulic structures for navigation and hydropower; tube wells and groundwater exploration and exploitation; protection and preservation of ground water resources; conjunctive use of surface and ground water, irrigation for agricultural purposes, water management, command area development; management of reservoirs and reservoir sedimentation; flood (control) management, drainage, drought proofing, water logging and sea erosion problems; dam safety.
- (c) Regulation and development of inter-State rivers and river valleys. Implementation of Awards of Tribunals through Schemes, River Boards.
- (d) Water quality assessment.
- (e) Water Laws, legislation including International Water Law.
- (f) International organisations, commissions and conferences relating to water resources development and management, drainage and flood control.
- (g) Matters relating to rivers common to India and neighbouring countries; the Joint Rivers Commission with Bangladesh, the Indus Waters Treaty 1960; the Permanent Indus Commission.

(h) Bilateral and external assistance and cooperation programmes in the field of water resources development.

The Ministry is headed by Hon'ble Shri Priyaranjan Das Munsri as the Union Minister of Water Resources since 22.5.2004. Hon'ble Shri Jai Prakash Yadav is the Minister of State for Water Resources since 24.5.2004. Shri V.K. Duggal is the Secretary in the Ministry of Water Resources since 4.11.2003. Smt. Sushma Singh Joined the Ministry as Additional Secretary on 6.2.2004. The Ministry has nine wings namely; Administration, Finance, Policy & Planning, Projects, Eastern Rivers, Indus, Command Area Development & Water Management, and Hydrology Project & Minor Irrigation and Ground Water Wing. Each Wing is headed by an officer of the level of Joint Secretary. To achieve its various objectives, the Ministry is assisted by the following organisations to perform the assigned tasks.

Assistance provided by Ministry to Tsunami affected States/ UTs

The Ministry of Water Resources has been vested with responsibility of carrying out immediate relief work by constructing tubewells in the affected areas to mitigate the drinking water problem of the victims of devastation caused by Tsunami in Andaman & Nicobar islands, Tamil Nadu, Pondicherry, Andhra Pradesh and Kerala. The ministry has taken special measures for procurement and installation of Desalination plant and De-watering/ Pumping machinery in coordination with the Department of Drinking Water Supply in these affected areas. As a long term plan of disaster management in Andaman & Nicobar Islands, the Ministry has proposed to take up



The Hon'ble Finance Minister Shri P.C.Chidabaram (centre), The Hon'ble Minister for Water Resources Shri Priyaranjan Das Munsi (right) and Secretary (WR) Shri V.K. Duggal (left) at the National Workshop on Challenges for water development and management in India and future Strategies on 13-14 January 2005 at New Delhi



The Hon'ble Minister of state for Water Resources Shri J.P.N.Yadav (second from right) and Addl. Secretary (WR) Smt Shushma Singh (first from right) attending the National Conference on the importance and challenges for exploration of Water resources projects.

augmentation of ground water resources by adopting rain water harvesting on a large scale. The Ministry has undertaken following work in the Tsunami affected States/UTs.

Andaman & Nicobar Islands: A camp office has been established at Port Blair for coordinating various activities and extending assistance to the Andaman & Nicobar Islands Administration for the restoration/revival/modernization of drinking water supply system on priority basis and the scheme wise estimates for restoration of drinking water supply in the entire Union Territory in a time bound manner.

Various machineries and equipment including high capacity pumps, generator sets, water tanks, and EC meters have been supplied. Desalination Plants as well as high capacity panel tanks are under procurement and will be supplied in due course of time.

Tamil Nadu: Team of Scientist has visited the Tsunami affected areas and provided technical assistance for reviving the drinking water supply.

In Nagapattinam district, 3 wells are to be drilled by CGWB in the depth range 300-350 mts. the work of drilling of two wells is in progress. In Tirunelveli district, 6 nos. of bore wells are to be drilled in hard rock areas. Three borewells out of six has been completed.

Pondicherry: All technical and scientific inputs such as site selection for drilling, electrical logging and evolving suitable well designs shall be provided, as and when required.

Andhra Pradesh: State Authorities are regularly being contacted for any assistance in the affected area.

Kerala: Preliminary studies of the affected areas have been carried out. The officers are working jointly with the State Ground Water Department for site selection for drilling, electrical logging and evolving suitable well designs. 15 sites have been jointly selected with State Agencies for construction of wells by Kerala Water Authority.

ORGANIZATIONS AND BODIES UNDER THE MINISTRY OF WATER RESOURCES

- 1. Central Water Commission.**
- 2. Central Soil and Materials Research Station.**
- 3. Central Ground Water Board. /Central Ground Water Authority.**
- 4. Central Water & Power Research Station.**
- 5. Farakka Barrage Project.**
- 6. Ganga Flood Control Commission.**
- 7. Sardar Sarovar Construction Advisory Committee.**
- 8. Brahmaputra Board.**
- 9. Narmada Control Authority.**
- 10. Betwa River Board.**
- 11. National Institute of Hydrology.**
- 12. National Water Development Agency.**
- 13. Bansagar Control Board.**
- 14. Tungabhadra Board.**
- 15. Upper Yamuna River Board.**
- 16. Water and Power Consultancy Services (India) Ltd.**
- 17. National Projects Construction Corporation Limited.**



The Hon'ble Minister for Water Resources Shri Priyaranjan Das Munsu inspects the Tsunami disaster affected areas in Car Nicobar Islands.



Hon'ble Minister for Water Resources Shri Priyaranjan Das Munsu visit to Car Nicobar island in wake of Tsunami disaster.

National Water Policy

The Ministry adopted Water Policy in 1987 and same was subsequently revised. The revised National Water Policy was adopted by the National Water Resources Council under the Chairmanship of the Prime Minister of India in its 5th meeting held on 1st April, 2002.

The salient features of the National Water Policy – 2002 are as under:-

- Water is a precious national resource and its planning, development and management should be governed by national perspectives.
- A well developed information system for water related data at national/state level should be established with a network of data banks and data bases integrating and strengthening the existing central and state level agencies.
- Water resources development and management will have to be planned for a hydrological unit. Appropriate river basin organizations should be established for the planned development and management of the river basins.
- Water should be made available to water short areas by transfer from other areas including transfer from one river basin to another, after taking into account the requirements of the areas/basins.
- Planning of water resources development projects should, as far as possible, be for multi-purpose with an integrated and multi-disciplinary approach having regard to human and ecological aspects including those of disadvantaged sections of the society.
- In the allocation of water, first priority should be given for drinking water, followed by irrigation, hydro-power, ecology, agro-industries and non-agricultural industries, navigation and other uses, in that order.
- The exploitation of groundwater should be regulated with reference to recharge possibilities and consideration of social equity. The detrimental environmental consequences of over-exploitation of ground water need to be effectively prevented.
- Careful planning is necessary to ensure that construction and rehabilitation activities proceed simultaneously. A skeletal national policy on resettlement & rehabilitation needs to be formulated such that project affected persons share the benefits through proper rehabilitation.
- Adequate emphasis needs to be given to the physical and financial sustainability of existing water resources facilities. There is need to ensure that the water charges for various uses should be fixed such as to cover at least the operation and maintenance charges initially and a part of the capital costs subsequently.
- Management of the water resources for diverse uses should incorporate a participatory approach by involving users and other stakeholders along with various governmental agencies, in an effective and decisive manner.
- Private sector participation should be encouraged in planning, development and management of water resources projects for diverse uses, wherever feasible.

- Both surface water and ground water should be regularly monitored for quality. Effluents should be treated to acceptable levels and standards before discharging them into natural streams. Minimum flow should be ensured in the perennial streams for maintaining ecology.
- Efficiency of utilization should be improved in all the diverse uses of water and conservation consciousness promoted through education, regulation, incentives and disincentives.
- There should be a Master Plan for flood control and management for each flood prone basin. In flood control and management, the strategy should be to reduce the intensity of floods.
- Land erosion by sea or river should be minimized by suitable cost-effective measures. Indiscriminate occupation of, and economic activity in coastal areas and flood plain zones should be regulated.
- Needs of drought-prone areas should be given priority in the planning of project for development of water resources. These areas should be made less vulnerable through various measures.
- The water sharing/distribution amongst the states should be guided by a national perspective with due regard to water resources availability and needs within the river basin.
- Training and research efforts should be intensified as an integral part of water resources development.

National Water Resources Council was set up by the Government of India in March, 1983 as an apex body to evolve

National Policy for development and use of water resource.

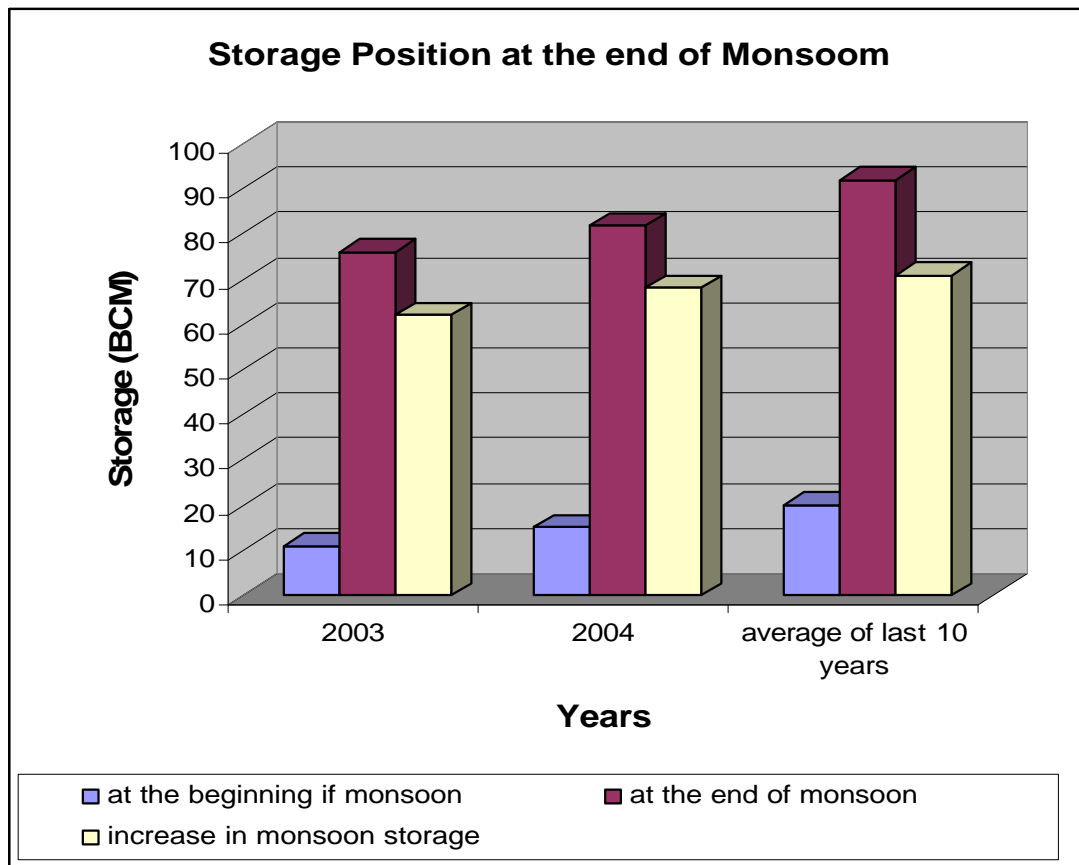
1.2 Water Scenario:

The annual precipitation including snowfall, which is the main source of water in the country, is estimated to be of the order of 4000 Billion Cubic Metres(BCM). The estimated precipitation during the monsoon season (June to September) is of the order of 3000 BCM. Thus the southwest (summer) monsoon accounts for more than 75 percent of the precipitation. Compared to 2003, the southwest monsoon in 2004 was erratic during late June, most of July, late August and early September over different parts of the country. For the country as a whole, the seasonal rainfall from 1st June to 30th September was 87% of its long period average. Seasonal (June-September) rainfall was normal in 23 out of 36 meteorological sub-divisions and the remaining 13 subdivisions registered deficient rainfall. On the sub-divisional basis none of the meteorological subdivisions experienced severe drought conditions (seasonal rainfall deficiency exceeding 50%) at the end of the season. However Himachal Pradesh, West Uttar Pradesh, Punjab, West Rajasthan, Vidarbha and Telangana experienced moderate drought conditions (seasonal rainfall deficiency between 25 and 50 %). Out of 524 meteorological districts, 132 districts (25%) experienced moderate drought and 36 districts (7%) experienced severe drought conditions at the end of the season.

A total storage capacity of 212.78 Billion Cu m (BCM) has been created in the country with the help of major & medium projects since completed. The projects under construction will contribute to an

additional 76.26 BCM while the contribution expected from projects under consideration is 107.54 BCM. Central Water Commission is monitoring storage position of 71 important reservoirs spread all over the country. The Total designed

Storage (at FRL) in these reservoirs is 131.28 Billion Cubic Meter (BCM). The total availability of water in the 71 major reservoirs was 85.12 BCM at the end of the monsoon of 2004 against 78.76 BCM at the end of the monsoon last year.



CHAPTER 1

MAJOR AND MEDIUM PROJECTS

PRESENT DEVELOPMENT SCENARIO

Irrigation development in the country has been taken up in a big way through Major, Medium and Minor Irrigation schemes since independence. The creation of irrigation potential has gone up from 22.6 m.ha. (9.76 m.ha through Major & Medium and 12.84 m.ha through Minor) prior to Plan period to 93.95 m.ha. (37.05 m.ha through Major & Medium and 56.90 m.ha through Minor) by end of IX Plan against Ultimate Irrigation Potential of 139.91 m.ha. (58.49 m.ha through Major & Medium and 81.42 m.ha through Minor). This has contributed to country's self-sufficiency in food grains. A total number of about 1232 Major, Medium & ERM (Extension, Renovation & Modernisation) projects have been completed by the end of IX plan and 468 (162 Major, 221 Medium & 85 ERM) projects with balance cost of Rs.86377 crores have spilled over to the X Plan period. In addition, 268 new Major, Medium & ERM projects are proposed to be taken up. During the X Plan period, 15.16 m.ha. additional Irrigation Potential is likely to be created and out of this 9.93 m.ha will be through Major and Medium Irrigation projects

ACCELERATED IRRIGATION BENEFITS PROGRAMME (AIBP)

A large number of river valley projects, both multipurpose and irrigation, have spilled over from Plan to Plan mainly because of financial constraints faced by the State Governments. As a result of this, despite a huge investment having already been made on these projects, the country is not able to derive the desired benefits. There were 171 Major, 259 Medium and 72 Extension, Renovation and Modernisation on-going Irrigation projects in the country at various stages of construction at the end of the VIIIth Plan (i.e. end of 1996-97) with spillover cost of Rs.75,690 crore. This was a matter of grave concern for the Union Government and measures for expeditious completion of some of

the projects which were in advanced stage of completion became necessary.

With this end in view, the Government of India launched the Accelerated Irrigation Benefits Programme (AIBP) during 1996-97 for accelerating implementation of on-going Irrigation/multi-purpose projects on which substantial progress have been made and which are beyond the resource capability of the State Governments and for other major and medium Irrigation projects which are in advanced stage of construction and could yield irrigation benefits in the next four agricultural seasons. Thus the twin objectives of AIBP are (i) to accelerate ongoing irrigation projects and (ii) to realize bulk benefits from completed irrigation projects.

Guidelines of The Existing Programme

The Govt. of India has categorized the states in the union as Special Category States and Non-special Category States for extending Central Assistance. States like Himachal Pradesh, Jammu and Kashmir, Uttaranchal, Sikkim and the North-eastern States are placed under the special category while the remaining States are considered under the general category.

Fast Track Programme comprises of projects which can be completed in one year (two working seasons) with full Central assistance and was introduced in February, 2002.

The Cabinet in its meeting held on 20th January, 2004 considered further relaxation in criteria and the following were included :-

- i) To include grant component in AIBP with 70% loan and 30% grant for General Category States and 10% loan and 90% grant for Special Category States for projects under Fast Track Programme. For projects not under Fast Track an incentive of

conversion of loan to grant criteria as mentioned above shall be given if projects are completed on schedule.

- ii) To extend time limit for completion of Fast Track Projects to 3 working seasons and 6-8 working seasons for projects under normal funding.

Releases In Various Years

The funds are released by the Ministry of Finance on the recommendations of the Ministry of Water Resources. Since inception of this programme in 1996-97 an amount of Rs.14670.234 crore has been released for various major/medium/ minor irrigation projects as CLA upto 2003-2004(Table-1.1).

Against a provision of Rs.3670.00 crore in the Union Budget for Accelerated Irrigation Benefits Programme(AIBP) during 2004-05, and an amount of Rs.632.3579 crore(incl Sikkim) has been released to various major/ medium/minor irrigation projects as Central Loan Assistance(CLA) under this programme as

upto Dec'2004. The State-wise details of CLA released under AIBP are enclosed(Table-1.2).

Overall Cumulative Release & Benefits

Under AIBP an amount of Rs. 14670.234 crore has been injected since inception of the programme in 1996-97, (Table-1.1) As a result the Government has been able to expedite the creation of additional irrigation potential by 2738 th. ha. upto March, 2004. A total of 32 Major/Medium Projects have since been completed with the help of this programme(Table-1.3).

Audit Observations

The Comptroller and Auditor General of India made a performance review of the Accelerated Irrigation Benefits Programme for the period from 1996-97 to 2002-2003 and submitted Performance Appraisal report No.15 of 2004. The important observations noted in the report on the programme are at Annexure-VII of annual report

Table 1.1**Statewise details of CLA released under AIBP***(Rs. Crore)*

Sl. No.	State	CLA Released								Grand Total
		1996-97	1997-98	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	
1	Andhra Pradesh	35.250	74.000	79.670	65.015	95.020	281.660	33.186	205.530	869.331
2	Arunachal Pradesh	0.000	0.000	0.000	7.500	7.500	15.000	1.500	20.000	51.500
3	Assam	5.230	12.400	13.950	14.540	24.077	14.521	16.274	19.2015	120.194
4	Bihar	13.500	5.150	36.185	129.695	151.775	3.420	14.481	74.644	428.850
5	Chhattisgarh	0.000	4.500	9.500	10.520	13.930	48.200	104.000	74.630	265.280
6	Goa	0.000	5.250	0.000	3.500	61.650	58.000	0.000	2.000	130.400
7	Gujarat	74.773	196.900	423.820	272.700	421.850	581.690	1000.330	650.359	3622.422
8	Haryana	32.500	12.000	0.000	0.000	0.000	0.000	18.000	7.735	70.235
9	Himachal Pradesh	0.000	6.500	5.000	11.047	18.015	3.244	8.150	14.692	66.648
10	Jammu & Kashmir	1.300	0.000	0.000	4.680	10.460	11.070	34.999	21.545	84.054
11	Jharkhand	0.000	8.890	11.640	14.345	5.715	10.820	9.670	1.833	62.913
11	Karnataka	61.250	90.500	94.500	157.140	171.000	492.500	620.850	266.478	1954.218
12	Kerala	3.750	15.000	0.000	0.000	22.400	11.275	5.665	31.000	89.090
13	Madhya Pradesh	63.250	110.000	81.250	95.325	151.328	215.410	220.000	568.440	1505.003
14	Maharashtra	14.000	55.000	50.860	49.875	97.020	39.100	133.134	164.395	603.384
15	Manipur	4.300	26.000	10.780	21.810	1.500	9.360	19.500	15.500	108.750
16	Meghalaya	0.000	0.000	0.000	2.694	5.512	4.470	1.500	1.088	15.264
17	Mizoram	0.000	0.000	0.000	1.433	1.433	2.000	0.750	9.300	14.916
18	Nagaland	0.000	0.000	0.000	2.730	5.000	5.000	2.659	8.000	23.389
19	Orissa	48.450	85.000	71.500	90.250	100.320	168.475	179.570	154.685	898.250
20	Punjab	67.500	100.000	0.000	42.000	55.620	113.690	36.660	0.000	415.470
21	Rajasthan	2.675	42.000	140.050	106.665	78.467	96.315	174.385	499.837	1140.394
22	Tripura	3.773	5.100	3.975	34.653	13.883	21.063	13.395	13.377	109.219
23	Tamil Nadu	20.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	20.000
25	Uttar Pradesh	43.500	78.000	76.500	286.000	315.900	354.690	359.000	274.785	1788.375
26	Uttaranchal	0.000	0.000	0.000	0.000	0.000	0.000	25.163	25.5525	50.715
27	West Bengal	5.000	20.000	10.000	25.000	26.825	38.608	28.133	3.144	156.710
28	Sikkim	0.000	0.000	0.000	1.360	0.000	2.400	0.750	0.750	5.260
Total		500.001	952.190	1119.180	1450.477	1856.200	2601.981	3061.703	3128.501	14670.233

Table-1.2

Statewise details of CLA released under AIBP during 2004-05

Sl.No.	State			Total
		2004-05		
		Loan	Grant	
1	Andhra Pradesh			0.000
2	Arunachal Pradesh			0.000
3	Assam	1.0500		1.050
4	Bihar	25.116		25.116
5	Chhattisgarh			0.000
6	Goa			0.000
7	Gujarat	210.000		210.000
8	Haryana			0.000
9	Himachal Pradesh			0.000
10	Jammu & Kashmir			0.000
11	Jharkhand			0.000
11	Karnataka	124.9759		124.976
12	Kerala			0.000
13	Madhya Pradesh	47.0365	0.0000	47.037
14	Maharashtra	95.305	6.360	101.665
15	Manipur			0.000
16	Meghalaya			0.000
17	Mizoram			0.000
18	Nagaland			0.000
19	Orissa			0.000
20	Punjab			0.000
21	Rajasthan	101.0555	20.934	121.990
22	Tripura			0.000
23	Tamil Nadu			0.000
25	Uttar Pradesh			0.000
26	Uttaranchal			0.000
27	West Bengal			0.000
28	Sikkim	0.525	0.000	0.525
Total		605.0639	27.2940	632.3579

Table-1.3

Statewise details of Major/Medium Projects completed under AIBP

S.No.	Name of State/Project (Started during the Plan)
	<u>Andhra Pradesh</u>
1.	Cheyzeru (Annamaya) (v) (2003-04)
	<u>Assam</u>
2.	Rupahi (2001-02)
3.	Bordikarai (V)
	<u>Bihar</u>
4.	Bilasi Reservoir (v) (2000-01)
	<u>Chhattisgarh</u>
5.	Shivnath Diversion (v) (2002-03)
	<u>Haryana</u>
6.	Gurgaon Canal (III) (2003-04)
	<u>Jharkhand</u>
7.	Latratu (VII) (2002-03)
8.	Tapkara Res. (VI) (2002-03)
	<u>Gujarat</u>
9.	Umaria (V) (1996-97)
10.	Deo (V) (1997-98)
11.	Harnav-II (IV) (1997-98)
12.	Jhuj (A.P. 1978-80) (1999-00)
13.	Sipu (A.P. 1978-80) (1999-00)
14.	Damanganga (IV) (1999-00)
15.	Karjan (V) (1999-00)
16.	Sukhi (V) (1999-00)
17.	Watrak (A.P. 1978-80) (1999-00)
	<u>Karnataka</u>
18.	Maskinala (2003-04)
	<u>Madhya Pradesh</u>
19.	Upper Weinganga (V) (2002-03)
20.	Urmil (V) (2002-03)
21.	Banjar (V) (2002-03)
	<u>Maharashtra</u>
22.	Kadvi *
23.	Khadakwasla (II) *
	<u>Rajasthan</u>
24.	Jaismand (VI) (2000-01)
25.	Gambhiri (VI) (2000-01)
	<u>Punjab</u>
26.	Ranjit Sagar Dam (VI) (2000-01)
	<u>Uttar Pradesh</u>
27.	Rajghat Dam (V) (1996-97)
28.	Gunta Nala Dam (VI) (1999-00)
29.	Sarda Sahayak (III) (2000-01)
30.	Gyanpur Pump Canal (VII) (2001-02)
31.	Madhya Ganga & Upper Ganga Mod. (V) (2003-04)
	<u>West Bengal</u>
32.	Kangsabati (II) (2002-03)

* Project/Project Component completed under Fast Track Programme

NATIONAL PERSPECTIVE PLAN FOR WATER RESOURCES DEVELOPMENT

With a view to optimally utilize the water resources of the country, the Ministry has prepared a perspective plan. The proposal comprises of two components, namely, (a) Peninsular Rivers Development Component and (b) Himalayan Rivers Development Component. The National Water Development Agency has been carrying out studies of the National Perspective Plan for water resources development.

NATIONAL WATER DEVELOPMENT AGENCY

Introduction

National Water Development Agency (NWDA) was established in July, 1982 as a registered Society under the Societies Registration Act, 1860 under the Ministry of Water Resources to study the feasibility of the Peninsular Component of National Perspective Plan. The NWDA is fully funded by Government of India. Subsequently in 1990-91, NWDA Society resolved to take up the studies of Himalayan Component also. The Agency functions with the following main objectives:

- (a) To promote scientific development for optimum utilization of water resources in the country.
- (b) To carry out detailed field surveys and investigations of possible storage reservoir sites and inter connecting links in order to establish feasibility of the proposals of Peninsular Rivers Development and Himalayan Rivers Development Components forming part of National Perspective for Water Resources Development prepared by the then Min. of Irrigation (now Ministry of Water Resources) and Central Water Commission.
- (c) To carry out detailed studies about the quantum of water in various Peninsular

and Himalayan River Systems, which can be transferred to other basins/States after meeting reasonable needs of basin States in the foreseeable future.

- (d) To prepare feasibility reports of various components of the schemes relating to Peninsular Rivers Development and Himalayan Rivers Development.
- (e) To take all such other actions as the Society may consider necessary, incidental, supplementary or conducive to the attainment of above objectives.

Organisational Setup

The NWDA is headed by the Director General of the rank of Additional Secretary to Govt. of India. He is the Principal Executive Officer of the Society, responsible for the proper administration of the affairs and funds of the Society and for coordination and general supervision of the activities of the Society. The Headquarters of the Agency is at New Delhi..

ACTIVITIES

INTER BASIN WATER TRANSFER PROPOSALS

The National Water Development Agency has been carrying out studies of the National Perspective Plan for water resources development. The proposal comprises of two components, namely, (a) Peninsular Rivers Development Component and (b) Himalayan Rivers Development Component.

Peninsular Rivers Development Component

The Peninsular Rivers Development is divided into following four major parts:

1. Interlinking of the Mahanadi – Godavari – Krishna – Pennar - Cauvery Rivers.
2. Interlinking of the west flowing rivers north of Bombay and South of Tapi.
3. Interlinking of the river Ken with Chambal.

4. Diversion of the west flowing rivers of Kerala and Karnataka to water deficit areas east of the Western ghats.

Studies undertaken:

Under the Peninsular Component, National Water Development Agency has completed collection of data and water balance studies of all 137 basins/sub-basins and 52 identified diversion points(including 3 additional

studies), 58 reservoir studies, toposheet studies of 18 links including 1 additional study and all 18 pre-feasibility reports.

NWDA has identified the following 16 water transfer links under Peninsular Component for Surveys and Investigations and preparation of Feasibility Reports. The present status of the Feasibility Reports of these links is as under:

Sl. No.	Name of the Link Project	Present Status of FR
1.	Mahanadi(Manibhadra)-Godavari(Dowlaiswaram) link	Completed
2.	Godavari(Polavaram)-Krishna(Vijayawada) link	Completed
3.	Godavari(Inchampalli Low Dam)- Krishna (Nagarjunasagar Tail Pond) link	Under Progress
4.	Godavari(Inchampalli)-Krishna(Nagarjunasagar) link	Under Progress
5.	Krishna(Nagarjunasagar)-Pennar(Somasila) link	Completed
6.	Krishna(Srisailem)-Pennar link	Completed
7.	Krishna(Almatti)-Pennar link	Completed
8.	Pennar(Somasila)-Palar-Cauvery(Grand Anicut) link	Under Progress
9.	Cauvery(Kattalai)- Vaigai- Gundar link	Completed
10.	Pamba-Achankovil-Vaippar link	Completed
11.	Bedti-Varda link	*
12.	Netravati-Hemavati link	*
13.	Par-Tapi-Narmada link	Completed
14.	Damanganga-Pinjal link	Completed
15.	Parbati-Kalisindh-Chambal link	Completed
16.	Ken-Betwa link	Completed

Note: * The field surveys and investigations for preparation of feasibility reports of these links will be taken up after obtaining clearance from Govt. of Karnataka.

The water transfer links being studied by NWDA under Peninsular Component are shown in **Plate - I**

Himalayan Rivers Development Component

The studies in respect of Himalayan Rivers Development Component were started by NWDA during the year 1991-92. The Himalayan Component envisages construction of storage reservoirs on the principal tributaries of the Ganga and the Brahmaputra in India, Nepal and Bhutan, along with interlinking canal systems to

transfer surplus flows of the eastern tributaries of the Ganga to the west, apart from linking of the main Brahmaputra and its tributaries with the Ganga and Ganga with Mahanadi.

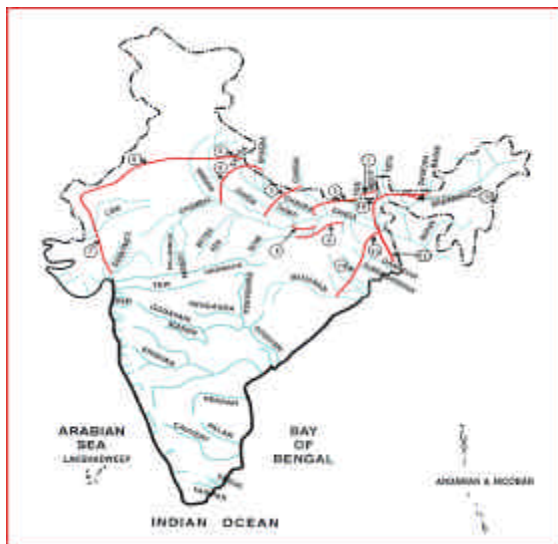
Studies undertaken:

Under the Himalayan Rivers Development Component, NWDA has completed water balance studies at all the 19 diversion points, toposheet studies of 16 storage reservoirs & 19 water transfer links and pre-feasibility report of 14 links.



Links Identified for Preparation of Feasibility Reports

HIMALAYAN COMPONENT



1. Kosi – Mechi
2. Kosi – Ghagra
3. Gandak – Ganga
4. Ghagra – Yamuna *
5. Sarda – Yamuna *
6. Yamuna – Rajasthan
7. Rajasthan – Sabarmati
8. Chunar - Sone Barrage
9. Sone Dam – Southern Tributaries of Ganga
10. Manas –Sankosh - Tista - Ganga
11. Jogighopa – Tista – Farakka (Alternate)
12. Farakka – Sunderbans
13. Ganga (Farakka) – Damodar – Subernarekha
14. Subernarekha – Mahanadi

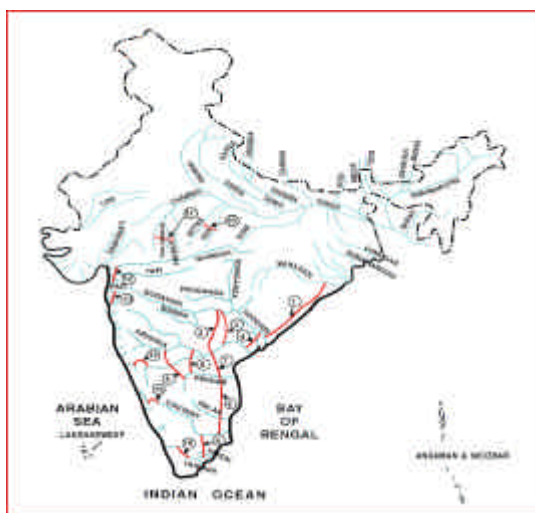
* FR Completed

41



Links Identified for Preparation of Feasibility Reports

PENINSULAR COMPONENT



1. Mahanadi (Manibhadra) – Godavari (Dowlaiswaram)
2. Godavari (Inchampalli) – Krishna (Nagarjunasagar)
3. Godavari (Inchampalli) – Krishna (Pulichintala)
4. Godavari (Polavaram) – Krishna (Vijayawada) *
5. Krishna (Almatti) – Pennar *
6. Krishna (Srisailem) – Pennar *
7. Krishna (Nagarjunasagar) – Pennar (Somasila) *
8. Pennar (Somasila) – Cauvery (Grand Anicut)
9. Cauvery (Kattalai) – Vaigai – Gundar *
10. Ken – Betwa *
11. Parbati – Kalisindh – Chambal *
12. Par – Tapi – Narmada *
13. Damanganga – Pinjal *
14. Bedti – Varda
15. Netravati – Hemavati
16. Pamba – Achankovil – Vaippar *

* FR Completed

25

NWDA has identified the following 14 water transfer links under Himalayan Component for Surveys and Investigations

and preparation of Feasibility Reports. The present status of the Feasibility Reports of these links is as under:

Sl. No.	Name of the Link Project	Present Status of FR
1.	Manas-Sankosh-Tista-Ganga	Under Progress
2.	Kosi-Mechi link	Under Progress
3.	Kosi-Ghagra link	Under Progress
4.	Gandak-Ganga link	Under Progress
5.	Ghagra-Yamuna link	Completed
6.	Sarada-Yamuna link	Completed
7.	Yamuna-Rajasthan link	Under Progress
8.	Rajasthan-Sabarmati link	Under Progress
9.	Chunar-Sone Barrage link	Under Progress
10.	Sone Dam-Southern Tributaries of Ganga (STG) link	Under Progress
11.	Ganga-Damodar-Subernarekha link	Under Progress
12.	Farakka-Sundarbans link	Under Progress
13.	Subernarekha-Mahanadi link	Under Progress
14.	Jogigopa-Tista-Ganga link (Alt. to M-S-T-G)	Under Progress

The water transfer links being studied by NWDA under Himalayan Component are shown in **Plate - I**.

Andhra Pradesh, Orissa, Karnataka, Tamil Nadu, Kerala, Pondicherry, Madhya Pradesh, Rajasthan, Maharashtra & Gujarat.

Benefits From Inter Basin Transfer Link Schemes

The National Perspective Plan would give additional benefits of 25 million ha of irrigation from surface water, 10 million ha by increased use of ground water, raising the ultimate irrigation potential from 113 million ha to 148 million ha and generation of 34 million KW of power, apart from the benefits of flood control, navigation, water supply, fisheries, salinity and pollution control etc.

As per National Water Development Agency studies (i) the Himalayan Component of the inter-basin water transfer proposal will benefit States of Uttar Pradesh, Uttaranchal, Haryana, Rajasthan, Gujarat, Assam, West Bengal, Bihar, Jharkhand and Orissa and also enrich the peninsular component from the surplus waters of Brahmaputra. (ii) The Peninsular Component will benefit

Meeting of A Group to Speed Up The Process of Arriving at Consensus Amongst the States on the Proposals of Interbasin Water Transfer

In order to speed up the process of arriving at consensus amongst the states regarding sharing of surplus water, a Group has been constituted by the Ministry of Water Resources vide its Office Memorandum No.2/3/2001-BM/265 dt.21.6.2002 under the Chairmanship of Chairman, Central Water Commission with Director General, NWDA as Member-Secretary, Member (WP&P), CWC, Chief Engineer (IMO), CWC and Secretaries of WR/Irrigation Departments of concerned States as Members of the Group. The main functions of the Group are to discuss & expedite the process of arriving at

consensus amongst the States regarding sharing of surplus water in river basins/sub-basins and the quantum of surplus water to be transferred from surplus basins to deficit basins/areas as per the proposals of interbasin water transfer of NWDA, to assist states in arriving at an agreement regarding sharing of costs & benefits by the beneficiary States and other related issues for taking up implementation of the link schemes and also to discuss the issue of preparation of Detailed Project Reports(DPRs) of various link schemes for which feasibility reports have already been completed by NWDA.

Task Force On Interlinking Of Rivers

Task Force on Interlinking of Rivers, set up by Ministry of Water Resource, with the approval of Hon'ble Prime Minister, had submitted Action Plan – I in April, 2003 and Action Plan – II on the various TORs in April, 2004 to the Government. So far, sixteen meetings (five in the year 2004 - 05) of the Task Force have been held. Secretariat services to Task Force have been given by the National Water Development Agency. The expenditure of the TF – ILR is also borne by NWDA.

On acceptance of resignation of Shri Suresh Prabhu as Chairman, TF – ILR w. e. f. 31.03.2004, Ministry of Water Resources decided that Dr. C. C. Patel, Vice – Chairman, TF – ILR shall look after the charge of the post of Chairman, in addition to his own duties with immediate effect until further orders.

National Common Minimum Programme of The Government:

The National Common Minimum Programme (NCMP) of the Government envisages that the UPA Government will make a comprehensive assessment of the feasibility of linking the rivers of the country starting with the southern rivers. This assessment will be done in a fully

consultative manner. It will also explore the feasibility of linking sub-basins of rivers in States like Bihar.

An assessment of interlinking of Rivers (ILR) Programme has been carried out at the level of Secretary (WR) through detailed discussions and interaction with various Stakeholders, Officers of Ministry of Water Resources and other Central Deptts., and State Governments. A Conference of the Chief Secretaries and Principal Secretaries of Water Resources of the States / UTs was held on 2nd and 3rd August, 2004 during which this issue was discussed .

Most of the States are supportive of the concept of the interlinking of rivers; provided the project can somehow ensure a “win – win” situation for all States. States were largely of the view that funding may have to be provided by Govt. of India. ILR, if successfully implemented, will mitigate the situation against floods and also provide relief to the drought prone areas.

A Presentation By Ministry Of Water Resources (Mowr)

A power point presentation was made by MOWR before the Hon'ble Prime Minister on October 11, 2004 in which the Union Minister of Finance, Deputy Chairman, Planning Commission, Member, Planning commission and Principal Secretary to PM were present among others. After the above presentation and as a part of the comprehensive assessment of feasibility of interlinking of rivers in the country, the Govt. decided:

1. To pursue the Interlinking of Rivers with focus on Peninsular Component
2. NWDA to continue with preparation of Feasibility Reports (FRs) & should adhere to stipulated time schedule

3. A time schedule for bringing consensus on priority links i.e. Ken – Betwa & Parbati – Kalisindh – Chambal
 4. To examine feasibility of intra State links when proposed by the respective States.
 5. A Group of Environmentalists, Social scientists and other experts will be constituted by MOWR which will be involved in the consultative process for the project.
 6. NWDA to identify another priority link in Peninsular Component in Southern India and initiate action thereafter for consensus building.
- Secretary (Water Resources) held the first meeting of the Committee of Experts on Inter-Linking of Rivers on 18th January 2005. It was informed that Ministry of Water Resources is in the process of conducting deliberations with the concerned State Governments of Uttar Pradesh , Madhya Pradesh and Rajasthan. For arriving at consensus for the Detailed Project Report (DPR) preparation of Ken-Betwa-Parbati-Kalisindh-Chambal Project. The key concern of the Government is to solve the socio-economic and socio environmental issues on the proposed links under ILR and obtain consensus in a fully consultative manner.

CHAPTER-2

COMMAND AREA DEVELOPMENT AND WATER MANAGEMENT SCHEME

The Command Area Development Programme was launched in the year 1974-75 with the objective of bridging the gap between the irrigation potential created and utilised and improving agricultural production and productivity in the irrigation commands.

The Programme was restructured in 2003-04 and renamed as Command Area Development and Water Management (CADWM) Programme. The components of the CADWM Programme are as under:

- a) Survey, planning and designing of On-Farm Developments (OFD) works;
- b) Construction of field channels with a minimum of 10% beneficiary contribution;
- c) Full package OFD works including construction of field channels, realignment of field boundaries, land leveling and shaping also with a minimum of 10% beneficiary contribution;
- d) Warabandi (to be continued without Central assistance)
- e) Construction of field drains, intermediate and link drains for letting out surplus water;
- f) Reclamation of waterlogged areas in irrigated commands using conventional techniques as well as bio-drainage wherever applicable with a minimum of 10% beneficiary contribution;
- g) Software components such as trainings of farmers and field functionaries & officials, adaptive trials & demonstrations, action research for Participatory Irrigation Management, seminars/ conferences/ workshops, monitoring & evaluation of the programme etc. through Water and Land Management Institutes (WALMI) and other institutions with seventy five percent funding from Government of India for State sponsored activities and 100% funding for Central Sector activities;
- h) Institutional support to Water Users' Associations;
- i) Establishment cost – 20 % of OFD works items at (b)/(c), (e) and (f) above
- j) R & D Activities.
- k) Correction of system deficiencies above the outlet upto distributaries of 150 Cusec capacity;
- l) Renovation and desilting of existing irrigation tanks including the irrigation system and control structures within the designated irrigation commands with a minimum of 10% beneficiary contribution as maintenance fund, the interest has to be used for maintenance in future and with a view to involve farmers in irrigation water management, Participatory Irrigation Management (PIM) has been made a thrust area of the CADWM Programme.

Programme Coverage

The programme was initiated in 1974-75 with 60 major and medium irrigation projects. So far 310 irrigation Projects with a Culturable Command Area (CCA) of about 30 m.ha. spread over 28 States and 2 Union Territories have been included in the Programme, out of which CAD works in 162 projects have been completed and Central assistance closed. Twenty three ongoing projects have been clubbed into 8 projects. The Programme will thus run in 133 projects during the remaining period of X Plan.

Programme Implementation

The Command Area Development and Water Management Wing of the Ministry of Water Resources coordinates and

monitors the implementation of the Command Area Development Programme at the National level. Proposals received from the States for inclusion of new projects under the Programme are examined and, if found techno-economically feasible, are included under the Programme. Progress of the projects is maintained through physical and financial progress reports of the programme received from the States. The quality of work is ensured through monitoring, including field visits. Moreover, technical guidelines and manuals have been circulated to the States in this regard. Functionaries are trained on specific subjects from time to time, besides holding various meetings, workshops and seminars on different technical and managerial aspects.

The programme is being implemented by the State Governments through Command Area Development Authorities (CADAs) set up by them. However, in some States, namely Arunachal Pradesh, Himachal Pradesh, Meghalaya, Nagaland, Tamil Nadu and Tripura, CAD Authorities have not been constituted and the Programme is being administered through the line Departments concerned.

Financing Pattern

Most of the Programme activities such as construction of field channels and field drains, reclamation of waterlogged areas etc., directly related with improving water utilisation are funded by the Centre and States on matching (50: 50) basis. For certain activities like construction of field channels, reclamation of waterlogged areas and renovation of Minor Irrigation Tanks, a mandatory 10% contribution is realised from beneficiary farmers. Software activities like trainings, adaptive trials, demonstrations etc. are funded in the ratio of 75:25 between the Centre and the State.

Financial Achievements

An amount of Rs.2756.14 crores has been released to States as Central Assistance under the CAD Programme upto March, 2004 since its inception. During the year 2003-2004, an amount of Rs.141.45 crores was released. An outlay of Rs. 181.50 crores has been provided under the Central Sector for implementation of the Programme during 2004-2005 and an amount of Rs.84.17 crore has been released to the States, till 11.1.2005 as per table 2.1

Table 2.1

(Rs.in crore)

Plan	Year	Approved Outlay	Release	% of releases
IX Plan	1997-2002	854.77	764.27	89.41
X Plan	2002-2003	202.00	152.16	75.32
	2003-2004	202.00	141.45	70.02
	2004-2005	181.50	84.17*	

*Released upto 11.1.2005

Seminar/Conference

Two days conference of State Secretaries, Incharge of CADWM Programme and Administrator of CADAs was held in Vigyan Bhawan, New Delhi on 2nd & 3rd

August 2004 to review the progress of Programme and discuss Guidelines for implementation of Restructured Programme during remaining years of X Plan.

Physical Achievements

The core components of physical works are construction of field channels and field drains and implementation of warabandi (rotational water supply). The cumulative progress of works on these respective components upto the end of IX Plan is 15.75 M.ha, 1.124 M. ha. and 10.18 M. ha. The physical targets and achievements in respect of the core components of on farm development works during the IX Plan, progress up to March 2004 and targets and

achievements during 2004-05 are given in the table 2.2

Revised Targets Under The Restructured Command Area Development And Water Management Programme

The total outlay for the restructured programme for the remaining three years of Tenth Plan is Rs. 1002 crores. The details of physical targets 2004-05 to 2006-07 are as per table 2.3

Table 2.2
(in Million hectare)

Item of work	Progress during IX Plan	Progress during 2002-03	Progress during 2003-2004	Progress during 2004-05	
				Target	Achievement*
Field Channels	1.783	0.471	0.401	0.230	0.083
Warabandi	1.552	0.340	0.141	0.210	0.041
Field Drains	0.313	0.138	0.074	0.050	0.018

*tentative (upto Sept.,2004)

Table 2.3
(Million Hectares)

Sl No.	Achievement	Target 2004-07
1.	Field channel/full package OFD works	0.68
2.	Field Drains/intermediate drains/link drains	0.10
3.	Warabandi	0.68*
4.	Reclamation of waterlogged areas	0.05
5.	Correction of system deficiency up to design discharge of 150 cusecs	1.00
6.	Renovation of Tanks	0.18

***no central assistance to be provided from 2004 onwards**

The above targets are tentative subject to readjustments due to availability of matching funds of the States.

Training Programmes

The CADWM Wing of the Ministry provides assistance for training of functionaries and farmers on various aspects of the CAD Programme including aspects of scientific advancement in irrigated agriculture. This includes various aspects of efficient water management technologies, methods of survey and reclamation of waterlogged areas and participatory irrigation management. The training programmes are meant for

officials of the State Government as well as the farmers. The senior level officers are trained on aspects of policy planning and preparation of action plans, while middle and junior level officers are trained on technical, procedural, implementation aspects. Farmers, on the other hand, are provided education about agricultural development and efficient management of water for irrigation. They are also motivated and made aware about the benefits of Participatory Irrigation Management (PIM). During the year 2004-05, 24 national level training courses

have been approved to be organized through various institutions.

Reclamation of Water Logged Areas

Although development of irrigation has increased agriculture production, it has also caused adverse effect in the form of water logging and associated problem of soil salinity/alkalinity in many irrigation commands. The problem of water logging can be mitigated to a large extent by efficient water management and by adopting many other suitable preventive measures. However, inspite of best efforts, irrigated areas are prone to be waterlogged and thus it is essential to reclaim such areas so as to have optimum agricultural production from them. The Ministry of Water Resources, Govt. of India has introduced a component of Reclamation of Water Logged Areas under the Centrally Sponsored Command Area Development Programme w.e.f. 1st April, 1996. So far 441 schemes of nine States namely Bihar, Gujarat, Madhya Pradesh, Jammu & Kashmir, Karnataka, Kerala, Maharashtra, Orissa and Uttar Pradesh have been approved at an estimated cost of Rs. 44.45 crores for reclamation of 57,123 ha of water logged area. Out of this, an area of 44,135 ha has been reported to be already reclaimed by these States upto March, 2004.

Participatory Irrigation Management (PIM)

The National Water Policy 2002 stresses participatory approach in water resources management. It has been recognized that participation of beneficiaries will help greatly for the optimal upkeep of irrigation system and effective utilization of irrigation water. The participation of farmers in the management of irrigation would give responsibility for operation & maintenance and also collection of water charges from the areas under the jurisdiction of the Water Users' Association. One time functional grant @

Rs.600/- per ha to be shared by the Centre, State and farmers @ Rs.270 : 270 : 60 respectively has to be paid.

As a result of various conferences/seminars organized by the Ministry, there has been an increased consciousness in States about the need for actively involving farmers in management of irrigation systems. Accordingly, States of Andhra Pradesh, Bihar, Goa, Karnataka, Madhya Pradesh, Orissa, Rajasthan, Tamil Nadu and Kerala have either enacted exclusive legislation or amended their Irrigation Acts for involvement of farmers in irrigation management. Some States like Maharashtra and Gujarat had experimented with the idea of farmers' co-operative movement in irrigation management and are in the process of enacting acts for Participatory Irrigation Management (PIM). Other States are also taking steps in this direction.

W.e.f. August 2003, Participatory Irrigation Management (PIM) has been identified as one of the thrust areas in the water resources sector for the country as a whole and its progress is being monitored by the Prime Minister's Office (PMO) and a Committee of Secretaries. So far, 55,490 Water User's Associations have been formed in various States covering an area of 10.23 m. ha under different various commands of irrigation projects.

Under the restructured 'Command Area Development & Water Management (CADWM) Programme more emphasis is being given to participatory approach. Under this programme, payment of central assistance to States is linked with the formation of Water User's Associations. Apart from this, farmers will have to contribute 10% cost of the works in form of cash/labour in the construction of field channels/ full package OFD, water logging, desilting and renovation of tanks etc.

CHAPTER 3

GROUND WATER AND MINOR IRRIGATION

Secretariat for Water Quality Assessment Authority(WQAA)

The Water Quality Assessment Authority(WQAA) was constituted under the Environment (Protection) Act, 1986 in May 2001 for the purpose of performing such functions as stated in the Gazette Notification for issuing directions to the agencies (government / local bodies / non-government) for water quality related matters specified in the Notification. The 12-member Authority is headed by the Secretary, Ministry of Environment & Forests as the Chairman and the Commissioner (HP&MI), Ministry of Water Resources as the Member Secretary. The Secretariat of the WQAA is functioning in MoWR.

The third meeting of WQAA was held in December, 2004. Based on the decisions taken in the meetings of WQAA Expert Group was constituted which has submitted its report containing recommendation and guidelines on various aspects of water quality monitoring and monitoring protocol. Also a Task Force was constituted by WQAA to deal with matters related to coordination, use and dissemination of data, review of water quality monitoring network, accreditation of water quality laboratories etc. The Task Force has already submitted its report. The National River Conservation Directorate, MoEF is working on bringing out a Gazette Notification of the Monitoring Protocol for adoption by all the water quality monitoring agencies. A Working Group has also been constituted by WQAA to deal with issues relating to minimum flows in riverine systems.

State Level Water Quality Review Committees were constituted to review monitoring practices at the State level and to highlight important State level issues for consideration by the Authority. So far the State level Committees have been constituted

in 33 states/union territories. In accordance with the decisions of WQAA, the Water Quality Monitoring Committee (WQMC) was also constituted to assist the WQAA in its functions. During its deliberations, WQMC considered modalities for working so as to fulfill its responsibilities. WQMC constituted 3 Standing Groups to initiate action considering present status and requirement/modality about action to be taken on related functions of WQAA.

Relevant issues like need for R&D norms, finalizing standard monitoring protocols and effective coordination with State level WQRS were taken up by WQMC.

A plan scheme titled "Creation of Coordination cell to assist WQAA" for Rs.350 lakhs has been sanctioned for the 10th Five Year Plan. The main provision in the estimate is for salary of the staff, provision for hiring of professionals and taking up selected R&D studies, travelling, offices and other administrative expenses for conducting seminars, workshops, meetings etc.

CENTRAL GROUND WATER BOARD

Organisation

The Central Ground Water Board (CGWB) is a subordinate office of the Ministry of Water Resources. It is responsible for carrying out nation-wide surveys and assessment of ground water resources and guiding the states appropriately in scientific and technical matters relating to ground water. The Central Ground Water Board has generated valuable scientific and technical data through regional hydrogeological surveys, ground water exploration, water quality monitoring and research and development. The Board also organizes in-service training programmes for its own as well as other Central and State Government officials. It assists the

States in developing broad policy guidelines for development and management of ground water resources including their conservation, augmentation and protection from pollution, regulation of extraction and conjunctive use of surface water and ground water resources. The Board organizes Mass Awareness programmes to create awareness on various aspect of ground water investigation, exploration, development and management.

The Board is headed by a Chairman and has ten Members. The Chairman and four Members are on the regular strength of the Board. The Members look after Surveys, Assessment and Monitoring (SAM) Wing; Sustainable Management and Liaison (SML) Wing; Exploratory Drilling and Materials Management (ED&MM). One of the Member is designated as Commissioner (GW) at MOWR. The Board has 18 Regional Offices, each headed by a Regional Director with seventeen supporting Engineering divisions and Ten State Unit Offices for undertaking various field activities in the country.

For the purpose of regulation and control of ground water development and management the Central Ground Water Authority (CGWA) was constituted on 14th January, 1997 under Environmental (protection) Act, 1986 .Its membership is the same as that of CGWB.

Achievements (upto November, 2004)

District Ground Water Development and Management Studies

These surveys are carried out to evaluate the impact of various developmental activities like withdrawal of ground water, urbanization and introduction of surface irrigation scheme on local ground water regime in time and space. During 2004-2005, an area of 2.08 lakh sq. km has been covered during pre monsoon period.

Exploration of Ground Water

The exploration of ground water to study the sub-surface geological and hydrogeological setups and evaluate various aquifer parameters is carried out by the Board with a fleet of 84 drilling rigs (34 Direct Rotary, 37 Down the Hole and 13 Percussion Combination types) and also through outsourcing. During the year 502 wells including 25 wells through outsourcing have been constructed up to November, 2004 against a target of 1424 wells. Out of these high yielding wells with discharge range 15900 lph to 82800 lph have been found.

Monitoring Through National Ground Water Monitoring Wells

The Board is monitoring the ground water levels in the country four times a year(Jan/May/Aug/Nov) through a network of 15766 National Ground Water Monitoring Wells. The water samples collected during the pre-monsoon monitoring are analysed for the purpose of ascertaining the changes in chemical quality of ground water. Monitoring of May and August, 2004 is completed in all the Regions and respective reports have been submitted consisting the fluctuation of water levels compared to monitoring of previous year, Decadal average and pre-monsoon monitoring. Except some part in two Regions monitoring for November,2004 has also been completed.

Technical Examination of Major and Medium Irrigation Schemes

As per the directives of the Planning Commission, the Board is scrutinizing the major and medium irrigation project reports/proposals sent by the State Governments/Central Water Commission. Recommendations are being made for inclusion of provisions for Conjunctive Use of Surface and Ground Water and periodic monitoring of ground water regime in the command areas of the projects. Apart from this the Board is also scrutinizing the reports of National Water Development Agency, use of ground water



A Water harvesting well around the fly over in New Delhi.



A Channel for Water Harvesting system.

for use in power plants and other miscellaneous infrastructural projects. Three proposals for projects located in M.P. and Maharashtra were scrutinized during the year.

Reports, Maps and Atlases

The reports that are issued by the Board, are categorized as project reports, survey reports, district reports, state reports, basic data reports, maps and atlases. During 2004-2005, 3 Ground Water Year Books have been issued and 42 District Reports, 20 Ground Water Year Books, 6 State Reports and 9 hydrogeological atlases are under preparation.

Basic Hydrogeological Research /Special Studies

During the year 2004-05, Four studies are undertaken by the Regional Offices of the Central Ground Water Board. They are (i) Studies in arsenic affected area of Bhojpur district in Bihar (ii) Utilization of aeromagnetic data for ground water exploration as per MOU with AMSE (GSI) (iii) Ground water modeling studies in parts of Yamuna flood plain (Palla well field) area of NCT, Delhi and (iv) Ground water contamination studies in Bhalswa, Gazipur and Okhla landfill site of NCT, Delhi using isotope techniques in collaboration with BARC. The above studies are under progress.

Water Quality Analysis

There are 15 well equipped Regional Chemical Laboratories to carry out chemical analysis of water samples collected from National Hydrograph stations, and those collected during Ground Water Exploration, Reappraisal Hydrogeological surveys, Short Term Investigations etc. All the Laboratories are equipped with Atomic Absorption Spectrophotometer to carry out the analysis of toxic elements and heavy metals at micro level. Four chemical laboratories are equipped with Gas Chromatograph (GC) to take up the

analysis of organic pollutants (Pesticides etc). Thirteen laboratories are equipped to carry out bacteriological analysis. During the year up to November, 2004, 10395 samples have been analyzed for basic/specific constituents and 3526 samples have been analyzed for Arsenic and heavy metals such as Cu, Zn, Fe, Mn, CO, Cd, Cr, Ni, Pb etc. In addition 51 samples for organic constituents have also been analysed.

Geophysical Studies

As an integral part of its activities, the Board undertakes geophysical studies to support and supplement hydrogeological surveys, ground water exploration and short-term water supply investigations. Besides these studies, geophysical techniques are also used to demarcate bedrock configuration and thickness of overburden and saline -fresh water interface that ultimately help in carrying out hydrogeological studies, well construction etc. During 2004-2005 (up to November, 2004), 1100 Vertical Electrical Sounding, 44 line kilometer resistivity profiling and 110 bore hole logging have been conducted in the various parts of the Country.

Short Term Water Supply Investigations

These investigations are carried out for locating sites for ground water structures and designing of tubewells and water lifting devices to provide a dependable water supply system in rural and urban areas, Railway and industrial establishments with priority being given to Defence Organisations. During 2004-2005 up to November 2004, 174 investigations have been carried out.

Estimation of Ground Water Resource Based on Gec- 1997 Methodology

As per the National Water Policy 2002, the ground water resource potential is to be re-assessed periodically on scientific basis. Accordingly, the ground water resource of



A Water Harvesting structure in a residential Complex

the entire country is being presently re-assessed based on the latest methodology GEC – 97. The States of Andhra Pradesh, Chhattisgarh, Gujrat, Kerala, Madhya Pradesh, Maharashtra, Orissa, Rajasthan, Tamilnadu, Uttar Pradesh and West Bengal have already completed the resources estimation. The resources estimation done by these states were discussed in the R&D Advisory Committee on ground water estimation, a Standing Committee constituted by the Govt. of India to look into various aspects of ground water resources estimation. The states are being asked to modify the resources estimation based on the discussion took place in the meetings of the above said committee. All the States have been asked to complete the resources estimation by 31st December, 2004.

Conjunctive Use Studies

Conjunctive Use Studies aimed at devising strategy for optimum utilization of surface water and ground water have been taken up

in three command areas.

1. Conjunctive use of ground water & surface water in Sri Ram Sagar command, A.P.
2. Conjunctive use of ground water & surface water in Rushikulya Command, Orissa,
3. Conjunctive use of ground water & surface water in West Yamuna Canal Command, Haryana

The above three studies are completed and modeling studies are under progress.

Research & Development Schemes

Central Ground Water Board under its R&D programme with the approval of Indian National Committee of Hydrology (INCOH) has under taken eight schemes. These are on-going during the current year in association with state governments and universities as listed below.

Sl No	Project Name	Implementing Agency
1.	Impact of Urban, Industrial & Agricultural Pollution in Surface and Ground Water in and around Hyderabad and Secunderabad -A.P.	Dept. of Geology, Osmania University, Hyderabad, A.P .
2.	Hydrofluorosis in Halia River, Environs; Nalgonda district, A. P. A case study of Intensity and Source.	Dept.of Geology, Osmania University, Hyderabad,.A.P.
3.	Study of Trace Metal in Surface and Sub-surface Water in and around Tirupati.	Dept. of Geology. S. V. University, Tirupati..
4.	Impact of Urbanisation on Ground Water- A Study from Jaipur City & its Hinterland,	Dept. of Geology, Univ. of Rajasthan, Jaipur .
5.	Cause effect & Remedial measure of Arsenic contamination in Ground Water Aquifers in parts of West Bengal.	State Water Investigation irectorate, Govt. of West Bengal
6.	Hydroeconomic, Interaction between Tank & Well Water and possibilities for conversion of Tank in to Percolation Tank.	Water Tech. Centre, Tamilnadu, Agricultural University, Coimbatore, Tamilnadu.
7.	Ground Water Management Studies in Upper Gondwanas of West Godavari District, A. P.	Dept, of Geology, Andhra Univ. Vishakhapatnam,A.P.
8.	Environmental Studies of Surface and Ground Water down stream of Pennar River, A. P .	Jawaharlal Nehru Technology Univ. Hyderabad.

Out of the eight studies, two studies at sl. No. 4 & 6 have been completed and final report has been submitted. Further, during the tenth plan period, nine R&D projects as follows have been sanctioned. All the schemes are on-going

Sl. No	Project Name	Implementing Agency
1.	Geohydrological Studies for Augmentation of Spring Discharge in Western Himalayas.	G. P. Pant Institute of Himalayan Environment & Development, Garhwal
2.	Study of Fluvial Geomorphology and Tectonics of the Khari- Mashi drainage Basin, Rajasthan for data base preparation and ground water recharge capability Assessment.	Birla Institute of Scientific Research, Statue Circle, Jaipur.
3.	Ascertaining Arsenic Mobilization in soil -water –plant systems and exploring the possible remedial measures.	Bidhan Chandra Krishi Viswavidyalaya, Kalyani, Nadia, West Bengal.
4.	Feasibility study of Artificial Recharge in Kongal River Basin, a Hard Rock Region Nalgonda District, A,P	NGRI, Hyderabad
5.	Studies in Salt Water Intrusion in Coastal Dakshin Kannada District, Karnataka	Karnataka Regional Engineering College, Srinivasnagar, Surathkal
6.	Water harvesting and water conservation in Imphal East I block, Imphal East distt. Manipur.	Research & Development Division, Manipur Science & Technology Council, Imphal, Manipur
7.	Ground water modeling and aquifer vulnerability studies in Yamuna-Krishni sub-basin, Mujafarnagar, Distt U.P.	Deptt. Of Geology, Aligarh Muslim University
8.	To assess the impact of septic tanks on ground water and spread of water borne diseases, and to identify means to solve the problems created by the waste water in Balrampur Distt U.P.	Deptt. Of Civil Engineering Jamia Millia Islamia, New Delhi.
9.	Ground water behaviour in connate water areas and hard rock terrains of Orissa with respect to different schedules of pumping and varied draw down conditions.	Directorate of Ground water survey and investigation, Bhubaneswar, Govt. of Orissa.

R&D Scheme in Pipeline:-

The following five proposals for R&D schemes have been scrutinized. Out of these 3 proposals at sl. No.. 1, 2 & 3 have been sent to experts for review while two proposals at sl.no. 4 & 5 have been sent to the Principal Investigators for modifications and resubmission

Sl. No	Project Name	Implementing Agency
1.	Developing an Electronic Sensor and automatic Pumping System for Skimming wells	Central Plantation Crops Research Institute (ICAR) Kasaragod, Kerala
2.	Development of Models for clean up of Cr (VI) contaminated Aquifers using Bio-remediation.	IIT, Madras, Department of Civil Engineering, Chennai.
3.	Spatio temporal modeling of ground water quality using artificial neural network	IIT, Madras, Department of Civil Engineer, Chennai.
4.	Water and Waste Water Management, Quality Characterization and impact of Rain Water and Environment on the sustainable development of Regional Aquifer System in parts of South West Delhi.	Department of Geology, AMU, Aligarh
5.	Detection and Quantification of Pollutants in Najafgarh drain and the levels of contamination in ground water	Ganesh Scientific Research Foundation, New Delhi.

CENTRAL GROUND WATER AUTHORITY (CGWA)

Central Ground Water Authority constituted under Environment Protection Act, 1986 has been entrusted with the responsibility of regulation and control of ground water development and its management in the country. Activity - wise achievement is summarized below:

a. Regulation of ground water development:

CGWA is regulating ground water development in 11 notified areas namely South and South-west districts and Yamuna Flood Plain area of NCT, Delhi; Municipal Corporation of Faridabad and Ballabhgarh, Faridabad district, Haryana; Ludhiana City, Ludhiana, Punjab; Union Territory of Diu, Municipal Corporation of Gaziabad, Gaziabad Distt. U.P.; Jhotwara block, Jaipur distt., Rajasthan; Haldia Municipal area, East Medinipur Distt., W.B.; Gandhinagar Taluka, Gandhinagar Distt., Gujarat and Gurgaon town and adjoining industrial areas, Gurgaon District, Haryana. The regulation of ground water development in the notified areas of Delhi and Haryana (Gurgaon and Faridabad) is being done directly by CGWA and for other notified areas directives have been issued to concerned district Collectors for registration of ground water structures and regulation of ground water development. The activity is under progress.

b. Registration of ground water structures:

To identify more areas for regulation, registration of ground water structures were undertaken by CGWA in 32 critical areas in the states of Madhya Pradesh, Andhra Pradesh, Haryana, Punjab and Rajasthan through State Govts. Till date 1,53,860 ground water abstraction have been registered . Re assessment of ground

water availability in these notified areas is being taken up.

c. Regulation of ground water withdrawal by industries:

In order to regulate the ground water development by the industries, a list of over exploited and dark blocks have been circulated to Statutory organizations like State Pollution Control Boards, Ministry of Environment and Forests etc which refers new industries/ projects to CGWA for obtaining ground water clearance prior to setting up of industries/projects . The proposals received, are evaluated on case to case basis, based on site specific recommendations of Central Ground Water Board and are accorded ground water clearance. During the year two industries located in Tamil Nadu and Punjab were accorded ground water clearance.

d. Registration of drilling agencies:

Registration of drilling agencies are being undertaken by CGWA to develop site specific micro level data base on ground water and to control indiscriminate drilling activity in the country. During the year 224 agencies were registered.

e. Mass Awareness and Training programmes:

Rain water harvesting is an activity to facilitate ground water recharge especially in ground water stressed areas, and public participation is essential for promotion of this activity. Identifying its inevitable need country wide mass awareness programmes and training programmes on rain water harvesting are organized by CGWA on regular basis to create public awareness about importance of rain water harvesting in recharging ground water. Training on rain water harvesting are also undertaken for dissemination of cost effective technologies to users like private sector organizations, government agencies,

NGO's, educational institutes, individuals etc. Response to these programmes is observed to be overwhelming, and calls for further stepping up of such activities on large scale with active involvement of various stakeholders. During the year 3 mass awareness programmes at Puri (Orissa), Sholighur (Tamil Nadu) and NCT Delhi and 4 water management training programmes were organised at Ranga Reddy (Andhra Pradesh), Yavatmal (Maharashtra), Puri (Orissa) and Sholinghur (Tamil Nadu).

Rajiv Gandhi National Ground Water Training And Research Institute

During 2004-2005 up to November 2004, seven training courses have been conducted. Of these, five courses were on technical / scientific and two for administrative matters. In all 140 trainees attended the trainings.

Exhibition / Trade Fair

CGWB/MOWR participated in Following Exhibition/Trade Fair

i) India International Trade Fair-2004:

Ministry of Water Resources participated in the 24th India International Trade Fair-2004, Pragati Maidan, New Delhi during 14th to 27th November, 2004. The theme of the Pavilion was "Water Conservation and its Efficient Management". Under the theme CGWB displayed three models viz a) Recycling of Domestic Waste Water and Reuse, b) Rain Water Harvesting, c) Testing of Water Quality parameters. Shri P.R.Dasmunsi, Hon'ble Minister of Water Resources and Shri V.K.Duggal, Secretary, Ministry of Water Resources visited the pavilion on 19th November, 2004 and appreciated the efforts of the Scientists and Engineers towards awareness, conservation and management of water. The pavilion was awarded with the Silver Medal among Central Govt. Deptt./ Ministry.

ii) Everything about Water EXPO 2004:

CGWB, SR, Hyderabad participated in International Exhibition on "Everything about Water EXPO 2004" held in HITEX FAIR Ground, Hyderabad from 19th to 20th November, 2004. CGWB, Ministry of Water Resources opened a stall and displayed the working models on rain water harvesting in rural and urban areas, charts, maps, electronic scrolling boards showing the activities of CGWB.

MINOR IRRIGATION

Minor irrigation Schemes are those Ground Water and Surface water schemes, which have a Culturable Command Area (CCA) up to 2000 hectare individually. Ground Water development is primarily done through individual and cooperative efforts of the farmers with the help of institutional finance and their own savings. Surface Water Minor Irrigation schemes are generally funded from the Public Sector outlay. The Ultimate irrigation potential from Minor Irrigation schemes has been assessed as 81.43 m.ha. As per Census of Minor Irrigation schemes conducted by the Ministry for the year 1993-94, the irrigation capacity created in the Minor Irrigation Sector covers about 2/3rd of the country's total irrigation capacity.

INITIATIVES

Repair, Renovation and Restoration of Water Bodies:

As the follow up of the announcement made by the Union Finance Minister in his Budget speech for 2004-05, the pilot scheme "National Project for repair, renovation and restoration of water bodies directly linked to agriculture" was prepared. The scheme with the total outlay of Rs. 300 Crores was approved by the Government for implementation during the remaining period of Xth plan. Funding pattern for the scheme is Centre: States: 75: 25. The objectives of the scheme are

- (a) to restore and augment storage capacity of the water bodies.
- (b) to recover and extend their lost irrigation potential.

In the Ist Phase projects from 16 districts in 9 states (Andhra Pradesh, Bihar, Chattisgarh, Jharkhand, Karnataka, Madhya Pradesh, Orissa, Tamil Nadu & West Bengal) have been found acceptable for funding in the current year. The total estimated cost of the 16 projects is Rs. 168 Crores involving work for renovation of 700 water bodies which would create additional irrigation potential of 20000 ha.

Rationalisation of Minor Irrigation

Pondicherry has created Statistical Cell from their own resources and there is no need for Statistical Cell in the UTs of Chandigarh, Daman & Diu and Lakshadweep because of insignificant MI activity. These Cells are responsible for collection of Quarterly Progress Reports on development of Minor Irrigation from concerned Departments and furnishing the same to this Ministry. The Officers/Staff posted in the Statistical Cells also help in conduct of Census as well as Sample Survey pertaining to Minor Irrigation Schemes.

The Sample Survey report on Status of Minor Irrigation Schemes with reference year 1998-99 has been finalised.

The 3rd Census of Minor Irrigation Projects with reference year 2000-01 is being conducted in 33 States/UTs. Census work has not been taken up for Lakshadweep and Daman and Diu. 32 States/UTs have completed the fieldwork relating to Census. The Government of Manipur is yet to complete the fieldwork. Scrutiny of data submitted by the remaining States/UTs was done after validation by NIC, MOWR for finalizing data in consultation with States/UTs. The Census data in respect of 10 States/UTs was finalized earlier. Census data in respect of 13 States/UTs was finalized in

Statistics (RMIS) Scheme

A Centrally Sponsored Plan Scheme "Rationalisation of Minor Irrigation Statistics (RMIS)" is under implementation. Under the RMIS Scheme, a Census of the Minor Irrigation projects is conducted every five years to create a reliable database for planning the development of the Minor Irrigation Sector. A sample survey on Minor Irrigation Schemes is also conducted, in between the two censuses under the scheme. Statistical Cells have been created in the nodal departments of 30 States/UTs. So far the State of Jharkhand has not created a Statistical Cell, the UT of the Census Cell during this year. Still there is discrepancy in data received from 9 States/UT and the matter is being taken up with concerned States for finalization. During the year sample check of Census data was conducted in 8 districts of 8 States/UTs.

CHAPTER 4

EASTERN RIVERS & FLOOD CONTROL

FLOOD MANAGEMENT

Although flood management falls within the purview of State Governments, however the Central Government has been initiating various measures including providing financial assistance to the States in this regard. Various Centrally Sponsored Schemes taken up by the Government of India under which financial assistance was provided to the State Governments during the year 2004-05 are detailed as under:

(i) Critical anti – erosion works in Ganga Basin States:

In order to take up critical anti-erosion works in the Ganga basin States a Centrally Sponsored Scheme was approved at an estimated cost of Rs. 178.85 crore with a Central Share of Rs. 136.17 crore as a continuing scheme for implementation during 2004-07 to provide financial assistance to the States of Bihar, Jharkhand, Himachal Pradesh, Uttar Pradesh, Uttaranchal, West Bengal & Farakka Barrage Project Authority.(FBPA)

The funding pattern under the scheme provides for Centre and State Share in the ratio of 75 : 25 and 100% funding for FBPA. The funds are provided as advance to the State Government to take up works. Rs. 14.05 crore to Government of Bihar, Rs. 9.95 crore to Government of Uttar Pradesh, Rs. 15.00 crore to Government of West Bengal and Rs. 1.00 crore to Government of Uttaranchal have been released upto 20.12.2004.

(ii) Maintenance of flood protection works of Kosi & Gandak Projects:

This Centrally Sponsored Scheme, which provides protection to the banks of the river Kosi & Gandak in and around barrages from erosion, is in operation since VIIIth Plan. The works are executed by the State Governments of Bihar and Uttar Pradesh in respect of Kosi and Gandak respectively. The full cost of the works incurred by the State Governments is reimbursed by the Central Government on the recommendations of Kosi and Gandak High Level Committees. The recommendations of Kosi and Gandak High Level Committee are awaited from GFCC following which funds will be released.

(iii) Raising, Strengthening and extension of embankments on Lalbakeya, Bagmati, Khando and Kamla rivers:

The scheme has been continuing since IXth Plan with the purpose to extend the embankments along these rivers in Indian Territory to Nepal and tie to high ground in Nepal with corresponding strengthening of embankments on Indian side. The full cost of the works is borne by the Central Government and the funds are released on the recommendation of the Ganga Flood Control Commission on their authentication of utilization certificates and inspection of the works. Central assistance under the scheme is released in advance to enable the State Government to take up the works. An amount of Rs. 1.50 crore has been provided to Government of Bihar during the Xth Plan. However during 2004-05, no fund has been released under the Scheme for want of request from the State Government.

(iv) Improvement of drainage in critical areas of the country:

Government of India sanctioned in February 2004, a Centrally Sponsored Scheme having estimated cost of Rs. 54.57 crore with a Central Share of Rs. 49.62 crore to take up works relating to improvement of drainage in critical areas of the country. The scheme aims at improving drainage conditions of critical areas affected due to floods in States of Andhra Pradesh, Bihar, Orissa and Uttar Pradesh with Central Share of Rs. 5.45 crore, Rs. 27.39 crore, Rs. 13.13 crore and Rs. 3.65 crore respectively. The scheme among other benefits will also increase agricultural production in these areas. Works under the scheme shall be executed by the respective State Governments and completed by March, 2007 within the Xth Plan period. Funds amounting Rs. 1.50 crore to Government of Andhra Pradesh, Rs. 1.50 crore to Government of Orissa & Rs. 5.00 crore to Government of Bihar have been released upto 30.11.2004.

(v) Flood Proofing Programme in North Bihar:

Flood Proofing Programme in North Bihar has been in operation during first two years of the Xth Plan. The scope of this scheme is proposed to be enlarged to include States of Bihar, Uttar Pradesh, West Bengal, Orissa, Assam and Andhra Pradesh for implementation during 2004-07. The formulation of the enlarged / new scheme will depend upon the evaluation of performance of the completed works in Bihar. This has been desired by Planning

BRAHMAPUTRA BOARD

Introduction

The Brahmaputra Board, a statutory body was set up by an Act of Parliament called Brahmaputra Board Act. (Act 46 of 1980) under Ministry of Water Resources. The

Commission who have asked to get tested the performance of completed schemes in Bihar and Assam.

TASK FORCE FOR FLOOD MANAGEMENT/EROSION CONTROL

In view of the unprecedented floods this year in various parts of the country, a 21 Member Task Force headed by Chairman, Central Water Commission has been constituted to look into the problem of recurring floods and erosion in Assam and other neighbouring States as well as Bihar, West Bengal and Eastern Uttar Pradesh. The terms of reference for the Task Force interalia include study of flood/erosion problem, suggesting short term and long term measures for the management of floods and erosion control, examine international dimensions, suggest institutional arrangements for tackling the problem and source of funding for future action plan.

The Task Force had also constituted 3 sub-groups namely Sub-group-I for Assam and Neighbouring States, Sub-Group-II for West Bengal and Sub-Group III for Bihar and Uttar Pradesh. The Sub-Groups have been set up to collect the information, analyze them, chalk out the plan and approach keeping in mind the Terms of Reference of the Task Force and the time frame for submission of the report given to the Task Force. The Task Force submitted its report in December 2004 and same is under study of the ministry.

Board functions from Guwahati. The jurisdiction of the Board covers both the Brahmaputra and Barak valleys and extends over all the seven states of North Eastern Region of the country in part or full.

The main functions assigned to the Board are to carryout survey and investigation

and to prepare Master Plan for the control of floods, bank erosion and improvement of drainage congestion, giving due importance to the development and utilization of Water Resources of the Brahmaputra and Barak Valleys for irrigation, hydropower, navigation and other beneficial purposes. Its assignment also includes preparation of Detailed Project Report of the dams and other projects identified in the Master Plan as approved by Central Government and to take up construction & maintenance of the projects approved by the Central Government and works connected there with as proposed in the Master Plan and also to maintain and operate such dam and works.

Since inception, the Brahmaputra Board has been performing its statutory functions like preparation of Master plans for flood moderation, improvement of drainage congestion along with integrated development of the basin to ensure proper utilization of vast water resources of the North Eastern Region. These Master plans are of immense utility for water user agencies of the region and for others for selection of various schemes and their prioritization in the field of water resources.

Organization

The Board consists of 4 full-time Members comprising of the Chairman, Vice-Chairman, The General Manager and the Financial adviser and 17 part-time Members representing 7 States of the North-Eastern Region, North Eastern

Council, concerned Ministries namely Water Resources, Finance, Agriculture, Power, Surface Transport and Organisations of Government of India, namely Central Water Commission, Central Electricity Authority, India Meteorological Department and Geological Survey of India.

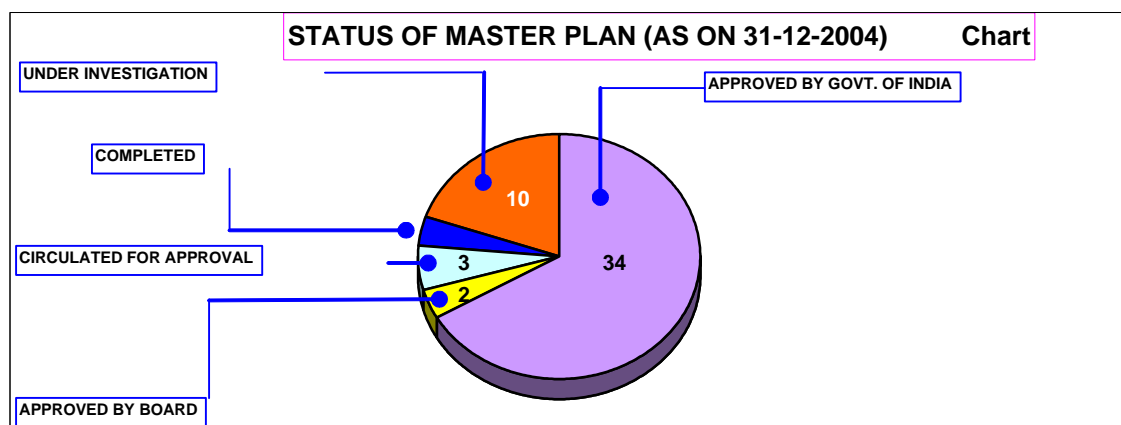
Board has also processed extension of its jurisdiction to the left out portion of North Eastern Region and inclusion of Sikkim & North Bengal being part of Brahmaputra Basin.

Activities of Brahmaputra Board

The Master Plan preparation has been taken up in 3(three) parts;

Part-I: Main stem of Brahmaputra,
Part-II: Barak and its tributaries and
Part -III: Tributaries of the river Brahmaputra, Barak and rivers of Tripura (49 Nos).

So far 34 Master plans out of 51 have already been approved by Govt. of India. Their status is indicated in the chart overleaf.



APPROVED BY GOVT. OF INDIA

1. BRAHMAPUTRA BASIN MAIN STEM
2. BARAK & ITS TRIBUTARIES
3. BURI-DEHING
4. DIKHOW
5. DHANSIRI(S)
6. KAPILI-KOLONG
7. PUTHIMARI
8. RANGANADI
9. GUMTI
10. PAGLADIA
11. NOA-NADI
12. DIKONG
13. MUHURI
14. JIA-BHARALI
15. MANU
16. CHAMPAMATI
17. DISANG
18. JINARI
19. JURI
20. NANOI
21. DHALAI
22. BURIMA
23. LOHIT
24. JIADHAL
25. BHARALU
26. MAJULI ISLAND
27. KHOWAI
28. GHILADHARI
29. JINJIRAM
30. JHANJI
31. DHALESWARI
32. SUBANSIRI
33. MORIDHAL
34. GAURANG

APPROVED BY BOARD

1. HAORA
2. GABHARU

CIRCULATED FOR APPROVAL

1. GADADHAR
2. BELSIRI
3. BHOGDOI

COMPLETED

1. KULSI - DEOSILA
2. BUROI

UNDER INVESTIGATION

1. BARNADI
2. TANGANI
3. DHANSIRI (N)
4. DIPOTA
5. BARGANG
6. BRAHMAJAN
7. DUDHNOI-KRISHNAI
8. BEKI-MANAS-AIE
9. SONKOSH
10. TIPKAI

Brahmaputra Board has identified 34 Drainage congested areas in Brahmaputra and Barak Basin i.e. 22 in Brahmaputra Basin, 8 in Barak Basin and 4 in Tripura.

The North Eastern Hydraulic & Allied Research Institute (**NEHARI**) was established near Guwahati with facilities of Hydraulic Modeling, Soil Testing, Concrete and Rock Mechanic Laboratory. In association with CSMRS, CWPRS, the Board has successfully carried out sample testing as requested by various organizations like NEEPCO, CWC, NEC, NHPC, State Govt. of Assam, Manipur, Meghalaya and Mizoram for their on going projects.

So far NEHARI has completed physical model studies of (i) Jiajhal river and (ii) River Brahmaputra from Porovita to South Salmara. The institute has received following funds from outside agencies for different works.

Upto March.2002	Rs. 95, 69,912.00
During 2002-03	Rs. 52, 42,321.00
During 2003-04	Rs. 9, 80,641.00
During 2004-05	Rs. 68, 00,000.00

Review by Hon'ble Union Minister for Water Resources:

Hon'ble Union Minister of Water Resources visited Guwahati on 20th -21st September, 2004 and held a meeting with the Hon'ble Members of Parliament from N.E.Region on 20thSep'2004, where Hon'ble Ministers for Irrigation, Water Resources and Revenue, Govt. of Assam, were also present. On 21st Sep'2004 a review meeting with the officials of Brahmaputra Board was held where issues related with Administration as well as Field works were discussed in details.

Schemes under execution of Board

- A) Pagladiya Dam Project
- B) Harang Drainage Development Scheme

- C) Anti Erosion work at Dhola Hatighuli
- D) Protection of Majui Island, Assam
- E) Barbhag Drainage Development Scheme, Assam
- F) Kushiabil & Durgajan village at Dimapur (Nagaland)
- G) Protection of North Guwahati Township(Rangmahal) from flood and erosion Assam

Critical Flood Control & Anti-erosion Schemes in Brahmaputra and Barak Valley under State sector:

Recently Govt. of India has approved a State Sector scheme to be funded in 90:10 (Central Grant: Loan) amounting to Rs. 150.00 Cr. for Xth Plan. The scheme will be executed by the various States. The Brahmaputra Board has been entrusted to monitor the implementation of the schemes by State Governments, recommend release of fund to the State Govts. and report to Ministry about the impact of the schemes. The schemes to be taken up for execution are required to be prioritized by an Empowered Committee headed by Chairman, Brahmaputra Board. The first and second meetings of the Empowered Committee were held on 29th December 2004 and 12th January 2005 respectively.

GANGA FLOOD CONTROL COMMISSION

Introduction

Ganga Flood Control Commission, a subordinate office of the ministry of Water Resources was established in 1972 with its headquarter at Patna.

Organisation

The Commission has been assigned the task of preparing comprehensive plans for flood management of the river systems in the Ganga basin, phasing/sequencing of programme of implementation, monitoring, performance evaluation etc. of various flood management schemes,

assessment of adequacy of waterways under road and rail bridges and providing technical guidance to the basin states namely West Bengal, Bihar, Jharkhand, Uttar Pradesh, Uttaranchal, Chhattisgarh, Madhya Pradesh, Delhi, Haryana and Rajasthan on flood management. The Commission also accords technical clearance of flood management schemes of the Ganga basin.

The Commission is headed by a Chairman with two full time Members and other supporting officers and staff. The representatives of concerned central ministries and departments as well as the Engineer-in-Chief/Chief Engineers of the basin states are part time members / permanent invitees.

Achievements During Year 2004-2005 :

The Commission has already completed the comprehensive master plans for all the 23 river systems in the Ganga Basin. Updating of these plans is in progress. The Commission has updated comprehensive plans for eighteen river systems. During the year 2004-05 updating of comprehensive Plan of the Kosi and Kamla river systems is under progress.

Assessment of adequacy of waterways under road and rail bridges.

The Commission has prepared reports on the adequacy of Waterways under the road and rail bridges of 21 river systems up to 2003-04. During 2004-05 study of the main Ganga river system from Buxar to Sahebganj has been completed and the report is under finalisation.

Monitoring Of Important Flood Management Schemes

During the year 2004-05, monitoring of only four major on-going flood management schemes viz. the Maniram Domingarh Bund scheme on right bank of the river Rohin in Uttar Pradesh and the

Tamluk drainage scheme, the Ghea Kunti drainage scheme and the development work in the Sunderbans in West Bengal has continued.

In addition, the following centrally sponsored schemes are also being monitored.

- Maintenance of flood protection works of Kosi and Gandak Projects in Nepal portion.
- Flood proofing programme in North Bihar.
- Extension of embankments of Lalbakeya, Kamla, Bagmati and Khando rivers (Presently the works of raising and strengthening of embankments on Lalbakeya and Bagmati river in Indian portion are under progress).
- Critical anti-erosion schemes are being executed by the states of West Bengal, Bihar, Jharkhand, Uttar Pradesh and Uttaranchal.

Monitoring of floods in the Ganga basin

GFCC is monitoring the flood events of Ganga basin every year. During the monsoon of 2004, 16 weekly flood bulletins were issued. The Annual flood report for the year 2003 in respect of Ganga basin has also been prepared and circulated. The Annual flood report for the year 2004 is under preparation.

Technical examination of flood management schemes

Technical examination of the schemes is a continuing activity of the commission. During the year 2004-2005, 33 Flood Management Schemes of the Ganga basin were cleared after detail examination. Another 10 schemes are expected to be received from various State Govts and examined by GFCC by the end of the year.

Meetings

- Chairman GFCC attended 2nd meeting of Joint Committee on Water Resources (JCWR) between India and Nepal held in October 2004 at New Delhi.
- Member GFCC attended meeting of HLTC at Kathmandu in September 2004.
- Director GFCC attended 6th meeting of Coastal Protection Development Advisory Committee in April 2004 at Pandicherry.

Committees

Maintenance of flood protection works of Kosi and Gandak

The Kosi High Level Committee (KHLC) under the leadership of Member (C) GFCC (Representing Chairman, GFCC & KHLC) inspected the various flood affected sites on river Kosi from 8-9 Dec., 2004 and made recommendations for flood protection work to be taken up on river Kosi before the floods of 2005. The meeting/site inspection by Gandak High Level Committee (GHLC) meeting for deciding the protection works on right bank of river Gandak to be taken up before the floods of 2005 is proposed to be held from 23-25 Dec. 2004.

Standing Committee on inundation problem between India and Nepal

Standing Committee on inundation problem between India and Nepal was set up in the year 1986 in pursuance of the decision taken by the Prime Minister of India and his Majesty the King of Nepal during discussion on 8th December 1985 for dealing with the problems of inundation along Indo-Nepal border on a continuing basis. 13th meeting of this Committee was held from 30th September to 2nd October 2004 at Kathmandu, Nepal..

Indo-Nepal Sub-Committee on embankment construction

So far six meetings of the sub-committee have been held. The last meeting was held in June 2004, in which various decisions regarding construction of embankment on Lalbakeya, Bagmati, Kamla & Khando rivers were taken.

The works on raising & strengthening of embankments on Lalbakeya and Bagmati rivers in India are in progress. The work on Lalbakeya embankment in Nepal portion is in advance stage of completion. The work on Bagmati embankment in Nepal portion is in progress.

Indo-Nepal Joint Committee on Flood Management

During the 2nd meeting of the India-Nepal Joint Committee on Water Resources (JCWR) held at New Delhi on 7-8th October 2004, the Committee acknowledged the necessity of a comprehensive master plan for flood management, since flood havoc has become a recurrent phenomenon in Terai region of Nepal and adjoining areas in India (West Bengal, North Bihar and Eastern Uttar Pradesh). In view of the floods during the year 2004, both in India and Nepal, the Committee (JCWR) felt that a short-term strategy identifying the vulnerable areas along various rivers and suggesting necessary remedial measures should be jointly worked out on priority.

FARAKKA BARRAGE PROJECT

Introduction:

The problem of deterioration of Calcutta Port had drawn the attention of Engineers and politician from time to time and numerous investigations were carried out on the Bhagirathi-Hooghly System to find a permanent solution to the problem of gradual and continued deterioration of flow over various years which limited the draft in Hooghly for vessels and the vessels

could travel upto the river bank and enter the Port. This is due to gradual silting at the off-take point of the Bhagirathi which takes off from the river Ganga resulting reduced upland supplies into the Bhagirathi-Hooghly system. To achieve the above objective a Barrage across the Ganga at Farakka and, canal off taking the upstream of the Barrage to Bhagirathi for diversion of 40,000 cusecs for continuous supply of water into the Bhagirathi-Hooghly system was constructed. Therefore, the scheme for construction of the Farakka Barrage and its appurtenances was approved by the Govt. of India.

Objectives

- The increased upland supplies from, the Ganga at Farakka into Bhagirathi have improved the navigability, reduced salinity in the system and ensured sweet water supply to Kolkata and surrounding areas from Farakka to Kolkata since its commissioning in 1975.
- The road cum rail bridges built across the river Ganga at Farakka establishes direct communication link to the north-Eastern states, Sikkim, Bhutan & Nepal.
- The Hooghly-Bhagirathi, the Feeder Canal, and the navigation lock at Farakka form a part of the Haldia - Allahabad Inland Waterway (National Waterways No.1) which has opened a new era of inland Navigation at a cheap rate.

The principal components of the project:

- A 2245 metres long barrage across the river Ganga with 109 no. bays of 18.29m each. Head -Regulator of 11 no bays of 12.20 metres each on the right side of the Barrage;
- A 213 metres long barrage across the river Bhagirathi at Jangipur with 15 Nos. bays of 12.20 metres each.
- 38.38 KM long Feeder Canal with 1133 cusecs (40000 cusecs) carrying capacity, taking off the head Regulator

on the right of the Farakka barrage.

- Navigation locks at Farakka, Jangipur & Kalindri Lock Channels, Shelter basins; Navigation lights and other infrastructures.
- Left Afflux Bundh of Farakka Barrage of 33.79 KM length and Left Afflux Bundh of Jangipur Barrage 16.31 KM length.
- Anti Erosion measures, River Training Works, and Flood protection works.
- Two Road-cum-Rail Bridges and two road Bridges across the Feeder Canal.
- A number of Regulators at different locations in both Murshidabad and Malda District.
- Bagmari Syphon at RD 48.0 of Feeder Canal.
- Regulators on river Pagla (6 bays of 12.2m) and Bansloi (5 bay of 12.2m) including gates.
- Jetties at downstream shelter basin & at RD 62.532 of Feeder Canal.

Important Activities

All the principal works concerned with the two barrages and feeder canal have been completed and commissioned in November'1987 and Navigation Control Tower in 1996. The Navigation lock at Jangipur is not completed fully. The anti erosion works in upstream and downstream of Farakka Barrage and maintenance of guide bunds and numerous vital structure including operation and maintenance of two barrages, feeder canal as well as maintenance of three big township, the special repair of gates and operation system of Barrage is continuing work.

There are three committees under whose guidance the works of Farakka Barrage Project were/are being carried. These committees are :

- 1) The Farakka Barrage Control Board.
- 2) The Technical Advisory Committee (TAC) under the chairmanship of Member(D&R), CWC with two sub

committees (a) Gate Regulation Committee, (b) Canal Study Group.

- 3) Committee for monitoring the progress under the chairmanship of member (D&R),CWC.

Extension of jurisdiction of Farakka Barrage Project and constitution of Advisory Committee.

The National Common Minimum Programme (NCMP) of the Government, inter alia, provides for prevention of erosion in Padma-Ganga-Bhagirathi as also for the flood control in the State of West Bengal. In order to protect the assets of the Farakka Barrage Project by undertaking anti erosion works in the critical zones of the river, it has been decided with the consent of Govt. of West Bengal for extending the jurisdiction of the Farakka Barrage Project 40 KM upstream (upto Bhutani Diara) and 80 KM downstream (upto Jalangi) along the bank of River Ganga - Padma . steps have been taken augment the budgeting provision for the purpose.

An Advisory Committee has been formed with Additional. Secretary(WR) as chairperson and members drawn from Ministry of Water Resources, Central Water Commission, Farakka Barrage Project and Govt. of West Bengal with people representatives of the area as the special invitees to monitor and supervise the activities of the Farakka Barrage

Project. The advisory Committee held its 1st meeting on Feb'23rd 2005 at Farakka .

Progress of Work:

All the Principal Works concerned with the two Barrages (Farakka Barrage and Jangipur Barrage),Feeder canal and other structures have been completed well before schedule. The Farakka Barrage was inaugurated in 1975.

In the River Ganga, erosion is severely taking place in the districts of Malda & Murshidabad. The project has been taken up flood protection works in 11.5 KM upstream & 6.9 KM downstream of Farakka Barrage and 16.3 KM downstream of Jangipur Barrage. Major Protection works have been completed and the balance work 700m is proposed to be completed before June'2005.

38.38 KM of Feeder Canal along with several structures, inspection roads and several Free Ferry Service are being maintained adequately to ensure supply- of water to Canal to the designed capacity of 40000 cusecs. Protection works of scoured bed, bank & slope of Feeder Canal at various locations, (as per recommendation of Canal Study Committee/TAC) were completed and also under progress. The special repair of Farakka Barrage gates (109) is expected to be completed by March,05. The Special repair of Jangipur Barrage gates (15) have been completed.

CHAPTER 5

EXTERNAL ASSISTANCE IN WATER RESOURCES SECTOR

Introduction

The Ministry of Water Resources assists the State Governments and its organizations for availing external assistance from different funding agencies to fill up the resource gap and state-of-the-art technology for water resources development of the country, particularly for the irrigation schemes.

The World Bank continues to be the primary source of external assistance in the

water resources sector. Assistance is also being availed from multilateral/bilateral agencies and countries.

A brief account of ongoing externally aided projects (12 in number) being implemented in various States with assistance from the World Bank, European Economic Community (EEC) and other bilateral agencies namely Japan Bank for International Cooperation (JBIC) and Kreditanstalt für Wiederaufbau (KfW), Germany is as under:-

(A) WORLD BANK AIDED PROJECTS

S. No	Name Of Projects	State	Assistance Amount In Million Donor Currency
1.	A.P.Economic Restructuring Project (Irrigation component) Ln-4360-IN	Andhra Pradesh	US\$ 170
2.	Karnataka Community Based Tank Management Project - CR.3635-IN	Karnataka	SDR 80
3.	Madhya Pradesh Water Sector Restructuring Project	Madhya Pradesh	USD 396
4	Rajasthan Water Sector Restructuring Project Cr.3603-IN	Rajasthan	SDR110
5.	UP Water Sector Restructuring Project - Cr.3602-IN	Uttar Pradesh	SDR 117

(B) ASSISTANCE FROM EUROPEAN ECONOMIC COMMUNITY

Sl. No.	Name Of The Project	State	Amount Of Assistance (In Million Eur)
6.	Minor Irrigation Project	Orissa	10.70
7.	Maharashtra Saline Land Reclamation Project (Phase II)	Maharashtra	15.50

(C) BILATERAL ASSISTANCE

JAPAN			
Sl. No.	Name of the Project	State	Amount of assistance (Million Donor Currency)
8.	Modernisation of Kurnool-Cuddapah Canal	Andhra Pradesh	Yen 16049 – Tranche-I Yen 4773 – Tranche-II
9.	Rajghat Canal Major Irrigation Project	Madhya Pradesh	Yen 13222

10.	Rengali Irrigation Project	Orissa	Yen 7760- Tranche-I Yen 6342- Tranche-II
GERMANY			
11.	Maharashtra Minor Irrigation Project	Maharashtra	EUR 23.008
12.	Minor Irrigation & Rural Water Supply	Himachal Pradesh	EUR 2.659

PROJECTS RECENTLY NEGOTIATED

Sl. No.	Name of Project	Estimated Cost (Rs. in Crore)
1	Hydrology Project Phase-II	632

PIPELINE PROJECTS

At present the following projects are under consideration of the funding agencies for appraisal.

A. WORLD BANK ASSISTANCE

Sl. No.	Name of Project	Estimated Cost (Rs. in Crore)
1	Dam safety Assurance, Rehabilitation and Disaster Management Project	917
2	Maharashtra Water Service Improvement Project	1433
3.	Tamil Nadu Water Resources Consolidation Project Phase-II	2800

B. ASIAN DEVELOPMENT BANK

S.No.	Name of Project	Estimated Cost (in DC Million)
4	Chhattisgarh Irrigation Development Sector Project	US\$ 71.00

C. BILATERAL ASSISTANCE

S.No.	Name of Project	Funding Agency	Estimated Cost (Rs. incrores)
5	Swan River Flood Management and Integrated Land Development Project, Himchal Pradesh	Japan	123.93
6	Rehabilitation of Minor Irrigation Tanks in Rajasthan	Japan	586.83

JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)

JICA is responsible for the technical cooperation aspect of Japan's Official Development Assistance (ODA)

programmes. The Technical Cooperation is aimed at the transfer of technology and knowledge that can serve the socio-economic development of developing countries. JICA carries out a variety of programmes to support the nation building of developing countries through such

technical cooperation. At present, a proposal namely 'Integrated Ground Water Resources Development and Management in Rajasthan' is under consideration of JICA under their Development Study Programme.

During the financial year 2004-05 an amount of Rs.427.547 crore has been received from the external funding agencies and utilized till November, 2004 by the Central/ State Governments for implementation of various externally aided projects in Water Resources Sector.

HYDROLOGY PROJECT

The World Bank assisted Hydrology Project was implemented from Dec, 1995 to Dec, 2003 by nine states in Andhra Pradesh, Chhattisgarh, Gujarat, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Orissa and Tamil Nadu and six central agencies viz Ministry of Water Resources (Proper) Central Water Commission, Central Ground Water Board, Central Water & Power Research Station, National Institute of Hydrology and Indian Meteorological Department.

The main objective of the project was to establish a functional Hydrological Information System (HIS) and an improved institutional capacity of implementing agencies to build, operate and utilize the HIS to the benefit of

different user groups. To realize the above objective, the project had supported:

- Upgrading and expanding physical infrastructure for all aspects of data, viz collection, collation, processing, storage and dissemination;
- Provision of equipment and material;
- Institutional strengthening including technical assistance and training;
- New buildings, laboratories, computer hardware/software; and
- Incremental, operating and maintenance costs.

Financial and Physical Status.

The project agreement was for credit assistance of SDR 90.1 million. The Project cost was revised during mid term review from 90.1 million SDR to 75.1 million SDR in the year 1999 mainly due to decrease in cost of computer, over estimation of training targets and increase in dollar parity with the rupee. The total expenditure upto Sept, 2003 was Rs. 564.34 crore which was 92 % of the mid term review estimated cost of 75.1 million SDR (Rs. 609.24 crore). The final expenditure was Rs. 605.28 crore at the closing of the project (31.12.2003). The reimbursement received under the Project upto 31.12.2003 was 70.79 million SDR out of total credit of 75.1 million SDR which was about 94.26%. The overall component-wise financial status on the closing of Project is as given below

Sl. No.	Component	Allotment (in crore of Rupee)	Expenditure (in crore of Rupee)	Financial Status as on 31.12.2003 in percentage
1.	Civil works	172.74	171.82	99.47
2.	Equipment and materials (goods)	218.98	209.15	95.51
3.	Training and studies	12.12.	10.58	87.22
4.	Incremental staff salaries and recurrent costs	180.90	213.40	117.97

Physical status on closing of the project (31.12.2003) in major infrastructure components is as indicated below: -

Sl. No.	Item	Target	Achieved	%age achievement
1.	River gauging sites	916	916	100
2.	Meteorological stations	436	436	100

3.	Observation wells	7912	7895	100
4.	Water quality Labs	274	272	99
5.	Buildings	1574	1557	99
6.	Computers	656	637	97
7.	Vehicles	573	524	92

Achievements of Hydrology Project

Establishment of monitoring stations and creation of hydrological data base on surface and ground water resources, water quality and meteorology in 9 participating states and 6 central agencies were the major benefits due to the project implementation. The monitoring data collected during the project had high quality, better frequency and evenly spread spatial distribution for water level and water quality, and also avoided duplication of data collection by State and Central agencies. The implementation of project was very useful in planning network, providing hardware and software on surface water, ground water and water quality, preparation of standard manuals including guidelines for execution of Hydrological information System (HIS) and providing trainings to enhance skills of technical staff of the participating agencies.

(i) Monitoring network

The noteworthy gains in the area of data collection on surface water, ground water and water quality have been (a) optimization of network within the agency and integration of monitoring networks amongst different agencies operating in the same domain; (b) upgrading of domain specific monitoring network; (c) introduction and operationalisation of high frequency, error free data collection mechanisms; (d) establishment of time-specific and location-specific water quality monitoring network; and (e) uniform and standardized measurement methodologies and techniques.

(ii) Certified software for entry, processing, analysis and storage of data

Uniform and certified software has been adopted by state and central agencies. Surface Water Data Entry System (SWDES) and Ground Water Data Entry System (GWDES) were developed, customized and being used for data entry. Similarly Hydrological Modeling System (HYMOS), Ground Water Estimation & Management System (GEMS) and (WISDOM) had been developed and are being used for data processing and storage by the implementing agencies.

(iii) Establishment of permanent data centre in the participating states, CWC and CGWB and inter-agency data exchange

Establishment of linkage amongst various field level data collection units and multi location data processing centres are key contributions of the Hydrology Project. In total, 390 data entry and processing centres were established at various levels and 31 data storage centres at the apex levels during the project.

(iv) Standard procedures for data collection, analysis and storage

Standard procedures for data collection, analysis and storage were framed in the form of HIS protocols during the project phase. These procedures had been accepted and translated into uniform institutional practices across the states and agencies.

(v) Training

One of the outstanding gains from the Hydrology Project was extensive skill building of HIS staff/at all levels. Over 10000 people at the top & middle managerial/operational and field levels were trained by way of attending various courses in data collection, hydrome-

teorology, data management, data entry-processing and Basic IT level – 1 & 2.

(vi) Reference manual for HIS operations

The HIS reference manuals for surface water and ground water covering various operational, maintenance and management aspects of HIS have been documented and circulated to all the agencies for use at all the levels.

(vii) R&D Projects

The Hydrology Project also initiated some innovative R&D projects like Integrated River Basin Planning and Management in Sabarmati and Godavari basin, solute transport modeling studies in Kerala artificial recharge in alluvial and hard rock of Maharashtra, ground water contamination and solute transport modeling at Dindigul, Tamilnadu etc.

(viii) Computerized historical data

A large store house of historical data available with the implementing agencies has been converted into computer compatible formats following several stages of validation during the project phase.

HYDROLOGY PROJECT-PHASE II

Hydrology Project Phase –II is a follow-on project of Hydrology Project and to be implemented with the assistance of World Bank. The project objectives are:-

- i. To extend and promote the sustained and effective use of the HIS by all implementing agencies concerned with water resources planning and management in the 13 States and 8

Central agencies. The coverage of existing states under the project is to help them move from development of HIS (as in HP-I) towards use of HIS in water resources planning and management.

To extend the HIS to the four new state agencies of H.P., Punjab, Goa and Pondicherry.

Strengthening the capabilities of implementing agencies at state/central level in HIS data utilisation for efficient water resource planning and management.

- iv. Awareness building and outreach services about HIS use.

During the year 2004-05, the Project preparation work in association with the World Bank was continued. Co-ordination with the 30 participating agencies was made for the purpose. The participating agencies are surface and ground water agencies in 9 states viz. A.P., Chhatisgarh, Gujarat, Karnataka, M.P., Kerala, Maharashtra, Orissa, Tamilnadu; four new state agencies of H.P., Punjab, Goa and Pondicherry and 8 Central agencies viz. CGWB, CWC, IMD, NIH, CW&PRS, MoWR, CPCB and BBMB.

The total cost of the Project including taxes, duties, physical & price contingencies is Rs. 631.83 crore. Negotiation with the World Bank was held on 24.8.2004 and a loan of Rs. 493.63 Crore (105.51 Million US\$) has been approved by World Bank as IBRD Loan. The project is proposed to be implemented over a period of six years from the financial year 2005. The EFC Memo for the Project is under process for securing approval of the Govt. and signing of the Project.

CHAPTER 6

CENTRAL WATER COMMISSION

Introduction

Central Water Commission is an attached office of the Ministry of Water Resources with its Head Quarters at New Delhi. It is a premier Technical Organisation in the country in the field of Water Resources since 1945. The Commission is entrusted with the general responsibility of initiating, coordinating and furthering, in consultation with the State Governments concerned, schemes for control, conservation and utilization of water resources throughout the country for the purpose of Flood Control, Irrigation, Drinking Water Supply and Water Power Development.

ORGANISATIONAL SETUP

The Central Water Commission is headed by a Chairman and Ex-Officio Secretary to Government of India. The Commission has three Technical Wings, namely:

- Designs and Research Wing
- Water Planning and Projects Wing
- River Management Wing

Each Wing is headed by a Member and Ex-Officio Additional Secretary to Government of India. The activities of the wings are carried out by 18 functional units in the headquarters, each headed by a Chief Engineer level officer. The National Water Academy located at Pune is also a part of the Commission. Besides, the Commission has 13 Regional Field Organisations, each headed by a Chief Engineer.

ACTIVITIES

The activities of CWC may be summarized as follows:

Resources Assessment

- a. Observation of hydrological and hydro-meteorological data

- b. Analysis and publishing of data related to water resources

Macro Level Planning

- a. National Perspective Plan and Basin-wise Master Plan.
- b. Matters related to Inter-State Water Sharing/Disputes

Project Planning

- a. Survey & Investigation
- b. Hydrological Studies
- c. Planning for Irrigation and other Uses
- d. Design
- e. Construction Equipment Planning and Plant Layout
- f. Environmental & Rehabilitation and Resettlement Issues

Project Evaluation

Techno-economic Appraisal of Water Resources projects

Execution of Water Resources Development Projects

- a. Project Monitoring
- b. Advice on various Planning and Design problems encountered during construction
- c. Revival, restoration and rehabilitation of water bodies
- d. Advice on coastal erosion problems

Operation of Water Resources Projects

- a. Flood Forecasting
- b. Reservoir Inflow Forecast
- c. Regulation of Reservoirs
- d. Dam Safety Aspects

Research and Development

- a. Co-ordination of R&D Activities
- b. Application of Modern Techniques:
 - (i) Development & Application of Software & Models for Water Resources related Problems
 - (ii) Remote Sensing Technology
 - (iii) Studies on Sedimentation

- c. Performance evaluation and Benchmarking of water resources projects
- d. Morphological studies
- e. Regional Hydrological Studies

Standardization and Documentation

- a. Preparation of BIS Codes related to Water Resources
- b. Preparation of Manuals/Guidelines

Guidance/Advisory Role

- a. Organising of Trainings/Workshops
- b. Representation on various Committees/Boards

Others

- a. Mass Awareness programmes

Technical Support to Ministry of Water Resources and Departments of Government of India are also provided on all matters related to water resources development and management.

MAJOR ACTIVITIES

Hydrological Observations

The implementation of World Bank assisted 'Hydrology Project' has helped in improvement in the quality of data and its processing, storage and retrieval. Hydrological Information System (HIS) comprising of comprehensive, easily accessible and user-friendly database has been established for the peninsular India under the project for 284 sites. Comprehensive hydrological data banks have been successfully established in the regional data centres in the states and 5 regional offices of CWC and National Data Centre at CWC (HQ), Delhi. Buoyed with the success of the Hydrology Project, the Government is contemplating to horizontally extend the gains made in the Hydrology Project-I to other states under the second phase of the project.

Water Quality Monitoring

Collection of water samples at hydrological observation sites of CWC for estimation of water quality is an important activity. CWC monitors water quality at 371 key stations through a network of 286 water quality laboratories fully equipped with modern equipment of different levels (258 Level-I Laboratories, 24 Level-II Laboratories and 4 Level III/II⁺ Laboratories). The data generated is computerised in data base system and disseminated in the form of water quality year books and water quality bulletins regularly.

Level II⁺ Laboratory at Hyderabad has conducted 5th round of Analytical Quality Control Programme (AQC) for 25 CWC Water Quality Laboratories and 11 State Surface Water Quality Laboratories.

Ministry of Environment and Forest 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 through the extraordinary notification in the Gazette of India dated 22nd 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 Committees (WQRC).

WQAA has constituted a working group headed by Member (RM), CWC to advise WQAA on the minimum flows in the rivers to conserve eco system. WQAA has also constituted a Standing Group, headed by the Member (RM), CWC to draw scheme(s) for imposition of restriction in water abstraction and discharge of treated sewage/trade effluent on land, river and other water bodies with a view to mitigate crisis of water quality. Three meetings of Working Group on minimum flows in the

ivers and one meeting of Standing Group-II were held during 2004-2005.

Flood Forecasting and Inflow Forecasting

Flood Forecasting activities in India in a scientific manner made a beginning in 1958 when the erstwhile Central Water and Power Commission (CW&PC) set up a Flood forecasting Unit (FFU) for issuing flood forecasts and warnings of floods in the 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 145 level forecasting stations on major rivers and 27 inflow forecasting stations on major dams/barrages. It covers 9 major river systems in the country, including 65 river sub-basins pertaining to 15 states viz. Andhra Pradesh, Assam, Bihar, Chhattisgarh, Gujarat, Haryana, Jharkhand, Karnataka, Madhya Pradesh, Maharashtra, Orissa, Tripura, Uttaranchal, Uttar Pradesh & West Bengal and one union territory Dadra & Nagar Haveli and the National Capital Territory of Delhi. Normally forecasts are issued 12 to 48 hours in advance, depending upon the river terrain, the location of the flood forecasting sites and base stations.

During the flood season 2004 (May to Oct), 4889 flood forecasts (4184 level forecasts and 705 inflow forecasts) were issued, out of which 4696 (96.05%) forecasts were within accuracy limits.

To make the flood forecasts more accurate, effective and timely, CWC is continuously updating and modernizing its flood forecasting system. During the IX Plan, Modernization of inflow forecasting services in Mahanadi & Chambal basins was taken up with a view to improve the quality and accuracy of the forecasts as well as to increase the warning time to forecast 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 catchment models. This scheme is of immense help to the project authorities to know well in advance about the quantum of water likely to be received at various dam sites and flood prone cities so that they can take advance action for suitable reservoir regulation for ensuring safety of the dam as well as property and livestock. During the X Plan it is proposed to extend this system to Brahmaputra, Barak, Damodar, Krishna, Godavari, Yamuna, Ghaghra, Rapti and Sutlej river basins.

Under USAID assisted Disaster Management Project of Ministry of Home Affairs – Climate Forecasting, proposal for development of decision support system for flood forecasting and inundation forecast model for Mahanadi basin and issue of flash flood forecasting for Sutlej basin are under consideration of the Ministry. Another proposal for development of real-time flood forecasting system for Brahmaputra and Barak basin (joint project with Department of Information and Technology) is also under consideration.

Survey and Investigation

More than 200 irrigation and HE projects have been investigated by CWC and the Detailed Project Reports (DPR) have been prepared and submitted to the concerned authorities. At present 15 projects (India – 13 & Nepal – 2) are under investigation by CWC. DPR for Sessiri multipurpose project, Arunachal Pradesh has been completed in January, 2005.

CWC has also carried out investigation of more than 30 projects in the neighbouring countries in Bhutan, Myanmar and Nepal. Pancheshwar Multi Purpose Project has been investigated by Joint Project Office – Pancheshwar Investigations (JPO-PI). The Joint DPR could not be completed due to some outstanding issues still to be resolved

by the Joint Group of Experts (JGE) of Nepal and India.

Joint Project Office for survey and investigation of Sapta Kosi High Dam Multipurpose project and Sun Kosi Storage-cum-Diversion Dam has been opened in Nepal in August, 2004 and the work is under progress.

Morphological Studies

Morphological Studies are very important from the point of view of studying the behaviour of the river, shifting of river course and plan for the remedial measure for erosion and other related problems. Morphological studies for river Narmada has been completed whereas for rivers Kosi and Gandak are under progress. During X Plan morphological studies of Brahmaputra, Ghaghra, Sutlej and Ganga (Allahabad to Buxar) have also been planned.

Coastal Erosion

The National Hydrographic Office, Dehradun, states that the Indian Coastline is extending to a length of about 7516.60 kms out of which about 1380 km is facing severe erosion. Almost all the maritime States/UTs are facing erosion problems of varying magnitudes.

A National Coastal protection project (NCP) covering all the maritime States/UTs is under formulation in Central Water Commission for protection of severe erosion prone coastal areas through structural as well as non-structural measures. Central Government is also providing assistance to maritime states/UTs to take up coastal protection works in severely affected areas. After the devastation due to Tsunami along the coast of Tamil Nadu, Kerala, Andhra Pradesh, Pondicherry and Andaman & Nicobar Islands, coastal protection works have assumed greater significance.

Hydrological Studies

Detailed Hydrological studies are carried out by Central Water Commission at various stages of projects for assessment of quantities of available water and its time distribution, estimation of design flood, sediment rate and its distribution pattern in the reservoir. These details are essentially required to:

- (i) Carry out optimum planning for the available water resources;
- (ii) Design the structure from safety consideration;
- (iii) Estimate the life of reservoir.

CWC has carried out hydrological studies in respect of almost all the projects in the country. At present hydrological studies in respect of 23 projects are in hand.

Hydrological studies are made in connection with Detailed Project Reports prepared by CWC. 146 projects were dealt by CWC during the year 2004-05 from hydrological point of view, out of which 15 projects were dealt as consultancy work and 131 projects were dealt for Technical Examination /study of hydrology.

CWC has come up with Indian version of regional models for rational estimation of design flood. Sub-zonal reports for estimating design flood for use in areas with insufficient hydrological and hydrometeorological data have been brought out by CWC which are extensively used by various State Government and Central Government Departments/Organisations. Such models are available for 23 sub-zones out of the 26 sub-zones in which the country has been divided.

PMP atlas for Krishna and Indus Basins are under preparation with the assistance of IITM, Pune.

Design

The Central water Commission is actively associated with design of almost all the

major water resources projects in the country by way of design consultancy or during technical appraisal of the projects. Four design units are functioning to cater to specific requirements and to attend to special design related problems of different regions. A number of projects in the neighbouring countries have also been designed. At present, CWC is carrying out designs in respect of 99 projects. In addition, specific problems in respect of 4 projects have also been referred to CWC.

Under the 50,000 MW Initiative launched by the Hon'ble Prime Minister, Pre-Feasibility-Reports for 162 potential hydroelectric projects in different parts of the country were got prepared through various consultants appointed by Central Electricity Authority. CWC played a major role in the preparation of these reports by way of hydrological studies, project layout, project planning etc.

Dam Safety

There are 4050 existing large dams in the country. In addition, 475 large dams are under construction. About 60% of these dams are more than 20 years old. Appropriate measures for the maintenance of such structures are critical for their safety. Dam Safety Organization of CWC acts as nodal agency in implementation of the World Bank assisted "Dam Safety Assurance and Rehabilitation Project (DSARP)" in which 4 states participated. The success of this project led to the framing of a fresh proposal named "Dam Safety Assurance, Rehabilitation Disaster Management Project (DSARDMP)" which has 11 participating states, namely Andhra Pradesh, Bihar, Chhattisgarh, Gujarat, Jharkhand, Kerala, Maharashtra, Tamil Nadu, Uttar Pradesh, Uttaranchal and West Bengal. This proposal estimated to cost Rs. 718.99 crores, has been submitted to MOWR for taking up with the World Bank. The proposal has been cleared by the

Planning Commission and forwarded by DEA to the World Bank for consideration.

The National Committee on Dam Safety (NCDS), constituted by the GOI in October, 1987, acts as a forum for exchange of views and information on all aspects concerned with the safety of dams and provides guidance to dam owning states / agencies. The 26th meeting of this committee was held on 30.11.2004. Major dam safety issues were discussed and deliberated during the meeting. The importance on the necessity of Dam Safety Act was emphasised and the states were requested to bring in legislation in their respective states.

National Committee on Seismic Design Parameters (NCSDP) for River valley projects, earlier known as "Standing Committee to suggest Design Seismic Coefficient of Hydraulic Structures in River Valley Projects", reconstituted in October, 1999 review and finalize seismic design parameters of water resources projects. During 2004-05, 14th meeting of NCSDP was held on 29.4.2004 at Omkareshwar Project site, East Nimar (M.P.) in which design seismic parameters for three projects were recommended and site specific seismic study reports of four projects were suggested for modifications.

Environmental Management and Rehabilitation - Resettlement (R&R) Issues

Central Water Commission is represented in the Committees set up at National and State level by the Ministry of Environment & Forests for recommending clearance of River Valley and Hydro-electric Projects. A National Environmental Monitoring Committee for River Valley Projects (NEMCRVP) has been set up by the MOWR to monitor implementation of Environment Management Plan and observance of environmental safeguards as per environmental clearance. CWC is

actively involved in the monitoring of resettlement and rehabilitation issues of selected water resources projects in various states of India. R&R Monitoring team visited the resettlement sites/ submergence villages of Hasdeo Bango Project (Chhattisgarh) and Kol Dam Project (HP)

Project Appraisal

Since 1961 Central Water Commission has appraised more than 1400 projects. The appraisal of the project ensures that the project proposal is in tune with overall development plan; the basic planning of the project is reliable and investigations are as per established norms. It is also established that international/interstate agreements or tribunal awards for utilization of water are duly followed and the layout and design of the project are optimal. After establishment of the techno-economic feasibility of the project, the Advisory Committee on irrigation, flood control and multipurpose projects headed by the Secretary, Water Resources, considers the project for acceptance and thereafter recommends it for investment clearance by the Planning Commission. Power projects proposed by the State Electricity Boards/Private Sector are scrutinized in CWC from hydrology, civil design, interstate and cost angles in case of Hydel Projects and for establishing water availability for cooling and other purposes in case of Thermal Projects. The process of Project Appraisal involves examination of the different features of the project simultaneously by different specialized units of CWC to ensure early appraisal and clearance. The suggestions for improvement/ modifications are suitably incorporated in consultation with the project authorities.

During the year 2004-05, technical examinations of 7 irrigation projects were completed and one irrigation project was cleared by the Technical Advisory Committee. 92 irrigation schemes (39

Major & 53 Medium) and 63 flood management schemes are under different stages of appraisal.

External Financial Assistance to Water Resources Projects

The Commission assists the State Governments by providing technical support for preparation of project reports in respect of projects to be posed for external funding. Presently, 29 schemes and 3 Water Sector Re-structuring Projects are under various stages of appraisal.

Project Monitoring

CWC is carrying out general monitoring of 135 ongoing major, medium and Extension Renovation and Modernization (ERM) projects. The above 135 ongoing projects include 26 major pre-fifth / fifth Plan projects which have been put under vigorous monitoring and are visited frequently or at least twice a year for achieving their completion during the X Plan period i.e. by March, 2007.

The major, medium and selected minor surface water irrigation projects receiving Central Loan Assistance under Accelerated Irrigation Benefits Programme (AIBP) are also monitored by CWC. As a part of AIBP monitoring, the projects are inspected twice a year and monthly expenditure reports are collected. The recommendations of CWC form the basis for release of funds by the Ministry of Water Resources/ Ministry of Finance. CWC is monitoring 140 major and medium projects under AIBP. In order to explore possibility of monitoring of AIBP Project through Remote Sensing, studies for 2 projects on pilot basis is being assigned to National Remote Sensing Authority (NRSA) Hyderabad.

Central Water Commission is also monitoring physical and financial progress of more than 3000 minor irrigation

schemes in North Eastern Region and other hilly states and implementation of CAD programme in respect of 133 irrigation projects.

Monitoring of Reservoir Level and Live Storage Capacity

The Central Water Commission has been monitoring water levels and storage in respect of 71 important reservoirs in the country on weekly basis which forms an important input for Ministry of Agriculture's Crop Weather Watch Group. The total live storage capacity of the reservoirs being monitored is about 131.22 Billion Cubic Metre (BCM).

Central Water Commission has identified 54 more projects (each having storage capacity of 0.250 BCM or more) for inclusion in the monitoring system. Inclusion of these 54 reservoirs will raise the number of projects under monitoring to 125 and storage capacity from 131.22 BCM to 156.69 BCM, which is about 74% of the total capacity of 213 BCM created so far. Efforts are being made to collect the information from State / Project authorities and to include these projects in the monitoring system of CWC.

Application of Remote Sensing Technique in Water Resources Sector

During the X Plan, it has been proposed to take up Satellite Remote Sensing based reservoir sedimentation studies for 124 reservoirs out of which 79 studies will be carried by CWC, assessment of water logging, salinity & alkalinity affected soils in the whole country and morphological studies of six rivers viz. Kosi, Gandak, Brahmaputra, Ghaghra, Satluj and Ganga from Allahabad to Buxar. Accordingly, reservoir sedimentation studies meant for 21 reservoirs have been completed while work on another 25 reservoirs is in progress. Draft report on assessment of water logging, salinity and alkalinity

affected soils for 6 states i.e. Rajasthan, Haryana, Bihar / Jharkhand, Delhi, Karnataka and Goa have been submitted. All the 23 reports in this regard will be completed during the 10th Plan period i.e. by March 2007. Work on Morphological studies of three river stretches is in progress.

Benchmarking of Irrigation Projects

Benchmarking in irrigation system is in use in developed countries for quite some time. This concept is now being acknowledged as a potent management tool in irrigation sector in India as well. Accordingly, a Core Group for Benchmarking of Irrigation Systems in India has been set up by MoWR. CWC is playing an active role as a coordinator as well as a facilitator by way of providing technical support to the State Governments. During the X Plan 4 national level and 20 project level workshops on Benchmarking of Irrigation Projects are to be conducted. One Regional Level Workshop on Benchmarking of Irrigation System in India under this scheme was organized in October 2003 at Tezpur (Assam). The second such workshop was held at Bhubaneswar in March 2004

Irrigation Performance Overview of Completed Irrigation Projects:

Like any other developmental project, Water Resources projects are also conceived, formulated and implemented with well-defined objectives. The formulation is made on certain assumptions based on learning about nature, which cannot be predicted accurately despite best efforts and technological aids. Moreover, socio-economic and environmental aspects also play an important role in formulation of the project. Thus, difference in achievements with reference to set objectives make it imperative on the part of Project Authority to carry out periodic performance evaluation of the project in order to assess

its efficiency and to take remedial measures wherever warranted. Keeping these objectives in mind, the Central Water Commission has taken up the performance evaluation studies of completed irrigation projects as a pilot project, covering various aspects such as system performance, socio-economic, agro-economic and environmental aspects.

Performance Evaluation Studies of Irrigation Projects were taken up in the country for the first time in early seventies. Performance Evaluation Studies of 13 major and medium irrigation projects located across the country have been accomplished by CWC till the end of the IX Plan. Ten more such studies are planned for X Plan period out of which studies in respect of 4 projects are under progress while for another four projects are being taken up.

Hydrographic Survey of Important Reservoirs

Capacity survey of reservoirs is a continuing scheme hitherto known as “Hydrographic Survey of 30 important reservoirs in the country” initiated during VIII Plan and continued through IX Plan. At the end of IX Plan, a total of 19 reservoirs were covered under the scheme and 15 more reservoirs are planned to be covered during X Plan. Capacity survey reports for 18 reservoirs have been completed and for one reservoir, it is under finalisation. During 2004-05, 10 more reservoirs are being taken up for capacity survey.

Status Report on Watershed Management and Water Harvesting

The Status Report on Watershed Management and Water Harvesting has been prepared and the same is under print.

Policy and Planning

The Ministry of Water Resources is responsible for laying policy and planning guidelines for the development and regulation of country's water resources. The National Water resources Council (NWRC), under the Chairmanship of the Prime Minister and with Chief Ministers of States Administrators of Union Territories and Union Ministers of concerned departments as Members, is the apex policy making body for the water resources development in India. Issues connected with the development of the Water Resources of the country as well as progress achieved in the implementation of the National Water Policy are required to be considered, reviewed and reported to the council from time to time. The Government of India, has, therefore constituted a National Water Board (NWB) of the National Water Resources Council, under the Chairmanship of the Secretary (Water Resources) and Member (WP&P), CWC as Member-Secretary.

The Working Group headed by Chairman, CWC finalized the draft national policy guidelines for sharing / distribution of waters of inter-state rivers amongst States in its 3rd meeting held in June 2004 and the same has been included as one of the agenda for the 12th meeting of NWB.

Integrated River Basin Planning

Recognising that the Integrated Water Resources planning, development and management is the key to future policies and programmes, the National Water Policy adopted by the Government of India in April, 2002 enunciates that “Water is a scarce and precious national resource to be planned, developed, conserved and managed as such, and on an integrated and environmentally sound basis, keeping in view the socio-economic aspects and needs of the States. It is one of the most crucial elements in developmental planning. As the country has entered the 21st century,

efforts to develop, conserve, utilise and manage this important resource for sustainability have to be guided by national perspective". Keeping the above in view, under Hydrology Project – I, a case study “Integrated River Basin Planning Development and Management of Sabarmati River Basin” (Gujarat portion) was undertaken using the RIBASIM model. The study has been completed and the report is under print.

National Water Academy and Other Training Activities

National Water Academy at Pune is envisaged to function as Centre of Excellence for in-service training of Water Resources Engineering Personnel of State Government, Central Water Commission and other Central organizations. So far, National Water Academy, Pune has conducted 144 courses, in which 3146 officers (972 from CWC and 2174 from State Governments and other Central Government Agencies) have been trained. In addition, the Training Directorate at Headquarters has organized about 360 courses on various topics related to Water Resources Development. About 10,500 officials of various State Governments and Central Government Organizations/ Departments have undergone training through these courses. During the year 2004-05, 24 courses at NWA, Pune and 30 short term courses at CWC Headquarters at New Delhi were organized.

Advisory Role of Central Water Commission

CWC officers are represented on various committees/Boards etc. of different organizations and make valuable contribution. Also, the Chairman, Members and other senior officers of Central Water Commission preside over a number of important Committees dealing with the technical matters in Water Resources sector.

Interaction with Ministry of Agriculture

The officers of Central Water Commission actively participate in the Inter-Ministerial Central Teams Constituted by the Ministry of Agriculture from time to time for National Disasters like flood, cyclone, drought etc.

An 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 optimizing the yield per unit of water. The joint panel, after expiry of its term of three years, was further reconstituted seven times so far.

CHAPTER 7

REDRESSAL OF INTER STATE RIVER ISSUES

Inter-State Water Disputes (Amendment) Act, 2002

Inter-State Water Disputes Act was originally enacted by the Parliament in 1956 for adjudication of disputes relating to waters of inter-state rivers and river valleys. In view of Sarkaria Commission recommendations, Inter-State Disputes Act 1956 has been amended and “The Inter-State Water Disputes (Amendment) Act, 2002” (No. 14 of 2002 dated 28th March, 2002) has been enacted. The Act has come into force from 6th August, 2002. The amendments include time frame for constitution of the Inter-State Water Disputes Tribunal and also prescribes time limit for the tribunals to give their awards. As per the amendment, Central Government will have to constitute a Water dispute Tribunal within a period of one year from the date of receipt of a request from any State Government. The award of the Tribunal shall have the force of decree of Supreme Court.

INTER-STATE WATER DISPUTES AND TRIBUNALS

Cauvery Water Dispute

Progress in Adjudication of the Dispute before the CWDT:

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. Since its constitution, the Tribunal disposed off about 138 Civil Miscellaneous petitions (CMPs) out of 148 filed by party States framed issued for adjudication, completed cross examination of expert witnesses and completed arguments. During 2004-05, State of Tamil Nadu has taken up arguments on issues

covered under Group-3 i.e. relating to equitable apportionment and related subjects which is likely to continue during the current year.

Monitoring of the Implementation of Interim Order of CWDT

Under the provisions of Section 6 A of the ISWD Act, 1956, the Central Government has notified a Scheme called Cauvery Water (implementation of the Order of 1991 and all subsequent Related Orders of the Tribunal) Scheme, 1998, consisting of Cauvery River Authority and Monitoring Committee. The Cauvery River Authority consists of the Prime Minister as Chairperson and Chief Ministers of the basin States as members. The Monitoring Committee consists of Secretary, MOWR as Chairperson, Chief Secretaries and Chief Engineers of the basin States as Members and Chairman, Central Water Commission as Member. The Authority is required to give effect to the implementation of the Interim Order dated 25th June 1991 of the Tribunal and its related subsequent orders.

During the current year, no meeting of the Authority could be held. However, the Monitoring Committee under the Cauvery River Authority (CRA) held its 21st meeting on 22nd September, 2004. In this meeting, the storage position in the reservoirs in the Cauvery Basin, along with other issues relating to implementation of Interim Award of Cauvery Water Disputes Tribunal (CWDT) were deliberated. Keeping in view the good storage position in Kamataka reservoirs, as also the indication of normal north-east rainfall as given by IMD and the shortfall of about 33 TMC of availability of water at Mettur as on 21st September, 2004, vis-a-vis the

interim order of CWDT, Secretary(WR) requested Chief Secretary, Karnataka to make up the deficit at MeUr. It was also agreed to place the Distress Sharing Formula along with the views of the States before the Cauvery River Authority for its consideration whenever the next meeting is held.

Mandovi River Water Dispute

In July, 2002, the State of Goa made a request under Section 3 of the Inter-State River Water Disputes Act, 1956 (as amended) for constitution of the Tribunal under the said Act and refer the matter for adjudication and decision of dispute relating to Mandovi river. The issues mentioned in the request included the assessment of available utilisable water resources in the basin at various points and allocation of this water to the 3 basin States keeping in view priority of the use of water within basin as also to decide the machinery to implement the decision of the tribunal etc.

In the Inter-State Meeting convened by Union Minister(WR) on 20.12.2002, it was decided that the Government of Goa & Central Water Commission(CWC) would make joint efforts to reconcile the discrepancies in the data and yield figures. The Chief Minister of Goa in his letter addressed to Prime Minister in June, 2003 expressed the desire of his State to settle the longstanding issues with Karnataka through negotiations. The Government of Goa was subsequently allowed to obtain the raw data of Ganjim site of CWC. The Government of Goa has so far obtained the raw data from January, 1979 to May, 2003.

Krishna River Water Dispute

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

Shri Justice Brijesh Kumar, Judge of Supreme Court of India(now retired) is the Chairman of the Tribunal and Shri Justice S. P. Srivastava, Judge of the Allahabad High Court (now retired) and Shri Justice D.K. Seth, Judge of the Kolkata High Court are Members of the Tribunal. The Ministry of Urban Development have allotted office space to the KWDT. The Tribunal's preliminary sittings were arranged by the Ministry of Water Resources in May, 2004 and November, 2004.

Ravi & Beas Waters Tribunal

The Ravi & Beas Tribunal which was constituted on 2nd April, 1986 had submitted its report on 30th January, 1987. The report was circulated in May, 1987. A reference was made to the Tribunal comprising reference from the Central Government and Govts. of Punjab, Haryana and Rajasthan, seeking explanation/guidance on certain points in the report.

The period for forwarding of the report by the Tribunal has been extended upto 5th February, 2005. The Tribunal has held further hearings in April and October, 2004.

BOARD/AUTHORITY/COMMITTEES

NARMADA CONTROL AUTHORITY

Introduction

In pursuance of the decision of the Narmada Water Disputes Tribunal (NWDT) under Clause-XIV of its final order, the Government of India framed the Narmada Water Scheme, which, inter-alia, constituted the Narmada Control Authority and Review Committee, in 1980 for proper implementation of the decisions and directions of the Tribunal.

The Narmada Control Authority (NCA) has been vested with powers for the

implementation of the orders of the Tribunal with respect to the storage, apportionment, regulation and control of the Narmada water, sharing of power benefits from Sardar Sarovar Project (SSP), regulated release of water by Madhya Pradesh, acquisition of land likely to be submerged under the Sardar Sarovar Project by the concerned states, compensation, resettlement and rehabilitation of the oustees, and sharing of costs and implementation of the environmental safeguard measures.

Organisation

The Authority is headed by the Secretary, Ministry of Water Resources, Govt. of India, as its Chairman, with Secretaries of the Union Ministries of Power, Environment & Forests, Social Justice & Empowerment and Tribal Welfare, Chief Secretaries of the four party States, one Executive Member and three full time Members appointed by the Central Government, and four part time Members nominated by the party States, as Members.

The Review Committee for Narmada Control Authority (RCNCA), headed by the Union Minister of Water Resources, can suo-moto or on the application of any party State or Secretary to the Government of India, Ministry of Environment & Forests, review any decision of the Authority.

Meetings of Narmada Control Authority

The Narmada Control Authority held three meetings till December 2004 in which issues relating to resettlement and rehabilitation, raising of the Sardar Sarovar Dam, other project related matters and administrative issues were discussed.

Important Decisions Taken by the Authority

1. Next stage of raising of Sardar Sarovar Dam was modified as EL 121.92 M instead of 121.0 M approved in Action Plan.

2. All party States agreed that the decision taken in 59th meeting of NCA held on 6th December'99 permitting exparte allotment to PAFs may be treated as resolution by the party States under Clause XI (vi) of NWDT Award.
3. The Authority approved the creation of two additional posts of junior engineers (E) in the scale of Rs. 5500-9000 and three posts of technical helpers in the scale of Rs. 2650-4000 which are to be filled up on deputation basis/on contract basis.
4. The Authority approved the revised expenditure of Rs. 14.35 lakh incurred on the Narmada Pavilion during the Kumbha Mela, 2004 at Ujjain.
5. The Authority decided to adopt non-structural measures for control & operation of SSP reservoir/ IBPT.
6. The Authority and the party States unanimously passed a resolution under the Clause-XI (VI) of NWDT award that every oustee of urban area coming under submergence of SSP in M.P. be allotted a plot of size (12.19 m. x 18.25 m.) instead of plot size of 18.25 m. x 27.43 m. indicated under clause XI (iv) (3) (c) 10 of NWDT award.
7. The Authority approved the Annual report of NCA for the year 2003-04
8. The Revised Estimate for 2004-05 & Budget Estimate for 2005-06 were approved by the Authority.

Meetings of Review Committee for NCA

Meeting of the Review Committee for Narmada Control Authority (RCNCA) held on 9th September 2004.

Important decisions taken by RCNCA:

1. Govt. of Gujarat permitted to present again their view point to the Attorney General on the matter of sharing cost of R&R of SSP.
2. Govt. of Gujarat to take initiative to arrange mutual consultation with other power sharing states i.e. Madhya Pradesh

& Maharashtra on the issue of compensation of power loss due to running of IBPT and the decision so arrived to be discussed in future meetings.

3. The Environment Sub-group to discuss and advise on the cost sharing aspects of phase I and Phase II i.e. directly draining and freely draining critically degraded catchment areas and thereafter the issues to be discussed in NCA before it is taken up in RCNCA.

Committees/ Sub-groups/ Sub-committees of NCA

The Authority has constituted the following discipline based Sub-groups:

1. Environment Sub-group under the Chairmanship of Secretary, Government of India, Ministry of Environment & Forests (MOE&F).
2. Resettlement & Rehabilitation Sub-group under the Chairmanship of Secretary, Government of India, Ministry of Social Justice and Empowerment (MOSJ&E).
3. Rehabilitation Committee under the Chairmanship of Secretary, Government of India, Ministry of Social Justice and Empowerment (MOSJ&E).
4. Narmada Main Canal Sub-committee under the Chairmanship of Executive Member, Narmada Control Authority.
5. Hydromet Sub-group under the Chairmanship of Executive Member, Narmada Control Authority.
6. Power Sub-committee under the Chairmanship of Member (Power), Narmada Control Authority.
7. Environment Committee under the Chairmanship of Member (E&R), Narmada Control Authority.

Monitoring of Projects

As per Sub-Clause-8(3)(ii) of Clause-XIV of NWDT award, the Authority shall decide the

phasing and shall coordinate construction programmes of Indira Sagar Project & Unit-II (Canals) of Sardar Sarovar Project with a view to obtain expeditiously optimum benefits during and after the completion of the construction of the projects, having due regard to the availability of funds. In compliance of these directions, the NCA has been monitoring the progress of construction works of the Indira Sagar Project and Unit-II (Canals) of Sardar Sarovar Project and bringing out half yearly status reports for the period ending September and March of each year. The reports for the period ending 31st March 2004 & 30th September, 2004 in respect of these two projects were brought out by NCA.

Resettlement and Rehabilitation Activities

The resettlement and Rehabilitation policy for the affected persons of Sardar Sarovar Project (SSP) is based on the decisions and final orders of the Narmada Water Disputes Tribunal (NWDT) Award. Considering the socio-economic and cultural background of the population being displaced and with a view to improve the living conditions of these people, all the three participating States have formulated their own policies which contain more liberal provisions than those envisaged in the Narmada Water Disputes Tribunal (NWDT) Award.

The R&R progress is being monitored effectively by the monitoring machinery i.e. Resettlement & Rehabilitation (R&R) Sub-group of the Narmada Control Authority, chaired by the Secretary to the Government of India, Ministry of Social Justice & Empowerment. The NCA in its 72nd meeting held on 8.9.2004 had constituted a Task Force for regular monitoring of the progress of Resettlement & Rehabilitation (R&R). In addition, Chairman/Chairperson of R&R Sub-group and NCA's R&R Officials makes field visits to the submergence villages and R&R sites and the observations/ suggestions of the visit are being complied with by all the party States.

The Table given below indicates Overall Rehabilitation of Project Affected Families (PAF) up to October, 2004.

State	Total Project Affected Families	Total PAFs Resettled	(No. of PAFs)
			Balance to be Resettled
1. GUJARAT	4728	4726	2
2. MAHARASHTRA			
a) In Gujarat	999\$	930	69
b) In Maharashtra	2699 \$	2371	328
Total	3698	3301	397
3. MADHYA PRADESH			
a) In Gujarat	14124 *	5302	8822 *
b) In Madhya Pradesh	18890 *	9332	9558 *
Total	33014	14634	18380
Grand Total	41440	22661	18779

Note: \$ This number may change after declaration of genuine PAF s by GRA/State Government.

* This number may change after taking option of PAFs and finalisation of Land Acquisition Awards/declaration of genuine PAFs by GRA.

Energy Management Centre of Narmada Control Authority

An Energy Management Centre (EMC) has been set up by the Narmada Control Authority at Indore to monitor the sharing of Power generated at Sardar Sarovar Project by the party States. The total work of the EMC, estimated to cost to Rs. 3.69 crore, was divided into four packages. Package I, awarded to BHEL, comprises of microprocessor based Remote Terminal Units (RTUs). The RTU at Canal Head Power House (CHPH) has been installed and precommissioning tests carried out. Package II, also awarded to BHEL, comprises of Supervisory Control and Data Acquisition (SCADA) system, associated software and communication equipment. SCADA equipment at Energy Management Centre (EMC), Indore and Western Region Load Despatch Centre (WRLDC), Mumbai have been installed. Data transfer between EMC and WRLDC has been tested and being received at EMC, Indore over a leased data circuit. Alternate route for direct transmission of data from SSP to EMC, Indore via SSPNagda-Indore line is being reviewed and use of V-sat system in place of earlier proposal of microwave link and

PLCC link is being explored. Power Sub-committee of NCA has constituted a committee comprising representatives of NCA, SSCAC and party states to examine commercial and technical aspects for disposal of material already supplied for microwave link. Package-III comprise Auxiliary equipment like Uninterrupted Power Supply (UPS) System, Diesel Generator (DG) Set, Air Conditioning System, Multi Channel Voice Logging Recorder, Lighting, Fire detecting alarm etc. All the equipment under this package have been installed at EMC and work completed. Package IV, awarded to M/s INTRAX, comprises of Time of the day (TOD) meters. All the equipment under this package have been received and installed at the River Bed Power House (RBPH) and Canal Head Power House (CHPH) control room. 13 Nos. special energy meters (SEM) have been installed & put into service to monitor the power flow through SSP transmission lines ;and for energy accounting, purpose in line with requirement of IEGC.

Hydromet Network in Narmada Basin

In pursuance of the final decisions and

directives of NWDT vide clause XIV, Sub-Clause 8(3) (v), Narmada Control Authority is implementing the Hydromet Network which, inter-alia, comprises of setting up a Real Time Data Acquisition System (RTDAS) in the Narmada basin. The upgradation of specified key gauge and discharge stations under NCA has been entrusted to Cental Water Commission on deposit work basis. A turn key contract was signed with M/s ECIL in September 1996 for an accepted tender amount of Rs. 12.85 crores for implementation of Real Time Data Acquisition System (RTDAS) comprising of twenty six remote stations (RS) in the basin and a Master Control Centre (MCC) at Indore.

The Remote stations, have been configured to collect data on various hydro meteorological parameters namely, water level rainfall, evaporation, solar radiation, wind speed and direction, relative humidity and ambient temperature in real time mode and automated on line communication of the same to MCC through Data Relay Transponder (DRT) on board METSA T satellite (renamed as KALPANA-I). The MCC at Indore has already been established. The planned computerized network, operating in real time environment and free from such snags, will improve efficacy, accuracy and also warning time for safety of various major dams including Sardar Sarovar Project & Indira Sagar Project on river Narmada round the year and shall help in efficient integrated reservoir operation including regulated releases from Indira Sagar Project to Sardar Sarovar Project, and a holistic flood management in the basin. It will also be useful in proper accounting and apportionment of Narmada water among the beneficiary states in accordance with the mandate given by NWDT.

Due to the delays in commissioning the project, the Permanent Standing Committee of SSCAC requested the Secretary, MOWR and Chairman, NCA to

convene a meeting of the senior officials of the Deptt. of Atomic Energy, NCA, ECIL and the party states to expedite completion of the project. Accordingly, Secretary (WR) and Chairman, NCA has so far convened three Review meetings for taking steps to expedite completion of the project. Following these meetings, M/s ECIL have completed most of the field activities related to the installation and commissioning of the stations. But still sustained and stable communication is to be achieved with regard to the data communication after receipt of spare sensors and communication equipments from USA. As regards the demonstration and calibration of water management software only partial demonstration has been done. M/s ECIL are working in association with their foreign associates for conducting the demonstration of the assured performance in totality during the next monsoon season as per the conditions of the contract. M/s ECIL have sought time extension for commissioning of the project during monsoon 2005 and also for extending the completion period up to 31st December' 2005.

Annual Water Account of Narmada Basin

Pursuant to the directives contained in the Sub-Clause-8 under Clause-XIV of the NWDT award, NCA has been preparing Annual Water Account for the Narmada Basin after collecting the water utilization data from the party states on actual area irrigated in each season by different categories of the projects, withdrawals for domestic, municipal and industrial uses. The authority has also been mandated by the award to determine the volume of water flowing in the river Narmada and its tributaries in a water year (1 st July to 30th June). Annual Water Accounts upto the year 2002-03 have already been published by the Authority while draft report for the water year 2003-04 is finalized and being issued.

SARDAR SAROVAR CONSTRUCTION ADVISORY COMMITTEE

Composition and Functions

The Sardar Sarovar Construction Advisory Committee (SSCAC) was constituted in 1980 by the Government of India in accordance with the directives of the Narmada Water Disputes Tribunal (NWDT) with a view to ensure efficient, economical and early execution of Unit-I (Dam and Appurtenant works) and Unit-III (Hydro Power works) of the Sardar Sarovar Project. The Secretary, Government of India, Ministry of Water Resources, is the Chairman of the Committee. The Officers of the departments like Irrigation, Power, and Revenue etc. concerned with the construction of the project, of the four party states viz. Gujarat, Maharashtra, Rajasthan and Madhya Pradesh along with their counterparts from Government of India and the Narmada Control Authority, are Members of the Committee. The Committee has a full time Secretary of the rank of the Chief Engineer from the Central Water Commission. The secretariat of the Committee is located at Vadodara.

SSCAC Meetings:

Two meetings of the SSCAC were held during the year 2004-2005. The 70th meeting of the SSCAC was held on 11th May 2004, wherein important decisions were taken on matters related to following issues:

- Payments of Share cost of Sardar Sarovar Project by the party states.
- Proceedings of 88th Permanent Standing Committee (PSC) meeting.
- Approval of the Annual Development Plan (2003-2004) of Unit-I (Dam and Appurtenant works) and Unit-III (Hydro Power works).
- Approval of the raising of composite blocks of dam (nos. 21 and 51) up to EL 140m.
- Review of progress of Unit-I (Dam and Appurtenant works) and Unit-III (Hydro Power works).

- Approval of draft agreement with Gujarat Electricity Board for operation and maintenance of the Sardar Sarovar Project power complex.

The 71st meeting of the SSCAC was held on 8th September 2004, wherein important decisions were taken on matters related to following issues:

- Issue of payment of share cost of Sardar Sarovar Project by the party states.
- Proceedings of the PSC meetings.
- Approval of the Revised Implementation Schedule (RIS September 2002) for construction of concrete Dam of the Sardar Sarovar Project.
- Approval of the Annual Development Plan (2004-05) of Unit-I (Dam and Appurtenant works) and Unit-III (Hydro Power works).
- Issue of raising of overflow blocks numbered 22 to 50 for the next level of EL 121.92m and subsequent installation of gates.
- Review of progress of Unit-I (Dam and Appurtenant works) and Unit-III (Hydro Power works).
- Approval of the revised cost estimates of Unit-I (excluding B- Land component) and unit-III (Hydro Power works) at 2000-01 price level .
- Insurance coverage for Sardar Sarovar Power Project

Permanent Standing Committee Meetings:

The Sardar Sarovar Construction Advisory Committee (SSCAC) has a sub committee named the Permanent Standing Committee (PSC), with the Executive Member, Narmada Control Authority as the Chairman, and representatives from the Ministry of Water Resources, Central Water Commission, Central Electricity Authority and all the four party States as Members. The Secretary, SSCAC is the Member Secretary of the PSC.

The 89th meeting of the PSC of SSCAC was held on 18th June 2004 where in following issues were discussed:

- Recommendation on the Annual Development Plan (2004-2005) of Unit-I (Dam and Appurtenant works) and Unit-III (Hydro Power works) of Sardar Sarovar Project for approval of the SSCAC.
- Revised Implementation Schedule (RIS-September 2003) for construction of Garudeshwar Weir.
- Review of the progress of Unit-I (Dam and Appurtenant works) and Unit-III (Hydro Power works) of Sardar Sarovar Project up to March 2004.
- Review of the progress of Real Time Data Acquisition System (RTDAS) works

Narmada Bachao Andolan in the Supreme Court of India. The final judgment on the case was delivered by the Supreme Court on 18th October 2000, in which the Court cleared raising of the dam up to EL 90.0 m, and also gave directions for further construction of dam as per the award of the Narmada Water Disputes Tribunal. As per Court's directions, the permission for further rising of dam is now to be given by the NCA, after obtaining clearances from the Resettlement and Rehabilitation Sub-Group, and in consultation, with the Grievances Redressal Authorities (GRA's) of Gujarat, Maharashtra and Madhya Pradesh.

Progress of Main Dam Works

The construction of the main spillway portion of the dam had been held up for over five years due to the writ petition filed by

Subsequent to the final order of Supreme Court, the NCA in its 61st meeting held on 17th November'2000 approved the programme of dam construction as per details given below:

Dam Height (EL)	Time Frame	
	Completion of R&R	Completion of Dam
100.0m	December 2001	June 2002
110.0m	December 2002	June 2003
121.92m	December 2003	June 2004
138.68m	December 2004	June 2005

The NCA's stipulated target however was not achieved due to the slow progress of Resettlement and Rehabilitation works. The NCA in its 66th (Emergency) meeting, held on 14th May 2003, gave permission to raise the main spillway blocks (nos. 30 to 46) up to EL 100 m, along with permission to construct 3.0 m high hump over blocks 31 to 45 for the safety of downstream

silting basin. The said work was completed by the end of June 2003. In its 70th meeting held on 12th & 13th March 2004, NCA gave permission to raise the spillway block nos. 30 to 46 up to EL 110.64m, work for which was completed before the monsoon of 2004. The status of overall progress of works for the month ending October 2004 is given below.

Particulars	Revised Est. Qty.	Progress upto October 2004	% work completed
Excavation (Lakh Cu.m)	64.00	63.58	99.34%
Concreting (Lakh Cum)	68.20	63.72	93.44%

Progress of Canal Head Power House (CHPH)

The Civil and Electrical works of Canal Head Power House were completed in January 1998. After the height of the dam reached the Minimum Draw Down Level (MDDL) (110.64 m) in the current year, the CHPH units started generating partial power with the commencement of monsoon (16th August 2004).

Progress of River Bed Power House (RBPH)

The work of the River Bed Power House was held up due to development of stress zone in

the powerhouse cavern and non-receipt of embedded parts for the Turbine Generator (TG) Sets owing to some contractual problems. The issue of supply of T.G. Sets was resolved with the signing up of a fresh agreement with M/s. Sumitomo Corporation of Japan. The revised price of the supply contract is 23194.709 million Yen + Rs 9622.82 lacs. The supply of T.G. Sets parts has commenced and material worth 22588.70 million Yen has been received at site. The work of further excavation in the River Bed Power House cavern and concreting have also commenced, and the status of progress of civil work at the end of October 2004 is given in below:

Particulars	Est. Qty.	Progress upto October 2004	% work completed
Open Excavation (Lakh Cu.m).	17.15	17.03	99.3%
U.G. Excavation (Lakh Cum).	7.32	6.87	93.8%
Concrete (Lakh.Cu.m.)	3.31	3.06	92.4%

The erection of electrical components commenced in June 2000, and are progressing satisfactorily. The works of the first unit of RBPH are in advanced stages of completion and the unit is targeted for commissioning shortly. With the commissioning of other units at intervals of four months, the last unit of RBPH is expected to be commissioned by May 2006.

two 5.5 m diameter tunnels across the right bank hill, connecting the main reservoir with the first irrigation pond. The twin IBPTs, with invert level of EL 88.39 m at the inlet, will have a discharge capacity of about 283.12 cumecs (10,000 cusecs) at reservoir level of 97.54 m and 441.66 cumecs (15000 Cusecs) at reservoir level of 110.67m.

Progress of Irrigation Bye-Pass Tunnel (IBPT)

The decision about necessity of IBPT was taken in the 60th meeting of the NCA held on 18th July 2000, which was endorsed by the RCNCA in its 9th meeting held on 18th August 2001. The irrigation Bye-Pass Tunnels (IBPT) arrangement comprises of

Presently, the works of both the tunnels are in advanced stages of completion, and water is passing through them to canal system. The work of tunnel shafts and installation of gates is in progress in both the tunnels. The overall progress of IBPT works at the end of November 2004 is given in below:

Particulars	Estimated Quantity	Progress upto November 2004	% work completed
Open Excavation (Lakh cu.m.)	7.38	7.306	98.99%
Tunnel & Shaft Exc. (Lakh cu.m.)	0.35	0.318	90.86%
Concrete (Lakh Cu.m)	1.60	1.258	78.66%
Installation of gates (Th. Tonne)	2.610	1.100	42.15%

BANSAGAR CONTROL BOARD

Organisation and Composition

The Bansagar Control Board was set up by the Government of India through a Resolution in January 1976. The Resolution was amended in 1990. The Resolution was in accordance with an agreement reached between the Governments of Madhya Pradesh, Uttar Pradesh and Bihar on 16th September 1973 for sharing the waters of River Sone and the cost of the Bansagar Dam. After amendment the main features of the resolution are :

"In consultation with the Governments of Madhya Pradesh, Bihar and Uttar Pradesh, it has been decided to set up the Bansagar Control Board with a view to ensuring the efficient, economical and early execution of Bansagar dam including all connected works in Madhya Pradesh, but excluding the canal systems which will be executed by respective States namely, Madhya Pradesh, Uttar Pradesh and Bihar. The Control Board will be in overall charge of the project including its technical and financial aspects. The actual work of construction will be carried out under the direction of the Control Board by the Chief Engineer concerned of the Madhya Pradesh Government"

"The Three State Governments agree to delegate powers to the Chief Engineer, Madhya Pradesh, to contract for works, supplies and services under the direction of the Control Board. The contract in respect of all works will, however, be executed in the name of the Governor of Madhya Pradesh."

The Union Minister of Water Resources is the Chairman of the Board and the Minister of State for Water Resources, Union Minister of Power, Chief Ministers, Minister-in-Charge of Irrigation and Finance of the three States and Minister-in-Charge of Electricity of Madhya Pradesh are its members. The Executive Committee set up under the Chairmanship of the

Chairman, Central Water Commission, manages the day-to-day affairs of the Board. The expenditure on the office of the Board is initially met out of the budget grants of Union Ministry of Water Resources and subsequently reimbursed by the three States of Madhya Pradesh, Uttar Pradesh and Bihar.

BANSAGAR DAM PROJECT

Bansagar Dam, on Sone River, a joint venture of the States of Madhya Pradesh, Uttar Pradesh and Bihar is being executed by the Water Resources Department, Government of Madhya Pradesh under the directions of the Bansagar Control Board. The respective States are carrying out the execution of the canals and power systems independently.

The benefits and cost of the dam, including land acquisition and rehabilitation, are shared by Madhya Pradesh, Uttar Pradesh and Bihar in the ratio of 2: 1: 1. The project was originally estimated to cost Rs 91.30 crore. The revised cost of the project at 1991 price level is Rs 936 crore [Civil Works Rs 300 crore and Land Acquisition & Rehabilitation (LA&R) Works Rs 636 crores]. Project authorities have updated the cost estimate based on Madhya Pradesh Unified Civil Schedule of Rates (UCSR) 1998 to Rs 1054.96 crores (Civil Works Rs 391.30 crore and LA&R Works Rs 636.66 crores) which is yet to be approved by the Executive Committee of BCB.

Components of Bansagar Dam

The Bansagar dam envisages construction of

- 1) 67.5 m high masonry dam including rock fill flanks across the Sone river just downstream of the gorge at Kusumah (Deolond). Length of masonry dam, left rock fill dam and right rock fill dam are 670.00 m, 161.00 m and 185.00 m respectively.
- 2) Six low earth dykes, four on the left bank of Sone River and two on its right bank with a total length of 6.95 km.

3) Kuteshwar Lime Stone Deposits Protection works.

Benefits from the Project

Irrigation Benefits	
Annual Irrigation in M.P. (in the districts of Rewa, Sidhi, Satna and Shahdol).	2.49 lakh hectare
Annual Irrigation in U.P. (in the districts of Mirzapur and Allahabad)	1.5 lakh hectare
Annual Irrigation in Bihar	.94 lakh hectare towards stabilizing irrigation through old Sone Canal system.
Power Benefits	
Power generation in Madhya Pradesh	425 MW

Completion Schedule

As per construction programme approved by the Executive Committee in its 69th meeting held on 18.08.2004, it is proposed to complete the dam as per following schedule, provided funds as per the construction programme are provided by the participating States of Madhya Pradesh, Bihar and Uttar Pradesh.

Dam up to Crest level	Since completed in June 2000.
Dam up to Top Bund Level: (Full height)	By June'2005.

Progress of Works:

The left and right rock fill dam have been completed up to top level i.e. R.L. 347 M. All masonry non overflow blocks and both the key block on either side have been completed up to top elevation at R.L. 347 M. Spillway blocks have been raised up to crest level (R.L. 326.4 M.). Works on Spillway Piers & Bridge is in progress along with installation of 18 Nos. Radial Crest Gates of size 18.29 m X 15.41 m and Stop-Log Gates are in progress for completion by June 2005. All construction sluices have been plugged and gates lowered. Work on installation of Irrigation Sluice Gates have been fully completed. Work on all the six Saddles have almost been completed.

The dam at its full height will submerge 336 villages. According to Socio-Economic surveys, approximately 1.5 lakh PAP's of 23,390 families are likely to be affected. Total 56,428-hectare land is

coming under submergence, out of which 34,765 hectare is private land, 17,185-hectare is revenue land and 4,478-hectare is forestland. So far about 32,000 hectare private land of 287 villages have been acquired and PAP's have been resettled. R&R Programme is being implemented based on norms approved by the Executive Committee and orders issued by Government of Madhya Pradesh. Comprehensive R&R Policy for the project has been finalized.

Budget & State Shares:

The Budget provision made for the project; sub-head wise expenditure during the financial year 2004-05 and cumulative expenditure up to November 2004 is as under

(Rupees in Crores)

Sl. No.	Sub-head	Budget 2004-05	Provision	Expenditure during 2004-05 up to 11/2004	Cumulative expenditure up to 11/2004
1	2	3		4	5
1	Establishment	12.62		6089	122.85
2	Tools & Plants	0.00		0.00	2.06
3	Suspense (debit)	0.10		0.07	148.34
4	Works	147.00		58.69	841.58
	Gross Total	159.72		65.65	1114.83
5	Suspense (Credit)	79.91		0.17	140.14
	Net Total	79.81		65.48	974.69

The State Government of Madhya Pradesh, Uttar Pradesh and Bihar fund the project in the ratio of 2:1:1. The details of share due/received in relation to the expenditure incurred as on 30.11.2004 is as under

(Rs in Crores)

Total Expenditure	Share Due Share Received			Balance Share		
	M.P.	U.P.	BIHAR	M.P.	U.P.	BIHAR
Up to 31.03.2004: 909.216	454.608 478.405	227.304 211.249	227.304 219.562	(+) 23.797	(-) 16.055	(-) 7.742
During 2003-04 up to 11/2004: 65.48	32.74 65.48	16.37 0.00	16.37 0.00	(+) 32.74	(-) 16.37	(-) 16.37
Total as on 30.11.2004: 974.696	487.348 543.885	243.674 211.249	243.674 219.562	(+) 56.537	(-) 32.425	(-) 24.112

BETWA RIVER BOARD

Organisation and its Composition

A decision to harness the available water resources of Betwa River was taken in a meeting held on 22nd July, 1972 between Chief Ministers of Uttar Pradesh and Madhya Pradesh. Further Uttar Pradesh and Madhya Pradesh in a meeting held on 9th December, 1973 agreed for setting up of a tripartite Control Board for the speedy, smooth and efficient execution of the various inter-state projects of both the states. Betwa River Board (B.R.B.) was constituted in 1976 by an Act of Parliament to execute the Rajghat Dam Project and Power House. The

project authority started construction of the project under the overall guidance of Betwa River Board after promulgation of Betwa River Board Act, 1976. The benefits and cost of the above projects are being shared equally by both the State Governments.

The Union Minister of Water Resources is the Chairman of the Board. 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 its members. An Executive Committee of the Board headed by Chairman, Central Water Commission manages the activities of the Board.

Rajghat Dam Project

The Rajghat Dam with appurtenant structures has been constructed across river Betwa to provide irrigation facilities to 1.38 lakh ha. in Uttar Pradesh and 1.21 lakh ha 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 are to be shared equally by both the States. Construction work of Dam and Power House is almost complete.

Land Acquisition

The dam submerges 38 villages in U.P and 31 villages in M.P State. Compensation in M.P area is almost completed. In U.P. the District Administration, Lalitpur had paid the land compensation of 25 villages and for balance 13 villages the land property are being acquired through mutual negotiation by the Betwa River Board.

The filling of reservoir up to FRL of RL 371.00 M may not be possible till the acquisition of land and property of balance 13 submergence villages is completed. .

Planning and present status of Rajghat Power House Work

The estimate of Rajghat Hydro electric

Project at 1997 price level was Rs. 131.26 crores which included Rs. 58.41 crores for the civil works. The further revised cost of the civil works of Power House is Rs. 66.89 Crores at December 1999 price level and same has been furnished by BRB to MPEB. MPEB have contributed Rs, 59.51 crores The total expenditure incurred in civil works of Rajghat Power House till June 2004 is 61.74 crores.

The three units of Power House have been tested and commissioned during 1999-2000. Since commissioning the power generation are 280, 572, 1047, 676, 1419 and 271 lakh units during the year 1999-2000, 2000-2001, 2001-2002, 2002-2003, 2003-2004 and 2004-2005 up to 05.10.2004 respectively.

Utilization of present storage

The Phase-I of the construction of Dam up to Spillway crest level was completed in 1992 and since then the reservoir storage is being utilized in downstream in Betwa Canal system (U.P.) and Bhandar Canal System (U.P.). The impounding of water above Crest level has been started since 1999-2000.. The Reservoir (FRL 371.00m) filled up to the following level during the last five years is given below;

Sl.No.	Year	Filling level
1	1999-2000	365.70 m
2	2000-2001	366.00 m
3	2001-2002	368.35 m
4	2002-2003	367.00 m
5	2003-2004	370.00 m
6	2004-2005 (5.10.04)	370.20 m

Financial Position of BRB

The financial position of Rajghat Dam and Rajghat Power House Project are given in Table 7.7 & 7.8 respectively.

Rajghat Dam**Table 7.7**

Sl.No.	Item	U.P.	M.P.	Total
		(Rs. In Crores)	(Rs. In Crores)	(Rs. In Crores)
1.	Apportioned cost as per revised cost estimate	150.300	150.300	300.600
2.	Contribution received upto 10.9.04	132.850	140.22	273.07
3.	Balance to be contributed as on 10.9.04	17.450	10.08	27.53
4.	Net expenditure as on 30.6.04			265.03
5.	Balance available with BRB as on 30.6.04			0.82

Rajghat Power House**Table 7.8**

Detail	Civil works by BRB(Rs.in Crores)	E/M works by MPEB(Rs.in Crores)
Revised cost estimate of work component (Rs crore)	66.89	72.85 .
Contribution received up to 30.6.04 (Rs crore)	59.51	Expenditure has been made by MPEB directly.
Balance to be contributed (Rs crore)	7.38	
Net expenditure incurred up to 30.6.04 (Rs crore)	61.74	
Balance available with BRB as on 30.6.04 (Rs crore)	(-) 2.23	

TUNGABHADRA BOARD**Introduction**

The Tungabhadra Board was constituted by the President of India in exercise of the powers vested under sub section (4), Section 66 of Andhra State Act 1953 for completion of the Tungabhadra Project and for its operation and maintenance. The Board is regulating water for irrigation, Hydro power generation and other uses from the reservoir.

Organization

The Board consists of a Chairman, and three Members, one each representing the States of Andhra Pradesh, Karnataka and Government of India. In the discharge of its assigned functions, the Board exercises powers of the State Government. It makes rules for the conduct of its own business. The

Government of Andhra Pradesh and Karnataka provide funds in agreed proportions and also depute staff to man the various specified posts. The working table for canal wise distribution of water to the States is prepared every year by the Tungabhadra Board in consultation with the State Governments, and is reviewed from time to time during the water year. The regulation of water is carried out in accordance with the agreed working table.

Status of Activities**Irrigation**

The Tungabhadra Reservoir filled up to its full reservoir level this year. The inflow into the reservoir from June to November, 2004 was 5,435.447 Million Cumec (Mcum) (191.951 Thousand Million Cubic feet (TMCft.).

The utilization of water by the States of Karnataka and Andhra Pradesh till end of November 2004 was 1,736.247 Mcum (61.315 TMCft) and 785.028 Mcum (27.723 TMCft) respectively as against the likely abstraction of 3,766.141 Mcum (133.000 TMCft) for the water year 2004-2005. Evaporation losses from June to November 2004 were 168.627 Mcum (5.955 TMCft) to be shared by Karnataka and Andhra Pradesh in the ratio of 12.5 :5.5.

Hydro Power

Two Power Houses are maintained by the Tungabhadra Board, with a total installed capacity of 72 MW, and a target of 157 million units of power generation is envisaged during the water year 2004-2005. Against this the power generated till end of November, 2004 was 80.812 million units. The power generated is shared between the States of Karnataka and Andhra Pradesh in the ratio of 20:80.

Mini Hydel Power Plant

A Mini Hydel Plant at the head of Right Bank High Level Canal of the Tungabhadra Project under Build, Operate, Own and Transfer (BOOT) system through an Independent Power Producer viz., M/s NCL Energy Ltd., Hyderabad has been commissioned on 27-10-2004. The mini Hydel plant comprised 3 units of 2.75 MW each and would generate approximately 27 million units per year. The Power generated shall be purchased by the Transmission Corporations of Karnataka and Andhra Pradesh in the agreed ratio of 20:80.

Fisheries

The Tungabhadra Reservoir has a water spread area of 378 sq km at full reservoir level affording tremendous scope for development of fisheries. Quality fish seeds are reared in the Board's Fish Farm to meet the demand of the public and for stocking in the Reservoir to increase the biomass. The fishing rights of the Reservoir was auctioned

for the year to a local Fisheries Society for Rs. 28,32,039/-. In order to facilitate preservation of fish catch, the Board is running an Ice-cum-Cold Storage Plant. Quality fishnets are also manufactured in the Fish Net Making Plant run by the Board.

Board meeting

During the year, the Tungabhadra Board held two meetings till end of November, 2004.

UPPER YAMUNA RIVER BOARD

Introduction

"Upper Yamuna" refers to the reach of Yamuna from its origin at Yamunotri to Okhla barrage at Delhi. An MoU was signed on 12th May, 1994 amongst the basin States of Himachal Pradesh, Uttar Pradesh, Haryana, Rajasthan and Delhi, for sharing the utilisable surface flows of river Yamuna up to Okhla. The MoU also provided for creation of a "Upper Yamuna River Board" to implement the said agreement.

Accordingly, vide Resolution No. 10(66)/74-IT dated 11.3.95, the Central Government constituted the Upper Yamuna River Board as a subordinate office under the Ministry of Water Resources. After creation of Uttaranchal State in 2000, the resolution was modified to include Uttaranchal also in the Board.

The Resolution also provided for creation of a Review Committee, to be known as the Upper Yamuna Review Committee, comprising of the Chief Ministers (Governor in case of President's Rule) of the co-basin States as members and Union Minister/Minister of State for Water Resources as Chairman, to supervise the working of the Upper Yamuna River Board.

Organisation

The Board comprises of Member (WP&P), Central Water Commission as its Chairman, a representative from each of the six basin states; Central Electricity Authority, Central

Ground Water Board and Central Pollution Control Board as part-time member and a full time Member-Secretary. The activities of the Board are funded entirely from the contributions by the six basin States. The Board has a sanctioned staff strength of 58, including the full time Member-Secretary.

Functions

The functions of the Board include all aspects of water management in the Upper Yamuna basin, viz. implementation of the water sharing agreement; water allocation; water accounting and data warehousing; monitoring and upgrading the quality of surface and ground water; controlling the ground water extraction; coordination of the construction of all projects in the basin, integrated operation of all the projects, watershed development and catchment area treatment plans.

While the operation and maintenance of the control structures (dams, barrages) will continue to remain with the concerned States, the MoU provides that if there is any dispute regarding regulation of flows at any of the structures, the Board shall, with the approval of the Review Committee, take over the operation and control of that structure till the dispute is resolved.

Activities

The Board has been making tentative seasonal distribution of water to Basin States at various distribution points and conducting review of progress of Renuka, Kishau and Lakhwar Vyasi Projects in upper reaches of Yamuna. The Board has also been engaged in the Inter-State issues amongst the basin States related to water distribution and other issues related to benefits and cost sharing from the proposed storage projects in Yamuna Basin. The Board has held 27 meetings so far, the last one being on 27th August, 2004.

CHAPTER 8

INTERNATIONAL COOPERATION WITH NEIGHBOURING COUNTRIES

Introduction

The three major river systems of India namely Ganga, Brahmaputra and Indus cross international borders. This Ministry 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.

India-Bangladesh Cooperation

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 Resources Ministers of both the countries.

A new chapter in the Indo-Bangladesh relations opened up with signing of a Treaty by the Prime Ministers of India and Bangladesh on 12th December 1996 on the sharing of Ganga/Ganges waters. The Treaty shall remain in force for a period of thirty years to be renewable by mutual consent. For monitoring the implementation of the Treaty, a Joint Committee has been set up. During the current year the Committee met three times and observed that Joint measurements on Ganga at Farakka (India) and Ganges at Hardinge Bridge (Bangladesh) during lean season (Jan-May 2004) had been held to the satisfaction of both the countries.

Discussions have been continuing with Bangladesh for sharing of waters of Teesta river. For this purpose the Joint Rivers

Commission had constituted a Joint Committee of Experts (JCE) which is headed by Water Resources Secretaries of both the countries. The JCE has so far held 7 meetings. The 7th meeting was held at Dhaka from 13th to 16th September 2004. During the meeting the JCE constituted a Joint Technical Group (JTG) to discuss and examine all pending issues and come up with recommendations on the draft of the terms of reference for the Joint Scientific Study to assess the availability and requirement of waters of Teesta and also for the draft of the interim agreements for sharing of the lean season Teesta flows between the two countries. In this connection 3rd meeting of JTG was held at New Delhi on 9th and 10th November, 2004 and discussions will continue in the next meeting.

The existing system of transmission of flood forecasting data on major rivers like Ganga, Teesta, Brahmaputra and Barak during the monsoon season from India to Bangladesh was continued. The transmission of flood forecasting information from India during the monsoon has enabled the Civil and Military authorities in Bangladesh to shift the population affected by flood to safer places.

India-Bhutan Cooperation

A scheme titled "Comprehensive Scheme for Establishment of Hydro-meteorological and Flood Forecasting Network on rivers common to India and Bhutan" is in operation. The network consists of 35 hydro meteorological/meteorological stations located in Bhutan and being maintained by Royal Government of Bhutan with funding from India. The data

received from these stations is utilized in India by Central Water Commission for formulating the flood forecasts. A Joint Expert Team (JET) consisting of officials from the Government of India and Royal Government of Bhutan continuously reviews the progress and other requirements of the scheme. 19th JET meeting was held in Bhutan from 17th May to 19th May 2004.

The matter relating to problem of floods created by rivers originating from Bhutan and coming to India was taken up with Royal Government of Bhutan. In this connection 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 to both Governments appropriate and mutually acceptable remedial measures. The first meeting of JGE was held in Bhutan from 1st to 5th November, 2004. The JGE had series of discussions and also made several field visits to some of the affected areas which include the sites prone to landslides and dolomite mining areas. Based on their recommendations, the JGE felt that a more detailed technical examination is required and accordingly agreed to form a Joint Technical Team (JTT) under the Chairmanship of Member (PID), North Bengal Flood Control Commission with a representative each from GSI and Divisional Commission, Jalpaiguri and Central Water Commission. The team has been asked to submit its report to JGE by March, 2005.

As regards the Assam areas, a joint visit of the officials to be led by officers from Central Water Commission and from the Royal Government of Bhutan and Water Resources Department of Government of Assam as well as Geological Survey of India is scheduled to visit Tsatichu lake (which got burst during the last monsoon

which caused heavy inundation in Assam areas) so that further appropriate follow up action could be taken.

India-China Cooperation

In 2002, the Government of India had entered into an MOU with China for sharing of hydrological information on Yaluzangbu/ Brahmaputra river in flood season by China to India. 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. The requisite data during the current year from 1st June to 15th October 2004 was received which was utilized in formulation of flood forecasts by Central Water Commission.

An artificial lake was formed on Parechu in Tibet (China) because of landslide in June/July, 2004. The possible bursting of the lake would have caused danger in the downstream on the Indian side in Himachal Pradesh to the people and the infrastructure downstream including the Naptha Jhakri H.E. Project. The Government of India had been keeping a close watch on the day to day development in this regard. In order to discuss the situation in Parechu, a Technical team led by Shri R.K. Singh, Joint Secretary and Central Relief Commissioner, Ministry of Home Affairs comprising of officers from Ministry of Water Resources, Ministry of External Affairs, Central Water Commission, Geological Survey of India and Central Mining Research Institute held discussions with the Chinese authorities at Lhasa on 19th and 20th September 2004. The team discussed various possible measures to address the situation and agreed to take up further action through diplomatic channels.

Subsequent visit to Lhasa of technical delegates visited Beijing (China) from 26 to

29th December 2004 to hold in depth discussion regarding blocked on river Parechu and establishment of additional hydrological stations on Langquinzangbu (Sutlej) and Palongzangbu (Tributary of Yaluzangbu i.e. Brahmaputra) and Chaoyu (Lohit).

India – Nepal Cooperation:

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 from the date of its entry into force.

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 finalised after mutually resolving the pending issues. In this regard, the 20th meeting of the Joint Group of Experts (JGE) on Pancheshwar Multipurpose Project was held on 6th October, 2004 at New Delhi wherein various issues inter alia relating to water availability, location of re-regulating dam, power installation, generating unit size, assessment of power benefits and apportionment of cost were discussed. After discussions, the Joint Group of Experts decided to form a small Joint Group to look into all these issues and submit its report by January, 2005 to facilitate the finalisation of DPR. As a follow up action, the Joint Group held its first meeting at Kathmandu from 19th to

22nd December 2004 and the discussions will continue in the next meeting.

The Government of India has also been discussing with Nepal the taking up of Joint Investigation of Sapta Kosi High Dam Multipurpose Project and Sun Kosi Storage cum Diversion Scheme. A Joint Project Office (JPO) was set up in Nepal in August, 2004 to take up field investigations and preparation of Joint DPR. A proposal costing Rs. 29.34 crore for taking up field investigations and preparation of Joint DPR including setting up of JPO in Nepal has already been sanctioned by Government of India for this purpose. The preparation of Joint DPR is scheduled to be completed in a period of 30 months from the date of setting up of JPO. In addition to irrigation and power benefits, the above project will also have major flood control benefits particularly in north Bihar.

In order to prevent spilling of flood waters from Lalbakeya, Bagmati, Khando & Kamla rivers from Nepal side into Bihar, India and Nepal have agreed to extend the embankments along these rivers in Indian Territory to Nepal and tie to high ground in Nepal with corresponding strengthening of embankments on Indian side. Financing of works in Nepal with corresponding strengthening of embankments on Indian side. Financing of works in Nepal is done through MEA and on the Indian side, through MOWR. In this connection, a Committee on Embankment Construction has been constituted which is responsible for planning, design and construction of these embankments. Last meeting of this Committee was held in June, 2004. While the work in respect of Lalbakeya has almost been completed, the work in respect of Bagmati embankment is under progress.

In pursuance to the decision taken on the occasion of the visit of Prime Minister of Nepal, a High Level Nepal – India Technical Committee on Inundation

problem on Rupandehi (Nepal), / Siddharth Nagar (India) and Banke (Nepal) / Shrivasti districts (India) was constituted. The Committee which is headed by Commissioner (ER) on the Indian side has so far held two meetings. In the last meeting held in September, 2004 one of the issues relating to Lotan Rasiayawal Khurd Embankment was resolved while in respect of the other issue relating to Kalkalwa Embankment, a Joint Team was constituted to reconcile and revalidate some of the survey maps with field level book data.

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 Resources Secretaries of both countries is also functioning with the mandate to act as an Umbrella Committee of all committees and groups. The 2nd meeting of Joint Committee on Water Resources was held in New Delhi in October 2004 in which several issues were discussed. As decided in the meeting of JCWR, a Joint Group was constituted for evolving comprehensive strategy for flood management and control in order to identify the steps that could be taken by both sides to mitigate the devastation caused by flood. The Joint Committee has been asked to submit its report within 3 months. In this regard the 1st meeting of the Committee was held from 14-19th December 2004 in Nepal. The Committee also approved the Flood Forecasting Master Plan (FFMP) prepared jointly, which inter alia provides for 47 stations in Nepal for supplying data. For implementation of the scheme a Standing Committee on Flood Forecasting has been constituted. For this purpose, the Ministry of Water Resources has approved an estimate for Rs.188 lakh for this scheme during X Plan, which is being implemented by Central Water Commission. Another

achievement of this meeting had been that for the first time Nepal has agreed for undertaking the feasibility study of Kamla (as a part of the study for Sapta Kosi – Sun Kosi Projects) and preliminary study for Bagmati Multipurpose Project to be carried out by Joint Project Office, Sapta Kosi & Sun Kosi Investigations (JPO-SKSKI), already setup in Nepal (August 2004) to ascertain the likely constraints in implementation of these projects so that the same could be appropriately addressed.

Indo-Pakistan Co-operation

Under the Indus Waters Treaty 1960, India and Pakistan have created two 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 serve as the regular channel of communication on all matters relating to implementation of the Treaty. The two Commissioners together form the Permanent Indus Commission.

During the year 2004-05, the Commission held its 91st meeting in India in May 04 and its 92nd meeting to discuss Kishenganga Hydroelectric Plant (J&K) in Pakistan in Nov., 2004. The Commission also undertook its 102nd tour of inspection to certain projects in Pakistan. Besides, three Secretary level talks were held, first in India during June 2004 to discuss Baglihar Hydro Electric Project, second in Pakistan in July 2004 to discuss the Tulbal Navigation Project (J&K) and the third in India during January 2005 to discuss Baglihar Hydro Electric Project. A Technical Cooperation Mission is also under consideration for exchange of information and experiences related to projects in Water Resources Sector.

In fulfillment of the requirements of Indus Water Treaty, the daily data of 278 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, 2004, for Indus system of rivers.

CHAPTER 9

RESEARCH AND DEVELOPMENT

Ministry of Water Resources (MoWR) provides financial assistance to promote research work in the field of Water Resources Engineering. The assistance is provided by way of grants to academicians/experts in the Universities, IITs, recognised R&D laboratories, Water Resources/ Irrigation departments of the Central and State Governments and NGOs. Research proposals of applied nature as well as basic research are considered for MoWR support.

Considering wide range of topics covered by Water Resources Engineers, five committees called Indian National Committees (INCs) have been constituted to co-ordinate the R&D programme. The Indian National Committees dealing with Hydraulic research, Hydrology and Irrigation & Drainage come under the preview of Central Water Commission while the INCs dealing with Geo technical Engineering and Construction Material & Structures come under preview of Central Soil and Material Research (CSMRS)

The Ministry also provides grants to various academic institutions/ research organizations to take up research schemes on specific problems related to Thrust Areas and identified regional problems. The Ministry also supports Seminar/ Symposium etc. on important water related issues and other mass awareness programmes. During the first two year of the tenth plan an amount of Rs.3.38 crore was released to various institutions in the country for carryout research schemes. During the financial year 2004-05 Ministry has approved a programme for implementation of the plan scheme "Research and Development for Water Resources Management at a cost of Rs.3.00 crore

Central Soil And Materials Research Station

web-site: www.csmrs.nic.in

Introduction

The Central Soil and Materials Research Station (CSMRS), New Delhi, is an attached office of the Ministry. It is a premier organization in the country dealing with field explorations, laboratory investigations, basic and applied research in the field of geomechanics and construction materials, concerning river valley projects construction, safety evaluation of existing dams, etc. The sphere of activities of the Research Station is covered under the disciplines of:

- Soil Mechanics and Foundation Engineering including Soil Dynamics, Soil Chemistry, Geotextiles and Rockfill Technology.
- Rock Mechanics including Instrumentation, Engineering Geophysics, and Drilling Technology for sub-surface characterization.
- Construction Materials and Concrete Technology including Chemistry of Concrete and Grout Technology.

Research Activities During The Year

Investigation for projects

Investigation for as many as 45 River Valley Projects and other civil engineering structures have been handled successfully with particular reference to foundation and borrow areas materials characterization for which a large number of laboratory tests have been conducted and detailed technical reports finalized.

Research Schemes

Studies in the following research schemes were carried during the year 2004-2005:

Plan Schemes

- (a) Identification and characterization of Dispersive Soils.
 - (b) Diagnostic investigations of existing dams
 - (c) Study on Landslides
 - (d) Rock Blasting
 - (e) Monitoring of Rock Burst by Acoustic Emission Technique
 - (f) Advanced Mineralogy and Chemistry of Materials of Construction
 - (g) Development of High Performance Concrete Chemicals
 - (h) New Construction Techniques.
 - (i) Behaviour of Concrete under Multiaxial State of Stresses
 - (j) Structural Testing
 - (k) Dynamic Characterization of Mass Concrete for Dams
- Correlation between Point Load Strength and Uniaxial Compressive Strength
 - Rock mass Classification based on Geophysical properties (P,S Wave & Resistivity)
 - Anchoring Materials for Rock Bolting
 - Use of Fly ash in Reinforced Concrete for Corrosion Resistance
 - Effect of large size aggregate on compressive strength of mass concrete
 - Temperature Study of Mass Concrete
 - Correlation of Ultrasonic Pulse Velocity and Strength Characteristics of Concrete

CSMRS has established Geosynthetics Laboratory and upgraded the Rock Mechanics Laboratory.

Self Sponsored Research Schemes

- Prediction of Consolidation Characteristics of Fine grained Soils
- Effect of pH on Physical and Engineering Properties of Soils
- Use of Fly Ash as a Filter Material for Retention of various Toxic Cations

1. Total No. of Research Schemes sanctioned	: 40
2. Sanctioned amount of grant-in-aid	: Rs. 317.50 lakhs
3. Grant-in-aid released till date	: Rs. 234.38 lakhs
4. No. of schemes completed	: 18
5. No. of schemes partially completed & closed	: 02
6. State of Art reports printed	: 03
7. No. of schemes closed	: 02
8. Schemes likely to be closed	: 06
9. On-going projects	: 12
10. New schemes under consideration	: 03

The Present Status of Research Schemes funded by Indian National Committee on Construction Materials and Structures (INCCMS) is given as under:

1. Total No. of Research Schemes sanctioned	: 21
2. Sanctioned amount of grant-in-aid	: Rs. 267.83 lakhs
3. Grant-in-aid released till date	: Rs. 161.15 lakhs
4. No. of schemes completed	: 12
5. No. of schemes under execution	: 08

Indian National Committees

The following two national level committees were constituted by the Government of India for funding/providing financial support to various Research/Educational Institutions for carrying out basic/applied research in the field of Rock Mechanics, Soil Mechanics and Construction Materials & Structures.

The Present Status of Research Schemes funded by Indian National Committee on Geotechnical Engineering (INCGE) is given as under:

6. No. of schemes recommended for closure : 01
7. New schemes under consideration for sanction : 05
8. New schemes under “Invited Research” for sanction: 01

CONSULTANCY WORKS

The Research Station primarily functions as an Adviser and Consultant to the various Departments of Government of India, State Governments and Government of India Undertakings/Enterprises.

Besides contribution to almost all the major river valley projects spread all over the country, the CSMRS has also rendered consultancy to projects in the neighbouring and the middle-east countries like Myanmar, Srilanka, Afghanistan, Bangladesh, Iraq, Algeria, Mauritius etc in the past. At present CSMRS is handling a few projects in Bhutan, Nepal and Afghanistan. CSMRS has also imparted training to personnel from within the country/foreign countries in the fields of Geomechanics and Construction Materials Characterization for Civil Engineering Structures connected with river valley projects

A large number of consultancy works pertaining to river valley projects and connected civil engineering structures were handled in 2004-2005. Some of the important projects handled are given below:

- (i) Tehri Rockfill Dam Project, Uttaranchal
- (ii) Tala H.E. Project, Bhutan.
- (iii) Oil Jetty Project, Port Louis, Mauritius
- (iv) Myntdu Leshka H.E. Project
- (v) Subansiri Middle Project (Kamala), Arunachal Pradesh
- (vi) Loharinag Pala H.E. Project, Uttaranchal
- (vii) Baglihar H.E. Project

Other Consultancy Services

Consultancy services have been provided in Rihand Dam Project, UP; Lower Jhelum

H.E. Project, Baramulla, J&K; Parbati H.E. Project (Stage-III), HP; Dhauliganga H.E. Project, Uttaranchal; Idukki Dam Project; Bhakra Dam Project; and Middle Siang H.E. Project, Arunachal Pradesh; Kol Dam Project, H.P; Tapovan Vishnugad & Loharinag Pala Projects, Uttaranchal, Chutak H.E. Project, (J&K), Pandoh Dam, H.P., Kutni Dam Project, M.P. Tau Devi Lal Thermal Power Station, Haryana, Lakheri Dam, U.P., Umiam Dam, Meghalaya, Lakhwar Vyasi Dam Project, Uttaranchal, NSRS Srisailam Project, A.P, Kishau Dam Project, Uttaranchal, Chamera H.E. Project, State-III, H.P.

CSMRS is carrying out the dam safety and performance studies with the help of Instrumentation at Sardar Sarovar Project, Gujarat and Rihand Dam Project, U.P.

CSMRS also arranged specialized training programme in the field of Geotechnical Engineering and Construction Materials for the benefit of Public Sector & Central/State Government in service engineers.

River Links

The following geotechnical river link investigations are in progress for National Water Development Agency (NWDA)

- Ganga-Ghaghara Link Canal Project, U.P.
- Parbati-Kalisindh-Chambal Link Project, M.P./Rajasthan
- Krishna (Almatti)-Pennar Link Canal Project, Karnataka/A.P.
- Ghaghara-Yamuna Link Canal Project, U.P.
- Mahanadi-Godavari Link Canal Project, Orissa (Portion)
- Chunar-Sone Barrage Link Project, Bihar/U.P.

- Yamuna-Rajasthan Link Canal Project, Rajasthan
- Manas-Sankosh-Teesta Link Canal Project (Stage I), Assam/W.B.
- Somasila-Pennar-Palar-Cauvery Link Canal Project, Tamilnadu/A.P.
- Gandak-Ganga Link Canal Project
- Subernarekha-Mahanadi Link Canal Project
- Farakka-Sunderbans Link Canal Project
- Ganga-Damodar-Subernarekha Link Canal Project.

CSMRS-NGI Institutional Co-operation Programme

Central Soil and Materials Research Station and Norwegian Geotechnical Institute, Oslo, Norway entered into Institutional Co-operation Programme agreement in the field of “Investigation of Geological Hazards in Dam Reservoirs for Safety of Downstream Structures” for a period of 3 years w.e.f Nov. 2002. Under the programme, Rihand Dam Project (UP) has been taken up for detailed investigations and the planned investigations are in progress.

Central Water & Power Research Station, Pune

Introduction

Central Water and Power Research Station (CWPRS), established in 1916, is the premier Hydraulic Research Institute offering consultancy and advisory services to a variety of projects dealing with water, energy resources development and water-borne transport, disseminating expertise and research findings amongst hydraulic research fraternity, aiding and promoting research activities at various institutions besides training of research manpower. CWPRS has been recognized as the Regional Laboratory for ESCAP since 1971.

The studies are carried out on physical and mathematical models or by Desk studies for providing solution of various complex hydraulic and hydrologic problems. In addition CWPRS also undertakes allied works such as collection of field data, site investigations using seismic reflection / refraction surveys, evaluation of site specific seismic parameters, testing of civil engineering materials and water samples. Calibration of flowmeters / currentmeters is also carried out. CWPRS has made a significant progress in application of Remote Sensing technique for providing solutions of river and coastal engineering problems.

Organisation (wapis@mah.nic.in)

The activities of the Research Station are carried out through ten major laboratories in the disciplines viz.

Hydrology and Water Resources Analysis, River Engineering, Reservoir and Appurtenant Structures, Coastal and Offshore Engineering, Ship Hydrodynamics, Hydraulic Machinery, Earth Sciences, Mathematical Modelling, Foundations and Structures and Instrumentation and Control Engineering

Consultancy works

CWPRS carries out basic, applied and field oriented works through the ten major laboratories under one umbrella at Khadakwasla, to evolve safe, economic and rational technical solutions. During the year 2004-05, around 110 technical reports have been submitted to various clients.

The Research Station undertakes the assignments on no-loss no-profit basis. During the year, more than 90 new works from the three Major sectors viz. water and energy resources and water borne transport were awarded to the Research Station.

Some of the important studies include

- Mathematical model studies to assess the impact of land reclamation on the monuments in Agra, UP.
- Hydraulic model studies for the proposed Mayur Vihar link road along river Yamuna at New Delhi.
- Field studies for rating of Tungabhadra Right Bank Power Canal at 0.750 km, low level canal at 2.842 km and 251.850 km (Border), Tungabhadra dam, Karnataka.
- Studies for optimization of siltation at cooling water intake of Tata Power Company Ltd., Mumbai.
- Performance evaluation of Francis turbine units at Salal Hydroelectric Project, J&K
- Model studies for flood protection measures for western embankment of Kosi river in year 2004, Bihar.
- Studies for evolving coastal protection for parts of Gujarat; Maharashtra; Kerala; Karnataka.
- Safe design for spillways and energy dissipators, flushing of reservoirs, disilting arrangements and intakes for HE projects viz., Lower Subansiri, Assam; Omkareshwar, Madhya Pradesh; Chutak, West Bengal; Sewa, Himachal Pradesh.
- Studies related to deepening and expansion of Jawaharlal Nehru Port,;
- Studies for Development of Naval Dockyard extension, Visakhapatnam, Ennore Port, TN..
- Physcial model studies for survey for terminal at Rewas, Maharashtra
- Tapovan Vishnugad, Loharinag Pala Hydroelectric projects Uttarranchal : Reservoir sedimentation, Hydrological and geophysical studies.
- Estimation for safe grade elevation, area drainage and intake studies for power projects viz., Nagothane, Maharashtra; Dadri, Uttar Pradesh,; Tripura.
- Estimation of site-specific design seismic parameters for Pulichintala HE

project, AP; Earthen embankments of Kutch bank canal, Gujarat; Tala HE Project, Bhutan and Upper Beda Project, Madhya Pradesh

- Geophysical investigations for Nuclear Power Projects: Kudankulam, Kalpakkam, Tamil Nadu; Kakrapar, Gujarat; Rajasthan Atomic Power Project (RAPP), Kota

Plan Schemes

- Development and Application of Remote sensing Techniques for Hydraulic & Coastal Engineering,
- Modernisation and Upgradation of Research Facilities at CWPRS
- Improvement of Canal Control Through Modern Techniques and Technology

Dissemination Of Technical Information

- Forty research papers have been presented / published by CWPRS in various journals / conferences / workshops and seminars. Guidelines for 'Development of numerical models in free surface flows' have been prepared.
- A Technical book on River Training Works, titled *NADI NIYANTRAN TAKNIKI* was published in Hindi.
- Sixty-one officers were trained in various disciplines by nominating them to short term training courses / for participation in various seminars / symposia.
- Six courses / workshops / national seminar / conference were arranged by the Research Station and 54 technical lectures delivered in different courses including those organised by National Water Academy and other institutions.

NATIONAL INSTITUTE OF HYDROLOGY

Introduction

The National Institute of Hydrology, a Govt. of India Society under the Ministry of Water Resources,

established in 1978, is conducting basic, applied and strategic research in the fields of hydrology and water resources development. The Institute is being fully aided by the Ministry of Water Resources.

Main Objectives

- To undertake, aid, promote and coordinate systematic and scientific work in all aspects of hydrology;
- To cooperate and collaborate with other national and international organisations in the field of hydrology;
- To establish and maintain a research and reference library in pursuance of the objectives of the society and equip the same with books, reviews, magazines and other relevant publications; and
- To carry out activities that the Society may consider necessary, incidental or conducive to the attainment of the objectives for which the Institute has been established.

Organisation

The Union Minister of Water Resources is the President of the NIH Society and the Union Minister of State of Water Resources is its Vice-President. The Ministers-in-Charge of Irrigation in the States (for ten States to be nominated for every three years by the President of the Society), the Secretaries of the Ministries in the Government of India, concerned with water and related areas, and experts in hydrology and water resources are members of the Society. The Secretary, Ministry of Water Resources, Government of India, is the Chairman of the Governing Body. The Institute's research and other technical activities are monitored and guided by the Technical Advisory Committee (TAC) headed by the Chairman, Central Water Commission. The Director of the Institute is appointed

by the Government of India and is the Principal Executive Officer of the Society.

The Institute has set up four regional centers in order to deal with the area specific hydrological problems of different regions of the country and for providing effective interaction with the States in the region. The Centres are: Hard Rock regional Centre, Belgaum; Centre for Flood Management Studies for Brahmaputra, Guwahati; Western Himalayan Regional Centre, Jammu; Centre for Flood Management Studies for Ganga, Patna; Deltaic and East Coast Regional Centre, Kakinada; and Ganga Plains (South) Regional Centre, Sagar. The scientific themes are: (i) Surface Water Hydrology ii) Ground Water Hydrology iii) Environmental Hydrology iv) Agricultural Hydrology v) Water Resources Systems and vi) Hydrological Investigations.

Major Research Thrusts

- Water Related Disasters
- Groundwater
- Water Resources Planning and Management
- Snow and Glacier
- Prediction in Ungauged Basins
- Water Quality
- Hydrology of Arid and Semi-arid Zones
- Reservoir Sedimentation
- Watershed Hydrology

Studies and Research

The studies and research in the Institute are being carried out broadly under the following major categories:

- Basic studies and research
- Applied studies and research
- Software Development
- Field and Laboratory oriented studies
- Sponsored and consultancy research

The research outputs of the Institute are published in the form of reports and peer reviewed scientific papers. During the year 2004-05, the Institute has published 60 papers in reputed international and national journals and 120 papers in the proceedings of international and national conferences and symposia. About 50 reports based on studies and research in hydrology has been prepared during the year.

Laboratories

The Institute has following well equipped laboratories with state-of-art instruments to provide the necessary support to field studies.

- Hydrological Instrumentation
- Nuclear Hydrology
- Remote Sensing & GIS
- Soil Water
- Snow & Glacier
- Water Quality

Documentary on Gangotri Glacier

Snow and glaciers play an important role into Indian water resources. Therefore, hydrological investigations for glaciers become important. NIH has carried out hydrological studies on Chhota Shigri Glacier, Dokriani Glacier and Ganotri Glacier. A video film of about 20 minutes duration was prepared to show the investigations being carried out by NIH at the Gangotri Glacier. It consisted of videography of NIH discharge site and Meteorological observatory established near Gomukh. Different features of glacier such as moraines, crevasses, snout and melt stream were also pictured.

Indian National Committee on Hydrology (INCOH)

The Institute has been providing secretarial assistance to INCOH. In pursuance of its objective of preparing and periodically

updating the state-of-the-art technology in hydrology in the country, the secretariat brings out scientific reports covering a variety of topics. The secretariat also publishes a bi-annual journal on hydrology entitled “Jal-Vigyan Sameeksha”. The journal is being distributed to about 700 organisations in the country and abroad in order to disseminate and promote knowledge in the field of hydrology. During the year six issues of Jal Vigyan Sameeksha were brought out. Also the INCOH has funded fifteen international as well as national seminars, symposia, workshops, and conferences in the relevant areas of hydrology and water resources. The research Advisory Committees of INCOH had approved ten Research & Development projects for funding by Ministry of Water Resources. One of the major aims of the Committee is to effectively coordinate and act as the focal point for the international Hydrological Programme of UNESCO. This role is being performed by the INCOH very efficiently and India is actively participating in the IHP-VI of UNESCO.

Consultancy Activities And Capabilities

The Institute has capabilities in the following areas of hydrology and water resources to take up national and international consultancy:

- **Decision Support System**
 - Integrated reservoir management
 - Conjunctive use of surface and ground water
 - Surface water planning
 - Drought monitoring and management
 - Water quality
- **Flood Studies**
 - Design flood estimation
 - Dam break flood analysis
 - Flood plain zoning and flood risk mapping
 - Real time flood forecasting



Visit of The Hon'ble Minister for Water Resources Shri Priyaranjan Das Munsri (centre) and Secretary(WR) Shri V.K.Duggal (left) attending the annual meeting of The National Institute of Hydrology.



Field measurement being taken at Gangotri glacier.

- **Ground Water**
 - Assessment of irrigation return flow
 - Seawater intrusion in coastal aquifers
 - Identification of sources of pollutants
 - Modelling of spring flow
 - Modelling of fractured flow
- **Hydrological Investigations**
- **Hydrology of Lakes**
- **Instrumentation for Hydrologic Monitoring**
- **Isotope Applications in Hydrology**
 - Dating of groundwater and sediments
 - Sedimentation in water bodies
 - Ground water recharge and identification of recharge zones
 - Discharge measurement of mountainous rivers
 - Surface water-ground water interaction
- **Reservoir Analysis**
 - Simulation and optimization of operation of multi-purpose, multi-reservoir systems.
 - Sedimentation assessment using satellite remote sensing
- **Snow and Glacier Hydrology**
 - Snow and glacier melt contribution in annual flows
 - Snowmelt runoff and sediment modeling
- **Water Availability**
 - Water availability for gauged and ungauged catchments
- **Water Logging & Salinity in Command Areas**
 - Assessment of water logging and salinity
 - Design of sub-surface drainage
- **Water Quality**
 - Water quality in metropolitan cities
 - Adsorption, speciation and fractionation of toxic pollutants
 - Water quality of rivers and lakes
 - Water quality of rivers and lakes
 - Water quality modeling
- **Watershed Hydrology**
 - Integrated hydrological study in watersheds
 - Assessment of water availability for different uses
 - Training of PIAs, NGOs, stakeholders, researchers, etc.

Technology Transfer:

One of the main objectives of the Institute is to transfer the developed technology to the target users. Besides, wide circulation of the published reports and research papers, organization of workshops, training courses, seminars, symposia, conferences, brain storming sessions, etc. have been major activities under the Technology Transfer Programme. During the year 2004-05, the Institute has organized following activities:

1. Interactive Workshop on Water Conservation, 13-14 April, 2004 at Roorkee.
2. Interactive Workshop on Interaction of Surface Water and Ground Water, 22nd April, 2004 at Kakinada.
3. Training Course on ANNs and their application to Water Resources, 9 June, 2004 at CWC, New Delhi.
4. Training Course on Remote Sensing & GIS Application in Water Resources Management, 14-19 June, 2004 at Roorkee.
5. Workshop on Water Quality Monitoring and Modelling, 16-17 August 2004 at Roorkee
6. Training Workshop on Hydrological Investigations & Catchment Management for Lakes schedule, Roorkee, 28-29 September 2004.
7. Training Workshop on Hydrology of Lakes, January 19-20, 2005 at Udaipur.

The Institute Celebrated Its Silver Jubilee

1. The NIH celebrated its Silver Jubilee Year from December 16, 2003 to December 15, 2004 with great enthusiasm. As part of the year long celebration of the Silver Jubilee of the Institute a series of lectures were organized. National and international eminent and world-renowned experts in hydrology and other fields delivered these lectures. The Institute very successfully organized a 12 lecture series.

During the Silver Jubilee Year of the Institute, the following two major events were held:

11th National Symposium on Hydrology with focal theme on Water Quality 22-23 November 2004, Roorkee

The National Institute of Hydrology, Roorkee organized a two days National Symposium on Hydrology with focal theme on Water Quality during 22-23 November 2004 at Roorkee. The Symposium was held with the objective of providing a discussion forum for academicians, researchers and scientists working in different aspects of water quality. The Symposium was jointly

organized with Central Pollution Control Board, Delhi on the following themes:

- Surface Water Hydrology
- Ground Water Hydrology
- Surface Water Quality including Point and Non-point Source Pollution
- Ground Water Quality and Aquifer Contamination
- Water Quality Modelling and Management
- Treatment Technologies and Remediation

National Seminar on “FOREST, WATER and PEOPLE”

In association with the Institution of Engineers (India) Belgaum Local Centre organized a National Seminar on “FOREST, WATER and PEOPLE” during 29th and 30th of July 2004. The technical sessions were held under four major themes. They are:

- Hydrological process of Forested Watershed
- Impact of land use and land cover changes
- Environmental Aspects of Forested Watershed
- People's Participation in Watershed Management

CHAPTER 10

UNDERTAKINGS OF THE MINISTRY

Water And Power Consultancy Services (India) Limited

Introduction

Water and Power Consultancy Services (India) Limited (WAPCOS), New Delhi is one of the Mini Ratna Public Sector Enterprise of Government of India. It was set up in the year 1969 to channelise Indian Expertise in the fields of Water & Power Sectors and allied fields for the benefit of developing countries. The main fields of WAPCOS operations cover Irrigation Drainage, Ground Water Exploration, Minor Irrigation, Flood Control, Watershed Management, Hydro Power Engineering, Thermal Power Transmission and Distribution, Water Supply and Sanitation (Rural and Urban), Environmental Engineering, Ports & Harbours, Rural and Urban Development, Roads and Highway Engineering, System Studies and Information Technology and Human Resources Development.

International Operations

WAPCOS is registered with various International funding agencies like World Bank, Asian Development Bank, African Development Bank, Arab Fund for Economic and Social Development in Kuwait, African Development Bank, Food and Agriculture Organisation, International Bank for Reconstruction and Development, International Fund for Agricultural Development, United Nations Development Program, United Nations Organisation, World Health Organisations, JBIC, JICA, West African Development Bank, Indian Technical and Economic Cooperation (ITEC) Programme, Overseas Economic Co-operation Fund etc. Apart from Indian sub-continent, WAPCOS has been operating in over 36 developing countries and is currently engaged in providing consultancy services in Afghanistan,

Bhutan, Cambodia, Ethiopia, Eritrea, Mauritius and Zimbabwe. WAPCOS has been accredited with ISO 9001:2000 by AFAQ-EAQA, UK.

Recognition

- Rated as “Excellent” by the Dept. of Public Enterprises since for 12 years.
- Awarded Prime Minister’s MOU award for “Excellence” for the year 1998-99.
- Ranked amongst the top ten PSEs for the year 1999-2000.
- Awarded the ‘ Merit Certificate’ for “Excellent” Performance during 1999-2000 and 2000-2001 by the Vice President of India.
- Awarded the “Merit Certificate for Excellence” by His Excellency President of India for the year 2001-2002.

In recognition of its contribution in the Water and Power Sectors, WAPCOS has been elected as a Member of the Governing Body of Consultancy Development Centre (CDC), an autonomous body supported by DSIR, Ministry of Science & Technology and also Governing Council of Consulting Engineers Association of India (CEAI) second time for the year 2003-2005. WAPCOS has been awarded the best **Consultancy Project Award** by Consultancy Development Centre (CDC), for Haryana Operational Pilot Project (HOPP). “WAPCOS has been declared as a joint winner of the silver trophy of “Scopes Awards for Excellence and outstanding contribution to the Public Sector Management for the Year 2003-04”

Technical Activities

The activities of the Company are carried through various Centres. The activities during the Financial Year 2003-04 are reported below:-

Business Development

New initiatives taken for Business Development include detailed presentations regarding WAPCOS capabilities, expertise and experience of working in the Indo-China Region, establishment of linkages with the EXIM Bank to propagate WAPCOS interest in the countries where Lines of Credit are being extended by the Govt. of India, presentation about WAPCOS before New Partnership for Africa's Development (NEPAD), a comprehensive presentation to the representatives of the Common Market for Eastern and Southern Africa (COMESA) and meeting with the Chairperson, National Bank for Agriculture and Rural Development (NABARD) for developing association. Correspondence was initiated with Governments of Mauritius, Sri Lanka, Vietnam and Laos for projects initiated by MEA in Joint Commission Meetings for Algeria and Syria.

Centre For Water Resources

Foreign Projects

- Wabi Shebele Master Plan Study Project, Ethiopia
- New Anse Raffin Dam Rodrigues, Mauritius
- Municipal Dyke Rehabilitation Work, Mauritius
- Study of Land Drainage System of Mauritius
- Jamuna – Meghna River Erosion Mitigation Project (Phase-II), Bangladesh

Indian Projects

- Arresting Salinity Ingress and Ground Water for Recharge in Bhadrak, Puri & Kendrapara Districts (7 Creeks)
- Rengali Irrigation Sub-project Lower Bank Canal, Phase-II, Orissa
- Arresting Salinity Ingress and Ground Water Recharge for 27 creeks of Basudevpur & Chandbali Blocks of Bhadrak District, Orissa
- Godavari Lift Irrigation Scheme (GLIS), Andhra Pradesh

- Gram Bhagirath Yojana Project, Jharkhand
- Network planning & Micro-canalisation of Tonk Branch and Nagar Distributary Systems of Bisalpur Project, Rajasthan
- Enhancing the Capacity of Yashwant Sagar Dam, Indore, Madhya Pradesh, Artificial Recharge of Ground Water & Rainwater Harvesting in Watersheds of Chattisgarh state.
- Land Survey for Giral Thermal project Rajasthan; Kandi Canal Project, Jammu & Kashmir
- Survey work for Dholpur Gas Thermal Power Station Rajasthan
- Review of Flood hydrology of 6 dams in Uttar Pradesh
- Survey & digitization of Raneri Thermal Power Station, Rajasthan.
- Restoration work of Eastern Gandak Canal system, Bihar
- Hydrological Studies of Godavari Basin, Andhra Pradesh
- Carrying Capacity of Teesta Basin, Sikkim
- Implementation of micro-canalization works in 2000 ha of DVC Command Area.
- Kangsawati Reservoir System Studies,
- Implementation of construction of watercourses in DVC Command Area,
- Design and Estimation for Teesta MACRO Distribution Network
- Kurnool Cudappah Canal Modernisation Project,
- Lift Irrigation Schemes in Nizamsagar System,
- Investigation and Preparation of Design, Drawing and Estimates for Distributary NO. 37 AMR Project (Sri Sailam Left Bank Canal System)

Centre For Power

Foreign Projects

- Tala HE Project, Bhutan (6x170 MW)
- Chhukha HE Project, Bhutan
- Punatsangchu HE Project, Bhutan (6x145 MW)
- Design, Engineering, Tender Engineering, execution assistance for

132 kV transmission line from Kilikhar to Lhuentse (48 km), Bhutan

- Improvement upgradation of transmission system in western Bhutan, Sub-transmission and distribution system, Bhutan
- 24 Nos. Tubewells Project, Herat Province, Afghanistan
- Engineering services for 110/20 kV substations, for pole mounted substations and transmission line in Afghanistan.
- Studies for Power Evacuation of Bamyán HE Project (3x250 MW) in Bamyán Province, Afghanistan.
- Rehabilitation / completion of Salma HE Project, Khanabad Irrigation Project, Afghanistan.
- Amir Ghazi and Quargah Reservoir Projects and Mini/Micro Hydel Projects, Afghanistan.
- Rural Electrification Programme, Zimbabwe
- Hwange Thermal Power Station, Expansion Project and Kariba South Extension Project, Zimbabwe.

Indian Projects

- Preliminary Feasibility Reports of 71 HE Projects.
- Rani Avanti Bai Sagar Left Bank Canal Head Power House (2x5 MW), Madhya Pradesh.
- Consultancy services for Ash Pond Dykes A and B for Ib Thermal Power Station, Orissa.
- Loharinag Pala Hydro Electric Project (4x150 MW) & Tapovan Vishnugad HEP (4x130 MW), Himachal Pradesh
- Consultancy services for preparation of Detailed Project Reports for Lohirag Pala HE Project (4x150 MW) & Tapovan Vishnugad Hydro Electric Project (4x130 MW), H P
- Purulia Pumped Storage Project (4x225 MW), West Bengal
- Accelerated Power Development & Reforms Programme (APDRP), Delhi and Punjab

Centre For Infrastructure

Foreign Project

- Rehabilitation of West Barai Reservoir Project, Cambodia

Indian Projects

- EIA for Giral lignite mine, Rajasthan
- EIA study for various gypsum mines in Rajasthan, Upgradation of EIA study for breakwater at Ratnagiri, Maharashtra
- EIA for various dimension stones in Karnataka, Rajasthan and Gujarat
- ADB funded Inland Waterways Sector Development program (TA-3974-IND)
- Mathematical model studies for layout of breakwater and tender engineering for breakwater and allied works at Pawas Bay, Ratnagiri
- Development of Master Plan and setting up marine facilities at Masad in Dharmatar Creek near Mumbai, Techno-Economic Feasibility Study for permanent coal handling captive jetty in Savita Creek, Dahanu
- Field Investigation for Siltation Studies at Rewas-Aware Port, Techno-Economic
- Feasibility Studies for Development of Navigation on River Narmada from Hoshangabad to Sea, Model Studies for Onshore Gas Terminal at Kakinada
- Mathematical Model Studies for 5.8/10 MGT (Desalination sea water intake and discharge systems at north Chennai near Ennore Port)
- Planning, Design, Tender Engineering and detail construction engineering of storm water system of Seelampur and Shashtripark Area, Delhi
- Feasibility report on assessment of availability of water from river TEL for setting up an Alumina Refinery in Lanjhigarh – Orissa
- Survey; levelling and designing of distribution network for various locations at Ranchi City
- DPR for Water Supply Schemes in Jharkhand State, DPR for Providing Water Supply and Underground

Drainage facilities to 7 CMC & 1 TMC in Bangalore Urban District

- Bankable detailed project report for abatement of pollution of river Sheona in Mandsaur town and river Beehar in Rewa Town in Madhya Pradesh
- Construction Supervision works of 133 GP's villages in Sonebhadra district under Jalnidhi Scheme and Batch-I villages under Sector Reform Project, Haridwar.
- UNDP funded Small Grants Facility (SGF) for Water Sector, Ministry of Environment and Forests
- Development of MIS for Total Sanitation Campaign
- Water Resources Scoping Study in Eastern Tribal Belt, Gujarat
- Preparation of DPR & Construction Supervision of Water harvesting Schemes in Gujarat, Construction Management of Water Supply Schemes and Rain Water Harvesting in Ghogha Project area in Bhavnagar District, Gujarat
- Support Agency (SA) for Project Gram Panchayats (GPs) and Design of Multi Village Schemes in Karnataka
- Water Quality Monitoring & Surveillance in Sehore, Allahabad, Nellore & Kangra districts
- Master Plan of Water Supply Schemes for Dadra & Nagar Haveli and capacity building for Jal Swarajya Project in Maharashtra.

Sardar Sarovar Division

Sardar Sarovar Narmada Nigam Ltd. (SSNNL) awarded initially 1.0 lakh hectare of micro canal network design. Subsequently, they have awarded further 3.0 lakh hectares. The job involves field to field survey, planning of canal network, selection of structures and design thereof with BOQ so as to facilitate SSNNL to go for tenders. Field to field survey for 2.0 lakh hectares has already been completed and canal network has been finalised. Suitable softwares have been designed to carry out the design work.

Centre For Project Appraisal & Administration

Foreign Project

- Hagas and Alla Valley Horticulture Development study in Eritrea

Indian National Committee on Irrigation and Drainage (INCID)

INCID is the National Committee for India for the International Commission on Irrigation and Drainage (ICID). INCID contributes to various ICID meetings/workshops/congresses and conferences as also to other International conferences. One of the important functions carried out by the INCID is the processing, coordination and monitoring of the R&D schemes funded by the MOWR. INCID is also involved in bringing out technical publications in the form of Manuals, Reports, Bulletins, Seminar proceedings etc. so as to disseminate information relating to Irrigation and Drainage. WAPCOS serves as the main secretariat for INCID and continued to provide secretarial assistance to it, during the year under review.

National Projects Construction Corporation Ltd.

Introduction

National Projects Construction Corporation Limited (NPCC) an ISO 9000-2001 Certified Company was established in the year 1957 as a Premier Construction Company to provide the necessary know how and resources for construction of Canal Systems, Irrigation and River Valley Projects, Dams and Barrages, Hydel and Thermal Power Projects, Industrial Structures, Roads & Bridges, Buildings and Townships, Airfields, etc. The Corporation has been so far associated with 215 Projects of National and International importance. NPCC is one of the few Construction Companies in the Government Sector having expertise and equipment for

construction of Tunnels, which form a major component of any Hydro Electric Project.

The Corporation was doing well till 1988-89 but started incurring losses due to various reasons. The Corporation has since taken a number of measures to improve its performance such as aggressive marketing, diversification of activities in to new areas like environment-connected projects, highways and turnkey jobs etc. The Corporation has also entered into the field of Projects Management Consultancy in a big way. As a result of these measures the Corporation has been able to achieve Order Book Position of Rs. 1306.58 Crores (upto November 2004). During the year 2003-04 the turn over of the corporation has

considerably increased to 302.88 Crores & for the current financial year upto November 2004 it has achieved a turn over of Rs. 169.61 Crores.

In view of the marked improvement in the performance of the Corporation in the current year, the Revival Plan has been prepared and is under consideration of the Ministry. The authorized capital of the company is Rs.30 crore and its Paid up Capital is Rs.29.84 Crores.

Turnover

The turnover of the Corporation during last five years and the achievement for current year 2004-05 (upto November 2004) is given below:-

(Rs. In Crores)

Year	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05
Turnover	142.41	156.89	137.60	227.62	302.88	169.61

The target for achieving the turnover for the current year i.e. 2004-05 is Rs. 300.00 Crores.

New Works Secured

Despite several constraints in the tendering, Corporation has secured new works for **Rs. 1047.40 crores** as detailed below.

- A. Year 2003-04 **Rs. 740.21 crores** against a target of Rs.250.00 crores.
- B. Year 2004-05 **Rs. 307.19 crores** (upto November 2004) against a target of Rs.350.00 crores.

Order Book Position as on 30.11.2004 is Rs. 1306.58 crores.

Major Works awarded to NPCC during the year: -

- Construction of FOUNDATION & SUPERSTRUCTURE etc. at New Parli Project – 1x250 mw for Maharashtra State Electricity Board to the tune of Rs. 30. crores.
- Construction of Raw water reservoir and its lining package for Sipat Super Thermal Power Project Stage II (SSTPP) in Chattisghar for NTPC to the tune of Rs. 22.50 crores.
- Civil works package for Kahalgaon Super Thermal Project (KSTPP) in Bihar for NTPC for a value of Rs. 17.50 crores.
- Construction of Road Over Bridge, (ROB) & Road Under Bridge (RUB) in connection with New Broad Gauge (BG) line between Neora-Dhaniawan in Bihar for East Central Railway to the tune of Rs. 16.90 crores.
- Implementation of Pradhan Mantri Gramin Sadak Yojana (PMGSY) works in Patna Division of Bihar for Ministry of Rural Development, Government of India to the tune of Rs. 50 crores.
- Indo Bangla Border (IBB) fencing with Roads in Mizoram for Ministry of Home

Affairs. Government of India for a value of Rs. 40 crores.

- Starter Ash Dyke lagoon for Sipat Super Thermal Power Project (SSTPP) Stage-II in Chattisgarh for NTPC to the tune of Rs. 14.30 crores.

Works Under Execution

At present, the corporation is working on 90 Unit & spread all over the country. Some of the projects in hand are as follows.

(a) Irrigation And River Valley Projects.

- Khuga Dam & Spillway in **Manipur**
- Jobat Dam, Construction of Masonary Dam and allied Civil works, Ajnal Aqueduct, Escape Channel and Cross Regulator Works, Bansagar Spillway Bridge and Bariyarpur & Datia Canal works in Madhya Pradesh (**MP**).
- Diversion Channel at Kanpur in Uttar Pradesh (**UP**).
- Barrage across Chiravati River in Bagepalli in **Karnataka**.
- Construction of Barrage across river Mohri at Kalsi in **Tripura**.

(b) Hydroelectric Projects.

Maneri Bhali Hydro Electric Project that includes Construction of Head Race Tunnel, Surge Shaft, Pen Stocks in **Uttranchal**.

(c) Thermal Projects.

Foundation and Superstructure of New Parli Project in Maharashtra and following various works of National Thermal Power Corporation (NTPC) located in different States: -

- Ash Pond, Raw Water Reservoir and its Lining Package Works at Sipat Super Thermal Power Projects (SSTPP) in Chattisgarh.
- Ash Pond at Talcher Super Thermal Power Project (TSTPP) in **Orissa**.
- Civil Works (off site) for Kahalgaon STPP in Bihar.

(d) Industrial & Environmental Projects.

- Storm Water Drain & Water Supply Lines at Bagalkot in **Karnataka**.
- Sewerage Works in Gwalior in **Madhya Pradesh**.
- Reservoir Cum Pumping Station Water Treatment at Kalyani and Switchyard foundation etc. at Durgapur in **West Bengal**.

(e) Miscellaneous Projects

The Corporation under-took several construction assignments relating to Buildings, Roads, Hospitals, Bridges, and Flyovers etc. These include: -

- Police Line works in Moradabad & NOIDA in **UP**.
- Upgradation of Rural road at Distt sidhi, Shadol in **MP**.
- Kanchipuram Bridge & Road Over Bridge at Trichy in **Tamilnadu**.
- Guru Ghasi Dass University at Bilaspur in **Chattisgarh**.
- Department of Telecommunication (DOT) Building at Guwahati in **Assam**.
- Reinforced Cement Concrete (RCC) Bridge at Kawamara, Construction of Collage Campus, Fisheries College at Agartala and New Legislative Assembly Building at Agartala in **Tripura**
- Construction of Residential & Office Buildings for Assam Rifles in the state of **Nagaland, Arunanchal Pradesh, Manipur, Mizoram, Meghalaya and Tripura**
- School Complex at Bijapur Educational Institutions Society (KREIS), in **Karnatka**
- Construction of Administrative Office Complex Industrial ,Udyog Sadan, Patparganj and Building Works, Patel Chest Institute, Pavement for development of DTC Okhla& CRPF work at Vasant Kunj in **Delhi**.
- Roads works in Jayant, 30 nos Hostels in Ranchi Area, Bridges at distt

Dumka and Singhbhum, RCC Box Culverts for BG Line Between Baidyanath Dumka of Eastern Railway in **Jharkhand**.

- Minor Bridges for Tikiapara-Santaregachi Line near Kolkatta in **West Bengal**
- OTM accommodation for M.E.S. at Dehradun in **Uttranchal**.
- ROB for New BG line Neora Dhanlwan & Roads works for PMGSY at different locations in **Bihar**.
- Two Nos. Tunnel work for Jammu-Baramulla Rail Link project for Konkan Railway in **J&K State**.
- Indo Bangla Border Fencing in **Tripura & Mizorum**.

Voluntary Retirement Scheme:

The corporation implemented the VR Scheme since the financial year 1991-92 as announced by the Government to reduce manpower, which is one of the major contributory factors of the sickness of the corporation.

During the current year (upto November 2004) 399 employees had exercised option under VRS, out of them 228 application was accepted. So far, only 112 employees have been relieved from the services of the Corporation. Rest 116 employees shall be relieved after receipt of funds from the Government. Altogether a total number of 2837 employees have been relieved under VR Scheme till 30th November 2004

CHAPTER 11

ROLE OF WOMEN IN WATER RESOURCES MANAGEMENT

Women in particular contribute significantly in agricultural production. The women workforce time is estimated to be around 70 to 80% of the total work force time in the agriculture sector. Role of women in water resources management and conservation has been duly recognised. The National Water Policy 2002 while stressing on participatory approach in water resources management, specifically provides for necessary legal and institutional changes to be made at various levels for the purpose of ensuring appropriate role for women.

In pursuance of the provisions in National Water Policy 1987 (and also 2002) farmers are to be involved progressively in various aspects of management of irrigation systems, particularly in water distribution and collection of water charges. Ministry of Water Resources, while issuing guidelines in April 1987, specifically

emphasized to the States to consider representation of women in the Water Users' Association (WUAs) at all levels. As a consequence, many States have amended their Irrigation Acts or come out with specific Acts on the Participatory Irrigation Management. Some of the State Governments have taken some initiative and have made specific provisions for women's participation.

The marginal representation of women, however, is not adequate in view of the magnitude of the problem. Considering the importance of women in terms of their numerical strength and the significant contribution they make to the agriculture labour force, there is a need to encourage participation of more women in Water Users' Associations by strengthening the Acts or by bringing in a new culture among the water users.

CHAPTER 12

PROGRESSIVE USE OF HINDI

During the year, effective measures were taken in the Ministry of Water Resources for the Progressive use of Hindi for Official purposes. Efforts were made to ensure compliance of various orders/ instructions issued by the Department of Official Language. Along with translation of important documents, the Hindi Section of the Ministry implements the Official Language Policy of the Union Government in the Ministry and all the organisations under administrative control of the Ministry.

The second sub-Committee of the Parliamentary Committee on Official Language inspected various offices of Central Ground Water Board, Central Water Commission, Narmada Control Authority, Water and Power Consultancy Services(I) Ltd. and Central Soil and Material Research Station under the Ministry of Water Resources and suggested some measures for the progressive use of Hindi.

The Official Language Implementation Committee of the Ministry under the Chairmanship of Joint Secretary (Admn.) has been meeting regularly. The Committee has discussed the difficulties being faced in the use of Hindi in the Ministry and its organizations. Timely action was taken on the decisions taken in these meetings. Sufficient progress has been made in the implementation of the Rajbhasha Hindi in the Ministry.

Annual noting and drafting competition continued this year also to encourage staff and officers to do their work in Hindi.

To encourage healthy competition among the organizations under the Ministry for doing maximum work in Hindi, the Rajbhasha Vijayanti Shield has been introduced. Under this scheme, this year, first and second prizes were awarded to CSRMS, New Delhi and NWDA, New Delhi respectively.



.Secretary ,Water Resources Shri V.K.Duggal (left) giving away the Rajbhasha Shield to the Director Central Material & Soil Research Station, New Delhi.

Hindi Fortnight was organized in the Ministry during September, 2004. During the fortnight competitions for Rajbhasha Quiz, Hindi Noting & Drafting, Hindi Essay, Typing and Stenography and Sulekh were organized. Employees and Officers of the Ministry enthusiastically participated in these competitions.

During the year, 6 officers were nominated for Hindi training and 14 & 19 officials were nominated for Hindi typing and stenography training respectively from the Ministry. To encourage the staff to do their work in Hindi annual noting and drafting competition continued during the year.

Four Hindi Workshops were also organized with a view to promote Hindi in official work. Information regarding Official Language Act/Regulations was provided and participants were trained to do official work in Hindi during these workshops.

Director (Admn.) inspected some of the offices of the Ministry of Water Resources situated outside Delhi. Joint Director(O.L) and Assistant Director (O.L) inspected sections of the MOWR and oversaw the compliance of Official Language Policy, and instructions were given for rectification of the deficiencies pointed out during such inspections. Regular monitoring of the work being done in Hindi in the Ministry and its attached/subordinate offices was done through quarterly reports. Joint Director (OL) and Assistant Director(OL) delivered lectures in the workshops organized by attached/subordinate offices of the Ministry and apprised the participants about the O.L. policy of the Govt. of India.

CHAPTER 13

ADMINISTRATION, WELFARE AND VIGILANCE

ADMINISTRATION WING:

The total personnel in the various organizations of the Ministry in Group A, B, C and D is 14923. The policies of the Government with regard to welfare, personnel and e-governance are being implemented in the Ministry, A detailed Organisation Chart is given as Annexure II

E-Governnance

The Ministry of Water Resources has formulated a Five Year Information Technology Strategic Plan in order to identify the needs of the Ministry and identification of areas where IT Services shall be beneficial and conducive to improve efficiency and effectiveness of operations. In order to facilitate the implementation of IT Development Scheme in the Ministry, an IT Division has been set up under the overall supervision of Joint Secretary (Administration) & IT Manager, MoWR. The SAU will implement the Five Year Information Technology Strategic Plan under the technical guidance of National Informatics Centre (NIC). The achievements so far made are as under:

- Computers mostly provided upto section officer level.
- Increased use of E-mail in internet communications and data sharing.
- Training in office automation provided to 100 officials of the Ministry
- Data on state profile hosted on internet in coordination with Centre Water Commission.
- E-governance projects like Management Information System, Financial Information system, File tracking system, Inventory management Systems etc. are being planned.

Redressal of Staff Grievances

A Grievances Redressal Cell is in existence in the Ministry of Water Resources which entertains the grievances of staff of all organisations under the Ministry. Joint Secretary (Adm) and Director (Co-ordination & PPP) have been designated as Director of Public Grievances and Director of Staff Grievances, respectively. Due attention is paid for the disposal of grievances within a reasonable period. Most of the grievance received are related to service matters, payment of pensionary benefits etc. Out of 64 staff grievances received during the year, 17 have been disposed off.

Minority Welfare

In accordance with the guidelines issued by the Ministry of Welfare (present Ministry of Social Justice & Empowerment) in March, 1990, the Ministry is monitoring the recruitment of minority communities and representation of minorities in Selection Commission/Boards in the Ministry and the organisations under it.

Monitoring of Reservation for Physically Handicapped

Monitoring of the recruitment of physically handicapped is being done to ensure fulfillment of three per cent quota for the category by the Ministry as well as various organisations under it. Periodic reports on the progress made are being sent regularly to the Ministry of Social Justice & Empowerment.

Monitoring of Reservation for SC/ST/OBC

The Scheduled Caste/Scheduled Tribe and Other Backward Classes (SC/ST/OBC)'s Cell also forms part of the Administration



Additional Secretary(WR) Smt. Shushma Singh (centre) Chairing a meeting of vigilance division of the ministry.

Section. It renders secretariat assistance to Liaison Officers for SC/ ST and for OBC in discharging their functions on various matters relating to reservation for SC/ST/ OBC in Government services and carrying out inspections of reservation rosters. It also advises on allied matters to various organisations of the Ministry

The Administration Section of the Ministry is primarily responsible for the establishment, personnel and administrative matters of the officers and staff of the Ministry (proper) besides being the cadre controlling authority of posts borne on CSS/CSSS/CSCS sanctioned in the Ministry (proper) and those in Central Water Commission & Central Soil & Materials Research Station. Other aspects of the administration like filling up of posts by direct recruitment/ deputation/ promotion, termination of probation, confirmation, grant of financial upgradation under Assured Career Progression Scheme, release of annual increments, pay fixation, maintenance of Confidential Reports, sanction of TA/LTC advance, House

Building Advance, Motor Car/Scooter/Cycle advances, GPF advances/withdrawals, framing/ amendment of recruitment rules, finalisation of pension/family pension cases, leave of all kinds, forwarding of applications etc., are also dealt with.

As part of developing the human resources, 148 officials of the Ministry were sent on training in various institutes to enhance their capabilities and skills. The Schedule Caste/Schedule Tribe/Other Backward Class's Cell also forms part of the Administration Section. It renders secretariat assistance to Liaison Officer for Schedule Caste/Schedule Tribe, and Liaison Officer for Other Backward Class in discharging their functions on various matters relating to reservation for Schedule Caste/Schedule Tribe/Other Backward Class in Government services and carrying out inspections of reservation rosters and on allied matters in respect of various organisations of the Ministry.

Vigilance Activities

The Vigilance Unit under the over-all supervision of Chief Vigilance Officer provides a link between the Ministry and the Central Vigilance Commission (CVC). Apart from dealing with vigilance cases, the Unit is also responsible for such items of work as regular and surprise inspections of the sensitive areas of works, review and streamlining of the procedure which appear to afford scope for corruption or misconduct. It also takes other steps for the prevention of corruption and other malpractices in the Ministry. its attached, subordinate and other offices under its control including the PSUs.

The Vigilance Unit of this Ministry looks after various aspects of Vigilance and Disciplinary matters of all the employees of the Ministry of Water Resources (proper) including all Group A and B officers / officials of CSS, CSCS and CSSS cadre and Group A officers of all the Organizations under the administrative control of this Ministry. It also tenders advice on vigilance matters to the Attached and Subordinate Offices, PSUs, Statutory Bodies, Registered Societies etc under this Ministry, in consultation with CVC and other departments viz. UPSC, Department of Legal Affairs, DoPT, DoP&PW etc.

wherever necessary.

The Vigilance Unit also endeavours to ensure taking timely and appropriate action on the complaints received from various sources, completion of preliminary investigation within a period of three months, conclusion of formal inquiries within six months, awarding suitable punishment to the Charged Officers, wherever required. It also processes the requests for conveying the vigilance clearance certificates in connection with promotions, confirmation, forwarding of applications for deputation, foreign assignments, Training etc in respect of officials / officers of this Ministry. The Vigilance Unit has, so far, issued vigilance clearance certificates in respect of 983 officials.

The vigilance disciplinary cases pending in the Ministry are closely monitored by the CVC/ DOP&T. In this connection, a device has been introduced (DCM&MIS) in which the status of the cases is incorporated / updated and transmitted to them through INTERNET. These cases are also reviewed regularly by the Secretary (WR). The approximate numerical status (as on 31.01.2005), in brief, of various activities, is as under:

i	Complaints under investigation	30
Ii	Complaints referred by PMO	05
Iii	Vigilance/ Disciplinary Cases of Major Penalty	13
iv	Vigilance/ Disciplinary Cases of Minor Penalty	07
v	Appeal/Review/Revision cases	05
vi	Officials presently placed under suspension	04
vii	No of periodical returns sent to CVC/DOP&TI PMO	169
viii	No of instruction issued/ circulated	24
ix	Examination of the intimation of the transition of the Properties (movable & Immovable)	105
x	Submission of Annual Immovable Property Returns.	216

In a case relating to the irregularities committed in the Taj Corridor Project, the Hon'ble Supreme Court had inter-alia

directed to hold the departmental inquiry against the then CMD, NPCC. In pursuance of Hon'ble Court's Order, the

officer was proceeded against for major penalty and subsequently the penalty of "compulsory retirement" from service was imposed. Presently, some of the other senior officers of NPCC have also been proceeded against for major penalty.

In pursuance of the instructions of Ministry of Home Affairs and the CVC the Vigilance Unit is maintaining the "List of Officers of Doubtful Integrity" and the "Agreed List" in consultation with the CBI. As per the provisions, necessary directions have also been issued to the respective organizations to ensure not assigning any sensitive position to the officers appearing in these "lists".

The Vigilance Unit of the Ministry has undertaken the task of conducting "Preventive Vigilance Inspection" of various offices of the organizations under the Ministry on regular basis since November, 1999. Till date, the Unit has conducted as many as 22 such inspections. During the current financial year, the

Vigilance Division. has already undertaken Preventive Vigilance Inspections of CWPRS, Pune and the Unit office of NPCC, Ranchi. This apart, four such inspections are also proposed to be undertaken during the current financial year.

As per the direction of the Central Vigilance Commission, the Vigilance Awareness Week was observed from 3rd November 2003 to 8th November 2003. On this occasion, posters / banners highlighting anti-corruption slogans were displayed at the prime locations in the Building. Besides this Slogan Writing Completion, Essay Writing Competition, Quiz, etc. were also organized. An Interactive meeting with CVO's/ VO's of the organizations under this Ministry was also held. One former Secretary of CVC was invited to deliver lectures on various aspects of Vigilance and Disciplinary matter during the Vigilance Awareness Week.

CHAPTER 14

INITIATIVES IN THE NORTH EAST

Introduction

The northeast region consists of seven sister states having geographical area of 2,55,158 sq. km. Of which 90,573 sq.km. is plain. The region has two main river basins namely, Brahmaputra and the Barak, which form a part of Ganga-Brahmaputra-Meghna river system. Northeast India is endowed with enormous water resources. The combined annual flow of Brahmaputra & Barak rivers, before entering into Bangladesh, is the highest among all river basins in the country. In addition to the normal developments, significant initiatives taken by the Organisations of the Ministry for the development of Northeastern region are detailed below.

Brahmaputra Board (BB)

A) Pagladiya Dam Project: The preliminary works of Pagladiya Dam Project was initiated as approved by Govt. of India at Rs. 542.85 Cr. (2000 price level).

The project envisages assured irrigation to a gross command area of 54,160 ha., flood benefit to about 40,000 ha. & incidental Hydro Power generation of 3 MW (I.C) 956 ha. of land acquired against 3238 ha. for rehabilitation & resettlement purpose. Different infrastructure works i.e. Roads, Community Halls are presently under execution.

The cost of the project is likely to be revised to Rs. 1069.40 Crore which is yet to be cleared by the PIB / CCEA. The implementation of the project has been hindered due to objection by a Section of Project Affected Families & non completion of Zirat (property) Survey by Govt. of Assam.

B) Harang Drainage Development

Scheme:- The scheme was cleared during 9th Plan and revised to Rs.30.49 Cr. during 10th Plan. The completion is targeted for March 2005. On completion, this will benefit 11850 ha. chronically drainage congested area in Barak Valley, Assam.

C) Anti Erosion work at Dhola Hatighuli:-

An avulsion of River Dibang & Lohit jointly with Noa-Dehing had taken place near Dholla-Hatighuli Area of Assam & resulted in large scale erosion on the left bank including Tea Gardens. The work of diversion of the river Dibang to its original course was taken up by Board at a cost of Rs 10.47 Cr (Phase-I) and also diversion of Lohit (combined with Noa-Dehing) at a cost of Rs.5.22 Cr. (Phase-II). The works are planned in phased manner as per morphological studies. The Phase-I has been completed & could successfully divert the river Dibang to its original course and has reduced the erosion substantially on the left bank. The Phase-II works has also shown good results and further improvement are in progress. The Phase - III & IV are being planned after observing the river behavior.

D) Protection of Majuli Island,

Assam: Majuli measuring about 875 sq. km is a chronically flood and erosion affected island in river Brahmaputra. The protection works of the island was taken up by Board as approved by Govt. of India on the request of Government of Assam

(i) Immediate Measures; To give immediate relief, bare on flood and erosion control at an estimated cost Rs. 6.22 Cr. was taken up during 2003-04. This work has been completed during the year 2004-05.

(ii) For long term measures the Board had prepared a scheme at an estimated cost of Rs. 86.56 crore. The Phase-I of the scheme costing Rs. 41.28 crore has been approved by the Expenditure

Finance Committee in December 2004 and action has been initiated to take up the scheme. The Phase II & III are planned after completion of Physical Model Studies, which are being undertaken at Phase-I and Phase-II respectively.

E) Barbhag Drainage Development Scheme, Assam__: The Scheme was approved during 2004 at a cost of Rs. 7.23 Cr. Tendering process is in progress & targetted for completion within Xth Plan

F) Kushiabil & Durgajan village at Dimapur (Nagaland): The Scheme was approved during 2004 at a cost of Rs. 3.09 Cr. During the flood in 2004, the river has changed its course. The field survey for the new configuration have been carried out DPR modified and is under process of technical clearance of CWC & targetted for completion within Xth Plan.

G) Protection of North Guwahati Township(Rangmahal) from flood and erosion Assam: The Scheme was approved during 2004 at a cost of Rs. 3.05 Cr. The execution is held up due to non-receipt of undertaking from the Govt. of Assam for post construction maintenance Brahmaputra Board is working in the zone of north east only and all the works are related to development of North East of India.

Central Soil & Material Research Station(CSMRS)

- Assessment of the construction materials, including water quality, for use in concrete dam of Myntdu Leshka Hydro-Electric Project, located at about 140 kms from Shillong in Meghalaya which envisages construction of concrete gravity dam with installed capacity of 84 MW power generation
- Field and laboratory soil investigations for the proposed diversion structure of Teesta Hydro-Electric Project Stage II were undertaken
- Field and laboratory investigations for the riverbed rockfill materials and other construction materials of Noa Dehing

H.E. Project, Arunachal Pradesh were completed

- Assessment of the Construction materials for use in Pagladiya Dam Project (Assam) was undertaken
- Field and Laboratory investigations for Construction materials were also carried out for Turini & Kolodyne H.E. Project, Mizoram and Rangit H.E. Project, Stage-I, Sikkim.
- Training was imparted to the officers and staff of North Eastern Hydraulic and Allied Research Institute (NEHARI) Laboratories, Brahmaputra Board, Guwahati in laboratory testing of rock, coarse and the fine aggregate samples, analysis of data and report writing
- Technical Comments on the Detailed Project Report of Siyang (Siyom) Project, Arunachal Pradesh were communicated to Central Water Commission

Central Water Commission (CWC)

CWC has a dedicated design unit for East and North Eastern region to undertake design and consultancy of multipurpose, irrigation, water supply and hydro-electric projects. The scope of work also includes preparation of pre-feasibility and detailed project reports for the projects investigated by the field offices of CWC in the North East or projects undertaken by Brahmaputra Board, NEEPCO, State Government departments etc. Technical appraisal of PFRs and DPRs are also being carried out.

At present, there are 12 projects at construction stage and 14 projects at DPR stage for which design consultancy is being provided by CWC. In addition, there are 11 projects for which investigations/preparation of Detailed Project Reports (DPR) are under progress. Detailed hydrological studies and design works in respect of these projects are in progress. DPR for Sessiri multipurpose project, Arunachal Pradesh has been completed in

January, 2005. CWC is carrying out hydrological observations at 151 sites and issuing flood forecasts for 26 sites in NE Region including Sikkim. CWC is also monitoring progress of 15 major/medium irrigation projects and more than 3000 minor irrigation schemes being funded under AIBP.

Central Water & Power Research Station(CWPRS)

- Hydraulic model studies for desilting chambers and flushing tunnel beyond desilting basin for Teesta H.E. Project, Stage V, Sikkim
- Hydraulic model studies for flushing of the Sediment from reservoir – Subansiri Lower H.E. Project, Assam
- Morphological studies of river Brahmaputra from Dehingmukh to Dihowmukh reach, Assam
- Hydraulic model studies for Tenga & Bichom spillways of Kameng H.E. Project, Arunachal Pradesh
- Dynamic analysis of Leshka Concrete Dam of Myntdu Leshka Hydroelectric Project, Meghalaya.
- Studies for intake well and desilting basin for proposed Tripura Gas Based Power Project, NEEPCO, Tripura



Soil testing being carried out a representative basin in Assam

National Institute of Hydrology (NIH)

The major flood affected areas of the country lie in the Ganga, Brahmaputra & Barak basins. In this connection, it was proposed to reorient the scope of studies and research in the existing Regional Centre of the Institute at Guwahati. Accordingly, the Ministry of Water Resources, Govt. of India had conveyed the approval of the competent authority for renaming and reorienting studies in the existing Regional Centre at Guwahati as

Centre for Flood Management Studies for Brahmaputra Basin.

The Centre was known as North-Eastern Regional Centre (NERC) and covered the States of Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, and Tripura besides the hilly regions of West Bengal and Sikkim. The North Eastern region of the country comprising seven States has the largest quantum of water resources with abundance of rainfall resulting in severe floods. Also there are serious problems of large-scale soil erosion

on hill slopes, which need to be tackled urgently to save the land and people as well as irreparable damage to the ecology of the Region. The Centre has taken up a number of studies in consultation with States of the Region as well as Brahmaputra Board, CWC, CGWB, etc., so as to evolve preventive action. Important among them are: Representative basin studies in basins of Meghalaya and Assam, Ground water quality studies in Assam; Surface runoff studies in Brahmaputra river; Flood risk mapping in lower Assam. Earlier the infiltration studies, hydro-meteorological studies and geo-morphological studies of Dhudhnai basin were completed.

The Centre is involved in the following projects/studies for the year 2004-05:

- Estimation of PMF for Someswari (Simsang) basin
- Flood estimation of Jadukata basin with SCS method
- Flood hazard mapping and flood risk zoning for a reach of river Brahmaputra
- Assessment of ground water quality of Agartala (Tripura)
- Determination of soil hydrologic properties and infiltration modelling in a hilly watershed

The following two studies were completed recently:

1. Floodplain delineation and risk zoning in Gai river of Assam using remote sensing and GIS
2. Floodplain inundation mapping in Burhi Dihing, Brahmaputra using remote sensing and GIS

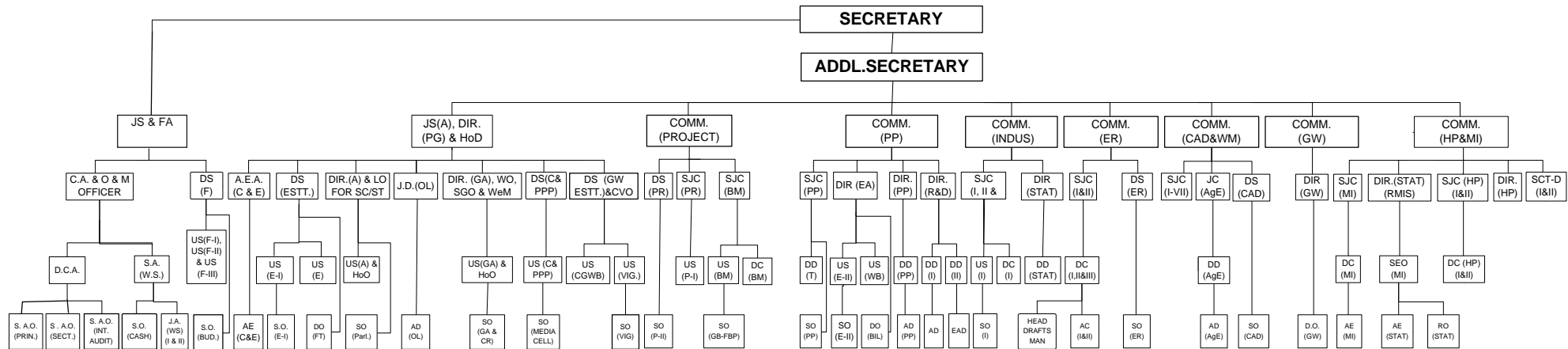
National Projects Construction Corporation (NPCC)

NPCC is presently engaged in construction of building works for Assam Rifles in the North Eastern States of Meghalaya, Manipur, Tripura, Nagaland, Mizoram and Arunachal Pradesh having a total value of Rs. 235 crores. In addition to this NPCC is also executing works of Indo Bangla Border fencing to the tune of Rs. 200 crores in the state of Tripura. NPCC has completed Maharani Barrage, Khowai Barrage and Manu Barrage. NPCC proudly associates itself for working in the deep remote areas and terrorist infested corners of Tripura by constructing Tripura Legislative Assembly, Diversion Scheme, Kalsi Barrage, Reinforced Cement Concrete Bridges (RCC), Khuga Dam in Manipur and other miscellaneous works. NPCC is having total value of works of Rs. 604 crores in North Eastern States out of which about Rs. 227.00 crores works have already been completed. In spite of disturbed law & order situation NPCC is executing works in North Eastern states thereby contributing significantly in the development of this region.

Staff Strength of the Ministry of Water Resources

Under Construction

Organisational Chart of Ministry of Water resources (As on 11.01.2005)



Legends:

A Administration
 AC Assistant Commissioner
 AD Assistant Director
 ADDL Additional
 AE Assistant Engineer
 AEA Additional Economic Advisor
 AgE Agricultural Engineering
 BIL Bilateral Aid
 BM Basin Management
 BUD Budget
 C&E Coordination & Evaluation
 C Coordination
 CA Controller of Accounts
 CAD Command Area Development
 CGWB Central Ground water Board
 COMM Commissioner
 CVO Chief Vigilance Officer
 DC Deputy Commissioner
 DCA Deputy Controller of Accounts

DD Deputy Director
 DIR Director
 DO Desk Officer
 DS Deputy Secretary
 E Establishment
 EA External Assistance
 EAD Extra Assistant Director
 ER Eastern Rivers
 ESTT Establishment
 F Finance
 FA Financial Advisor
 FT Foreign Training
 GA General Administration
 GB-FBP Ganga Basin-Farakka Barrage Project
 GW Ground Water
 HoD Head of Department
 HoO Head of Office
 HP Hydrology Project

I Indus
 INT AUDIT Internal Audit
 JA Junior Analyst
 JC Joint Commissioner
 JD Joint Director
 JS Joint Secretary
 LO Liaison Officer
 MI Minor Irrigation
 O&M Organisation and Methods
 OL Official Language
 P Projects
 Parl Parliament
 PG Public Grievances
 PP Policy & Planning
 PPP Public Private Partnership
 PR Projects
 PRIN Principal
 R&D Research & Development
 RMIS Rationalisation of Minor Irrigation Statistics

RO Research Officer
 SA Senior Analyst
 SAO Senior Accounts Officer
 SC Scheduled caste
 SCT Scientist
 SECT Secretariat
 SGO Staff Grievances Officer
 SJC Senior Joint Commissioner
 SO Section Officer
 ST Scheduled Tribe
 STAT Statistics
 T Technical
 US Under Secretary
 VIG Vigilance
 WB World Bank
 WeM Web Master
 WM Water Management
 WO Welfare Officer
 WS Work Study

ANNEXURE-III**LIST OF POSTAL ADDRESSES OF HEADS OF ORGANISATIONS UNDER THE MINISTRY OF WATER RESOURCES**

Sl. No	Organisation	Name of Head of Organisation	Telephone	Fax
1.	Government of India, Ministry of Water Resources, Room No. 412, IV Floor, Shram Shakti Bhavan, Rafi Marg, New Delhi – 110 001.	Shri V.K.Duggal Secretary	23710305 23715919	23731553
Attached Offices				
1.	Central Water Commission, Room No. 326, Sewa Bhavan, R.K. Puram, New Delhi– 110 066. cwcchairman@netscape.net	Shri R.Jeyaseelan Chairman	26108855	26108614
2.	Central Soil and Materials Research Station, Room No. 309, Hauz Khas, New Delhi – 110 016. csmrs@hub.nic.in	Shri A.K. Dhawan, Director	26967985 26961894	26853108
Subordinate Offices				
1.	Farakka Barrage Project, P.O. Farakka Barrage, Distt. Murshidabad – 742 212 West Bengal.	Shri M.U. Ghani, General Manager	03485-253664	03485- 253608
2.	Ganga Flood Control Commission, Sinchai Bhavan, III Floor, Patna – 800 015	Shri C.B. Vashistha, Chairman	0612-2233591	0612- 2222294
3.	Central Water and Power Research Station, P.O. Khadakwasla Research Station, Pune –411 024.	Smt. V.M. Bendre, Director	020-24380825	020- 24381004
4.	Central Ground Water Board, NH-4, Faridabad.	Dr. Salim Romani Chairman	95129-2413050	95129- 2419059
5.	Bansagar Control Board, Samab Colony, Rewa, Madhya Pradesh.	Shri S.K. Haldar, Secretary	07662-226318	07662- 242433
6.	Sardar Sarovar Construction Advisory Committee, Narmada Bhavan, A Block, IV Floor, Indira Avenue Vadodara – 390 001.	Shri Indra Raj, Secretary	0265-2421438 0265-2771382	0265- 2437262

Registered Societies				
1.	National Institute of Hydrology, Jal Vigyan Bhavan, Roorkee- 247 667 (Uttaranchal).	Dr. KD. Sharma, Director	01332-272906 01332-272907 01332-272908 01332-272909 (extn. 221) 01332-272718	01332- 272123
2.	National Water Development Agency, 18-20, Community Centre, Saket, New Delhi – 110 017. dgnwda@vsnl.net	Shri R.K. Sharma Director General	26519164	26960841
Statutory Bodies				
1.	Narmada Control Authority, BG-113, Scheme No. 74-C, Vijay Nagar, Indore –452 010.	Shri V.K. Duggal Chairman	0731-2557276 0731-2551144	0731- 2559888 2559886
2.	Brahmaputra Board, Basistha, Guwahati.	Shri M.L.Goyal, Chairman	0361-2307453	0361- 2308588
3.	Betwa River Board, Nandanpura, Jhansi –284 003.	Shri J.N. Purohit, Chief Engineer	0517-2480183	0517- 2480237
4.	Tungabhadra Board, H. No. 5-9-201/B&B1, Chirag Ali Lane, Hyderabad – 500 001(AP)	Shri V.K. Jyothi, Chief Engineer (CWC) & Chairman	040-23201605	040- 23201605
5.	Upper Yamuna River Board CWC 202, “S” Sewa Bhawan R.K.Puram New Delhi 110 066	Sh. C.B. Vashistha, Member (WP&O),CWC & Chairman	011- 261085900	011- 26108590
Public Sector Undertakings				
1.	Water and Power Consultancy Services (India) Limited, 76-C, Institutional Area, Sector – 18, Gurgaon – 122 015.	Shri D. Datta Chairman and Managing Director	23313881 23313502 95124-2399443	95124- 2399443
2.	National Projects Construction Corporation Limited, Plot No. 67-68, Sector 25, Faridabad (Haryana)	Shri S.K.Das, Member (D&R), CWC	95129-2231269 011-26108150	95129- 2230891

Annexure IV

List Of Postal Addresses Of Directors Of Public Grievances/Staff Grievances In The Ministry Of Water Resources And Its Various Organisations

S. No	Name of the Organisation	Address	Name & Designation of PG/ S.G. Officer
1.	Ministry of Water Resources	Room No. 403, 4 th Floor, Shram Shakti Bhavan, New Delhi-110001 (Tele Fax No. 23710343)	1. Shri K.S. Ramasubban, Joint Secretary (Admn.) & Director (PG)
		Room No. 216, Shram Shakti Bhavan, New Delhi-110001 (Tele No. 23717129)(Fax No. 23710253)	2Ms Meeta Singh, Deputy Secretary(C&PPP) & Director (SG),
2.	Narmada Control Authority	BG - 113, Scheme No. 74-C, Vijay Nagar, Indore – 452010(MP) (Tele No. 0731-551144) Fax No. 559888	Shri Major Singh, Grievance Officer & Member (Power)
3.	Bansagar Control Board, Rewa	Bansagar Control Board, Samab Colony, Rewa (MP) (Tele No. 07662-226318), 0755-2762059 Fax No. 07662-242433 –Fax No. 0755-2558264)	Shri Soumitre Haldar, Secretary & Director (Staff Grievances)
4.	Betwa River Board	Betwa River Board, Nandanpura, Jhansi-284003 (Tele No. 0517-2480183) Fax No. 0517-2480237	Shri R.S. Ram, Secretary & Director (Staff Grievances)
5.	Central Ground Water Board	CGWB, CHQ, Faridabad (Tele No. 95129- 2413050) Fax No.95129-2419059	1. Dr. Javed Raza, Scientist 'B' & Staff Grievances Officer
		CGWB, CHQ, Faridabad (Tele No.95129-2415024 & Fax No. 95129-2412524	2. Shri R.C. Jain, Scientist 'D', Public Grievances officer
6.	Central Soil and Materials Research Station	Room No. 309, CSMRS, Hauz Khas, New Delhi – 110 016 (Tel No. 26850025) Fax No. 26853108	Shri S.S. Brar, Chief Research Officer & Director (Staff & Public Grievances)
7.	Central Water Commission	Room No. 326, Sewa Bhawan, R.K. Puram, New Delhi-110066 (Tele No. 26187232) Fax No. 26195516)	Shri O.P. Khanda, Secretary & Grievances officer

8.	Central Water & Power Research Station	Central Water & Power Research Station, P.O. Khadakwasla Research Station, Pune – 411024 (Tele No. 020-4380825) Fax No. 020-4381004)	Shri A.K. Basu, Joint Director & Chairman (Grievance Cell)
9.	Farakka Barrage Project	P.O. Farakka Barrage, Distt. Murshidabad, West Bengal-742212 (Tele No. 03485 – 253285) Fax No. 03485-253608	Shri B.K. Chakravarty, Superintending Engineer (Coord.) & Director (Staff Grievances)
10.	Ganga Flood Control Commission	Ganga Flood Control Commission, Sinchai Bhawan, IIIrd Floor, Patna-800015 (Tele No. 0612-2233591) (Fax No. 0612-2222294)	Shri Bibhas Kumar, Director (MP-II) (Adm) & Director (Staff Grievances) & (Public Grievances)
11.	National Institute of Hydrology	Jal Vigyan Bhawan, Roorkee-247667 (Uttaranchal) (Tele No. 01332-272906, 272909 & 272718 Fax No. 01332-272123	Dr. A.K. Bhar, Scientist F & Chairman, Grievance Cell
12.	National Projects Construction Corporation Limited	NPCC Ltd., Plot No. 67-68, Sector 25, Faridabad (HNA) (Tele No. 95129 -2231272) Fax No. 95129-2231269)	Shri P.K.Bhargava AGM (PMW) Chairman (Grievance Committee) (Staff Grievances/Public Grievances)
13.	National Water Development Agency	18-20, Community Centre, Saket, New Delhi-110017 (Tele No. 26852735) Fax No. 26960841)	Shri N.K. Bhandari, Chief Engineer (HQ) & Director (Staff Grievances)
14.	Sardar Sarovar Construction Advisory Committee	Sardar Sarovar Construction Advisory Committee, Narmada Bhavan, “A” Block 4 th Floor, Vadodara – 390001 (Tele No. 0265-2421272) Fax No. 0265-2437262 (Telefax)	Shri B.R.K. Pillai, Assistant Secretary & Director (Grievances) & Director (Public Grievances)
15.	Water & Power Consultancy Services (India) Ltd.	76-C, Institutional Area, Sector-18, Gurgaon-122015 (Tele No. 95124-2397394) Fax No. 95124 -2397392	Shri D.S. Pahwa, General Manager (P&A) & Director (Staff Grievances)
16.	Brahmaputra Board	Basistha, Guwahati - 29 Tele No.0361-2307453 & 2307453 Fax No. 0361-2308588	Shri I. Islam, Secretary & Director (Grievances)

Annexure V

**BUDGET AT A GLANCE
(SECTOR-WISE)**

(Rupees in crore)

Sl No.	Sector/Organisation/Scheme	Actuals 2003-04		BE 2004-05		RE 2004-05	
		Plan	Non-Plan	Plan	Non-Plan	Plan	Non-Plan
1.	2.	3.	4.	5.	6.	7.	8.
I	<u>Secretariat-Economic Services</u>	1.21	11.37	2.20	13.54	1.56	14.14
II	Major & Medium Irrigation						
1.	Central Water Commission	20.70	70.80	29.63	72.45	25.96	72.03
2.	Central Soil and Materials Research Station	4.35	3.82	5.89	4.23	6.25	4.21
3.	Central Water & Power Research Station	3.30	19.23	3.55	19.91	3.39	19.83
4.	National Water Development Agency	18.61	0.00	35.00	0.00	21.00	0.00
5.	National Institute of Hydrology	3.90	3.68	3.66	3.84	4.01	4.22
6.	Research and Development Programme	9.36	0.00	4.00	0.00	3.20	0.00
7.	National Projects Construction Corporation Limited	0.00	15.54	0.00	15.80	0.00	15.80
8.	Sutlej Yamuna Link Canal Project	0.00	0.00	0.00	25.00	0.00	25.00
9.	Boards & Committees	0.00	0.67	0.00	2.22	0.00	1.88
	<u>Total: Major & Medium Irrigation</u>	60.22	113.74	81.73	143.45	63.81	142.97
III	Minor Irrigation						
1.	Central Ground Water Board	75.82	47.00	110.20	48.17	69.69	48.01
2.	Surface Water Schemes	7.80	0.00	7.00	0.00	4.79	0.00
3.	R. & D. Programme	1.11	0.00	0.50	0.00	0.75	0.00
4.	Repair, renovation and restoration of water bodies	0.00	0.00	0.00	0.00	5.00	0.00
	Total : Minor Irrigation	84.73	47.00	117.70	48.17	80.23	48.01
IV.	Command Area Development						
1.	Command Area Development Programme	142.17	0.00	180.00	0.00	138.31	0.00
2.	R. & D. Programme	1.85	0.00	1.50	0.00	2.05	0.00
	Total: Command Area Development	144.02	0.00	181.50	0.00	140.36	0.00
V.	Flood Control						
1.	Central Water Commission	16.76	31.66	17.38	31.11	16.97	30.87
2.	Flood Proofing Programme	1.25	0.00	1.00	0.00	1.00	0.00
3.	Ganga Flood Control Commission	2.02	0.00	2.29	0.00	2.19	0.00
4.	Emergent Flood Protection Measures in Eastern and Western Sectors	0.00	0.00	0.00	3.00	0.00	3.00
5.	Survey & Investigation of Kosi High Dam Project	0.00	0.00	6.00	0.00	4.69	0.00
6.	Maintenance of flood protection works of Kosi and Gandak Projects	4.18	0.00	6.00	0.00	4.70	0.00

Sl No.	Sector/Organisation/Scheme	Actuals 2003-04		BE 2004-05		RE 2004-05	
		Plan	Non-Plan	Plan	Non-Plan	Plan	Non-Plan
1.	2.	3.	4.	5.	6.	7.	8.
7.	Pancheshwar Multipurpose Project	2.15	0.00	2.40	0.00	1.94	0.00
8.	Joint Observation on common Rivers with Bangladesh and neighbouring countries	0.43	0.00	0.80	0.00	0.80	0.00
9.	Critical anti-erosion works in Ganga Basin States	21.82	0.00	30.00	0.00	46.00	0.00
10.	Extension of embankments on Lalbakeya, Kamla, Bagmati and Khando rivers	0.00	0.00	3.00	0.00	3.00	0.00
11.	Critical anti-erosion works in Coastal and other than Ganga Basin States	1.50	0.00	6.00	0.00	3.00	0.00
12.	Improvement of Drainage in Mokama Group of Tals	0.00	0.00	14.00	0.00	8.00	0.00
13.	Schemes for the benefit of North Eastern States & Sikkim						
	-Brahmaputra Board						
	-Flood Control in Brahmaputra and Barak Valley						
	-Pagladia Dam Project	17.81	0.00	20.00	0.00	20.00	0.00
	-Harrange Drainage Scheme	0.00	0.00	20.00	0.00	0.00	0.00
	-New schemes for Majuli island in Assam, Dihang Project, etc.						
	Sub Total (S.No.13)	0.01	0.00	40.00	0.00	3.00	0.00
		10.13	0.00	0.00	0.00	4.40	0.00
		17.73	0.00	15.00	0.00	16.10	0.00
		45.68	0.00	95.00	0.00	43.50	0.00
	Total : Flood Control	95.79	31.66	183.87	34.11	135.79	33.87
VI.	Transport Sector						
1.	Farakka Barrage Project	24.43	22.69	25.00	23.09	25.25	23.03
	TOTAL (I to VI)	410.40	226.46	592.00	262.36	447.00	262.02
VII	A.I.B.P.**	3061.70	0.00	2800.00	0.00	2800.00	0.00
	GRAND TOTAL	3465.97	232.39	3392.00	262.36	3392.00	262.02

Source of financing : Demand No.104 – Ministry of Water Resources for 2005-2006

**Source of financing: Demand No.36 -Transfer to States & Union Territory Governments for 2005-06

Annexure VI

Detailed assessment of performance for the year 2004-05 in respect of the following organizations under the Ministry of Water Resources

Sl.No.	Organisation
1.	Brahmaputra Board,
2.	National Water Development Agency
3.	National Institute of Hydrology

Detailed Assessment of Performance of Brahmaputra Board,

The Brahmaputra Board was set up under Brahmaputra Board Act (Act 46 of 1980). The main objectives, organizational set up, achievements, etc. of the Board are given in Chapter 4.

Out of 51 Master Plans taken up by the Board, two have been approved by Govt. of India and thirty two have been approved by the Board and are awaiting approval from Govt. of India. During the year 2004-2005, out of remaining 17 Master Plans, two have been completed and are awaiting approval from the Board, 5 are under preparation and 10 are under survey and investigation. Out of 34 drainage development schemes, one is under execution, another one is cleared for execution, three are awaiting technical clearance from Central Water Commission (CWC) and 5 DPR are under modifications as per suggestion from CWC and State Governments. Remaining 19 Drainage Development Schemes are under various stages of preparation and investigation. Similarly, out of 11 Nos. of multi-purpose projects, one is under execution and ten are under various stages of survey and preparation of DPR.

The Pagladiya Dam Project was cleared by Govt. of India in January, 2001 at an estimated cost of Rs.542.90 crore. The cost of the project has been increased to Rs.1030.00 crore. The revised cost is under examination. The Project envisages construction of earthen dam 25 m high and 20.63 km. long of Thalkuchi village, about 26 km. north of Nalbari, headquarters of Nalbari district of Assam. Out of a total requirement of 3238 ha required for resettlement of 3271 families, Govt. of Assam has allotted 956 ha in 33

locations till now and identified another 18000 ha of land for Resettlement and Rehabilitation (R/R) purpose. The construction of 391 dwelling units in the 10 R/R sites have been taken up. The Revenue Department of the Government of Assam has issued notification under Section 4(1) for all the 33 villages in the project area for the reservoir and construction of dam appurtenant structures.

The North-Eastern Hydraulic and Allied Research Institute (NEHARI), the construction of which was entrusted to the Board in September, 1985 has already procured and installed most of the equipments with adequate infrastructure facilities. An intensive training in soil concrete and rock testing disciplines work provided to the officers and staff of the Brahmaputra Board with the help of Central Soil & Materials Research Stations, New Delhi.

The fund earned by the NEHARI are as follows:

Up to March, 2004	-Rs.14810233.00
During 2004-2005	-Rs . 6800000.00

Detailed Assessment of Performance of National Water Development Agency,

The genesis of setting up of National Water Development Agency, an autonomous organization under the Ministry of Water Resources, its functions, organizational structure etc. have been given in detail in Chapter -1

National Water Development Agency (NWDA) is carrying out the feasibility studies of the National Perspective Plan for water resources development on a scientific basis, which inter-alia, envisage diversion of water from surplus river

basins to deficit/drought prone areas of the country by interlinking major rivers of the country. The plan includes construction of storage reservoirs to store flood waters and interlinking of river systems for optimum utilization of river waters. The water so diverted will be used for irrigation, drinking and other uses. This plan comprises of two components, namely Peninsular Rivers Development and Himalayan Rivers Development.

Under the Peninsular component, NWDA has completed data collection and water balance studies of 137 basins/sub-basins and 52 identified diversion points, toposheet studies of 58 identified storages and 18 toposheet studies of links alignments and prepared pre-feasibility reports of 18 water transfer links. Based on these water balance studies and pre-feasibility reports, NWDA has identified 16 inter-basin water transfer link proposals for the preparation of feasibility reports under Peninsular Component. Presently, the work of field surveys and investigations for preparation of feasibility reports of link schemes is on hand. Feasibility reports of 11 links have been completed so far and the field surveys and investigations and preparation of feasibility reports of another five links remained under progress at various stages during the year 2004-05. Moreover, the special studies such as geological surveys, geophysical investigations, geo-technical investigations, drilling work for geo-technical investigations, construction materials investigations, borrow area survey, socio-economic and environmental surveys, command area surveys, pre-irrigation soil surveys etc. of the above links remained under progress by other agencies.

Under the Himalayan component, NWDA has completed water balance studies at 19 diversion points, toposheet studies of 16 storage reservoirs and toposheet studies of 19 link alignments and prepared pre-feasibility reports of 14 water transfer links. Based on these water balance studies and pre-feasibility reports, NWDA has identified 14 inter-basin water transfer link proposals for preparation of feasibility reports under Himalayan Component. Presently, the work of field surveys and investigations for preparation of feasibility reports of link schemes is on hand. Feasibility reports of two links have been completed so far and the field surveys and investigations including special studies by other agencies for another twelve links remained under progress at various stages during the year 2004-05.

As per NPP, inter-basin water transfer is expected to provide additional irrigation benefits of 35 million hectare i.e. 25 million hectare from surface waters and 10 million hectare from increased use of ground waters which will be over and above the ultimate irrigation potential of about 113 million hectare envisaged from major, medium and minor irrigation projects through conventional method and would generate 34,000 MW of power, apart from the benefits of flood control, navigation, water supply, fisheries, salinity and pollution control etc.

Initially, peninsular River Development Component was taken up by NWDA when it was set up in 1982, it was estimated that Rs. 107.42 Crores would be required for carrying out the various activities. In 1990, when the work of Himalayan Rivers Development Component was also included in the scope of activities of NWDA, the estimate

was revised to Rs.181.00 Crores. The expenditure incurred by NWDA since inception up to March, 2004 was Rs. 143.78 Crores. During the year 2004-05, the MOWR has provided Grants-in-Aid of Rs. 35.00 Crores under plan for NWDA. However the Revised Estimate(R.E) is Rs. 21.00 Crores. The actual expenditure incurred up to 30th November, 2004 during the year 2004-05 is Rs. 12.32 Crores.

Detailed Assessment of Performance of National Institute of Hydrology

The National Institute of Hydrology (NIH) is a premier institute conducting research in basic and applied of hydrology. It was established in December 1978 with headquarters at Roorkee as an autonomous society under the Ministry of Water Resources. The Union Minister for Water Resources is the President and the Union Minister of State for Water Resources is the vice President of the Society. The Institute is managed, administered, directed and controlled by the Governing Body with Secretary (Water Resources) as its Chairman. Technical Advisory Committee, with the Chairman, Central Water Commission as its Chairman, is responsible for technical scrutiny of the research programmes of the Institute. The Institute has set up four regional centers in order to deal with the area specific hydrological problems of different regions of the country and for providing effective interaction with the States in the region. The Centres are: Hard Rock regional Centre, Belgaum; Centre for Flood Management Studies for Brahmaputra, Guwahati; Western Himalayan Regional Centre, Jammu; Centre for Flood Management Studies for Ganga, Patna; Deltaic and East Coast Regional Centre, Kakinada; and Ganga

Plains (South) Regional Centre, Sagar. Director of the Institute is the principal executive officer of the Society.

Overall Performance During 2004-05

Studies and Research

The Institute carries out basic, applied and field & laboratory oriented research at its headquarters and regional centers. The research outputs of the Institute are published in the form of reports and papers. During the year 2004-05, the Institute has published 60 technical papers in reputed international and national journals and 120 papers in the proceedings of international and national conferences and symposia. More than 50 reports based on studies and research in hydrology have been prepared during the year. The studies taken up during the 2004-2005 which are envisaged to be completed by 2005, will be completed by the 31st March 2005. During the next year 2005-06, 15 Technical Reports and 60 Research Papers are likely to be published. It is also expected that 100 papers will be presented in Seminar and Symposia during the year 2005-06. The institute has prepared a vision document covering the state-of-the-art technology in the area of hydrology in India, and worldwide, achievements of the Institute and long term plan for carrying out research covering different facets of hydrology.

Sponsored and Consultancy Projects

The institute has gained expertise and advanced technical knowledge in different areas of hydrology and water resources. The Institute has been undertaking research studies for providing solutions to the real life hydrological

problems in the field using advanced techniques. The Institute is also taking up sponsored and consultancy projects of several organization in order to help them in solving various complex and typical field problems. During the year 2004-05, the Institute has completed studies for four sponsored and consultancy projects that were taken up earlier. In addition four new projects were taken up during the year. Research work continued on nine sponsored/consultancy projects, which were sponsored in the earlier years.

Indian National Committee on Hydrology (INCOH)

The Institute has been providing secretarial assistance to INCOH. In pursuance of its objective of preparing and periodically updating the state-of-the-art technology in hydrology in the country, the secretariat brings out scientific reports covering a variety of topics. The secretariat also publishes a bi-annual journal on hydrology entitled “Jal-Vigyan Sameeksha”. The journal is being distributed to about 700 organisations in the country and abroad in order to disseminate and promote knowledge in the field of hydrology. During the year six

issues of Jal Vigyan Sameeksha were brought out. Also the INCOH has funded fifteen international as well as national seminars, symposia, workshops, and conferences in the relevant areas of hydrology and water resources. The research Advisory Committees of INCOH had approved ten Research & Development projects for funding by Ministry of Water Resources. One of the major aims of the Committee is to effectively coordinate and act as the focal point for the international Hydrological Programme of UNESCO. This role is being performed by the INCOH very efficiently and India is actively participating in the IHP-VI of UNESCO.

Technology Transfer Activities

One of the main objectives of the Institute is to transfer the developed technology to the target users. Besides, wide circulation of the published reports and research papers, organization of workshops, training courses, seminars, symposia, conferences, brain storming sessions, etc. have been major activities under the Technology Transfer Programme. During the year 2004-05, the Institute has organized 7 such activities.

ANNEXURE-VII**Audit Observations pertaining to Ministry of Water Resources**

Accelerated Irrigation Benefits Programme (AIBP) : The Government of India's intervention in the irrigation sector by way of launching the Accelerated Irrigation Benefits Programme(AIBP) to accelerate completion of ongoing irrigation projects in an advanced stage, was timely and desirable, considering that a large number of projects, languishing for want of funds, had spilled over from Plan to Plan. An amount of Rs.41,284,40 crore had been invested on 430 such incomplete projects by 24 States upto the VIII Five Year Plan. The optimal utilization of these resources was contingent on good planning, judicious selection of projects, efficient implementation for speedy utilization of potential created and effective maintenance of the assets created. Despite spending Rs.13,823.05 crore (including the States' share) in 24 States during 1996-2003, the Government failed to achieve the intended objective of accelerating irrigation benefits by ensuring completion of ongoing major/medium projects over four agricultural seasons (two years). The selection of 29 projects for completion within two agricultural seasons (one year) through the "fast track" was also not successful. As of March, 2003, only 23 of the 172 projects covered under the programme had been completed. The concept of fast track projects introduced in February, 2002 for focusing on completion of selected projects within one year also

failed to have the desired impact as none of the 29 projects put on the fast track were completed.

The poor performance of the programme was due to inadequate planning and lack of co-ordination with the State Governments, who were responsible for execution, frequent modifications in the guidelines diluting the main focus of the programme, inappropriate selection of projects resulting in thin spreading of resources, ineffective execution with substantial time and cost overrun in several cases, inefficient utilization of resources with several instances of diversion, parking and misuse of funds and insufficient monitoring despite an elaborate mechanism prescribed by the Ministry.

(Report No.15 of 2004)

Performance Appraisals

Infructuous expenditure on construction of building for primary school and primary Health center: Due to improper planning, buildings constructed for medical care and education purposes at a cost of Rs. 51.95 lakhs could not be utilized resulting in unfruitful expenditure.

(para 13.1 of Report No. 2 of 2004)
Transaction Audit Observationsw