

CHAPTER - VIII

Irrigation and Flood Control

8.1 Water Resources Development Department

Madhya Pradesh, with a geographical area of about 308 lakh hectare, is one of the largest states of India having nine major rivers namely Mahi, Narmada, Tapti, Chambal, Ken, Betwa, Sone, Tons, and Wainganga, which originate within the state and flow down to five bordering states.

The estimated annual run-off, from the above watersheds, in the state, is about 81523 MCM as assessed in Master plan. It is estimated that about 49743 MCM can be harnessed for irrigation purpose in M.P. It is possible to irrigate about 60.90 lakh hectares from surface water, while 52 lakh hectares can be irrigated through ground water. Thus the state has an ultimate irrigation potential of about 112.9 lakh hectare. At present irrigated area from all sources is 65.43 lakh hectares which is around 40% of net sown area. On fully exploitation of surface water resources, state will be able to irrigate 75% of the present net sown area.

State has developed surface irrigation potential of 31.39 lakh hectare up to 2009, which is only about 19% of net sown area and accounts for 51 % of total available ultimate potential from surface water. The Water Resources Department has developed an irrigation potential of 26.82 lakh hectare up to 2009 and NVDA contributed for 4.57 lakh hectares. Thus there is a large scope and need to develop more irrigation facilities in the state from Government sources, to ensure development of irrigation.

The big challenge for the state is to utilize its allocated share of 18.25 MAF as awarded by Narmada Water Dispute Tribunal in December 1979. The utilization of 18.25 MAF is to be achieved before 2018 otherwise state may lose its share, which will result in further backwardness of majority of its rural population depending on agriculture. NVDA has planned a number of projects to utilize allocated water. These projects on completion may serve as life line of the state and especially rural Madhya Pradesh. To implement all of them in a stipulated period before 2018 not only big investment is required timely approval and clearance of all projects within minimum period is must.

To enhance the pace developing irrigation facilities, state at its own end is exploiting various source of funding such as Accelerated Irrigation Benefit Programme, NABARD and foreign agencies.

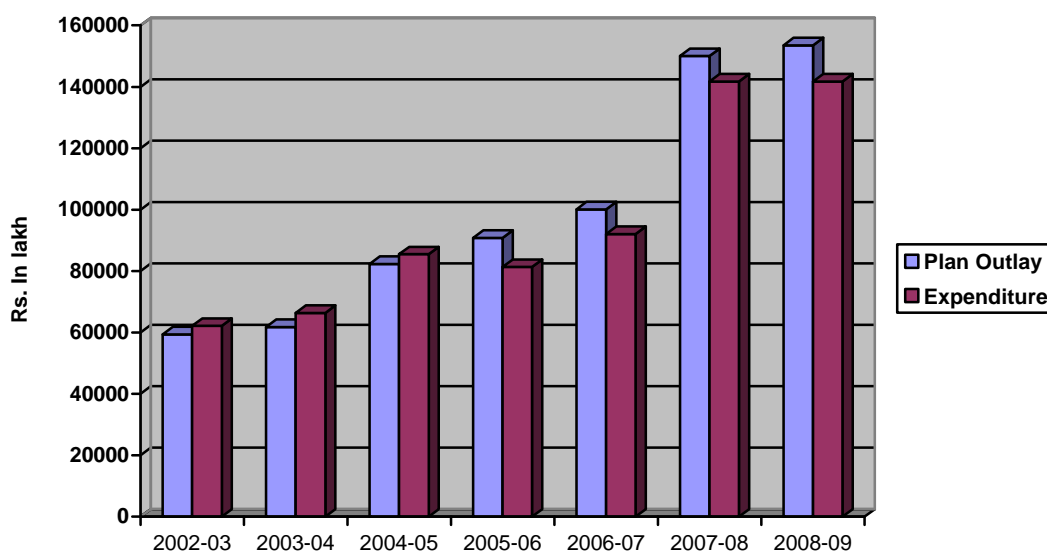
Activities of the Department in Brief

Ten Major, 105 Medium, and approximately 3883 minor schemes have been completed so far. During the year 2008-09, 33 minor irrigation schemes have been completed. Works on 10 Major, 26 Medium and around 1663 minor schemes and six modernization schemes is in progress at present.

2.0 Performance of Annual Plan 2008-09

- 2.1. An outlay of Rs. 153519 lakh for Annual Plan 2008-09 was approved. However, the budgeted outlay approved from finance departments was Rs. 159052 lakhs against which expenditure of Rs. 141723 lakh was incurred.

Trends of Plan Outlay and Expenditure



- 2.2 The physical achievements and targets during 2008-09 is presented in Table 8.1.2 below:

Table 8.1.1: Physical Achievements and Targets: 2008-09

(In thousand hectares)

Classification of schemes	Target	Actual Achievement	Percentage of Achievemnet
Major & Medium	111.37	42.74	38.38
Minor	38.00	49.48	130.21
Flood control	0.00	0.00	0.00
CAD	0.00	0.00	0.00
Total	149.37	92.22	61.74

3.0 Review of Annual Plan 2009-10

- 3.1 An outlay of Rs. 127171 lakh was approved for the year 2008-09. However, the budgeted outlay was Rs. 127206 lakh. Anticipated expenditure by the year end as reported by the department will be Rs. 127206 lakh. Details are given as given in table 8.1.2.

Table 8.1.2: Plan and Budgeted Outlay and Anticipated Targets: 2009-10

(Rs. in Lakh)

Classification of schemes	Plan Outlay	Budgeted Outlay	Anticipated Potential created by March 2010 (in Thousand Hectare)
Major & Medium	70417	75485	50.98
Minor	54954	49921	39.45
Flood control	800	800	0
CAD	1000	1000	0
Total	127171	127206	90.43

3.2 Following schemes were be completed during 2009-10

Major schemes

- 1) Kolar
- 2) Sindh Phase-1
- 3) Rajghat canal

Medium schemes

- 1) Kaliasote
- 2) Barchar (Tribal)
- 3) Gopad (Tribal)
- 4) Machak (Tawa)

ERM Projects

Major

1. Tawa (Handiya branch canal) extension, renovation and modernization
2. Kolar extension, renovation and modernization

Medium

1. Barna extension, renovation and modernization
2. Barna (RBC) extension, renovation and modernization
3. Tawa extension, renovation and modernization
4. Sindh remova link canal

Minor : 350 schemes approx.

3.3 Six major, 2 medium and around 200 minor irrigation schemes were proposed for the year 2009-10. In addition 10 new flood control scheme were proposed. These are as follow:

Major:

Panchamnagar complex
Bansujara
Aishah project

Bina
Ganeshpura PUW
Kalisindh

Medium

Mograkheda Bilgaon
Minor Schemes: 200 nos. of minor schemes.

Flood Control schemes

Babri ghat	Demawar ghat
Mandi ghat	Sheelkanth ghat
Satdev ghat	Chhipaneer ghat
Ramgarha ghat	Jamdar Tiver protection work
Ghat on village jet protection-II	Dhapera FP

4.0 Annual Plan for the year 2010-11**4.1. Strategy and priorities for the eleventh five year plan:**

The broad strategy regarding implementation of projects in the 11th five year plan is to give thrust on completion of ongoing projects, make more effective use of irrigation facilities created, both from existing and new schemes. State Government has approached NABARD and Govt. of India to seek loan assistance for major, medium, and minor schemes. This will enable faster creation of additional potential and obviate the time and cost over run to a greater extent.

4.2. In this context, an outlay of Rs. 178769.73 lakh has been approved. Break up of the plan outlay by sector and resources are given below in table 8.1.3 and 8.1.4

Table 8.1.3: Plan outlay by Sectors: 2010-11**(Rs. in Lakh)**

Classification of schemes	Plan Outlay			
	Normal	TSP	SCSP	Total
Major	57610.64	3663.00	4284.47	65558.11
Medium	11404.31	190.00	3500.00	15094.31
Total (Major + Medium)	69014.95	3853.00	7784.47	80652.42
Minor	47172.00	17329.00	1595.00	66096.00
Flood control	1000.00	0.00	0.00	1000.00
CAD	1000.00	0.00	0.00	1000.00
RRR	0.00	0.00	0.00	0.00
Bundelkhand Package	30021.31	0.00	0.00	30021.31
Grand Total	148208.26	21182.00	9379.47	178769.73

Table 8.1.4: Resource wise break up Plan Outlay: 2010-11

S. No.	Particulars	Resources (Rs. in Lakh)				
		EAP	NABARD	AIBP	State Resources	Total
1	Major	36070	0.00	24901.22	4586.89	65558.11
2	Medium	0	3652.80	3700.00	7741.51	15094.31
3	Total (1+2)	36070	3652.80	28601.22	12328.40	80652.42
4	Minor	0	10200.00	27540.00	28356.00	66096.00
5	Flood control	0	0.00	0.00	1000.00	1000.00
6	CAD	0	0.00	0.00	1000.00	1000.00
7	RRR	0			0.00	0.00
8	Bundelkhand Package	0			30021.31	30021.31
9	Total	36070	13852.80	56141.22	72705.71	178769.73

Physical targets of creating additional potential of 1.00 lakh hectares have been planned for Annual Plan 2010-11. In addition, targets have been fixed for Bundelkhand Special Package and Rehabilitation, Reconstruction and Recharge of water bodies. Sector wise targets of additional potential are presented below in Table 8.1.5.

Table 8.1.5: Physical targets by Sectors: 2010-11

Classification of schemes	Physical targets (Area in Th. Hectare)			
	Normal	TSP	SCSP	Total
Major	52.01	0.00	0.00	52.01
Medium	1.69	0.00	0.00	1.69
Total (Major + Medium)	53.70	0.00	0.00	53.70
Minor	35.00	7.00	4.30	46.30
Grand total	88.70	7.00	4.30	100.00

4.3. Schemes proposed to be completed during 2010-11:

Under Major irrigation schemes Kolar, Sindh Phase-1 and Rajghat canal are to be completed during annual plan 2010-11. Kaliasote, Barchar (Tribal), Gopad (Tribal) and Machak (Tawa) are the medium irrigation schemes planned for completion during the year.

ERM Projects the works of extension, renovation and modernization of Tawa (Handiya branch canal) and Kolar under Major project category and Barna, Barna (RBC) Tawa and Sindh Remova link canal under medium project category are planned for completion during annual plan period. 350 schemes approximately under Minor projects will also be completed during 2009-10.

4.4. New schemes proposed for the year 2010-11:

Under Medium Irrigation Projects two projects namely Bilgaon and Kachal have been proposed in addition 100 minor schemes are also proposed.

Under Flood Control schemes five schemes namely Neelkanth Ghat, Jawar Ghat, Vasudeo Ghat, Etawa rehti Ghat and Holipura Ghat will be taken up during plan period.

5.0 Command Area Development and Water Management Programme (CAD&WM) – Brief note on CADWM programme for annual plan 2009-10

5.1 CAD programme was accepted in state of M.P. by ‘Sankalp’ dated 9.9.74. In the beginning of X pln in the year 2002, there were only 6 Number of CAD formations functioning under the administrative control of the divisional commissioners. In year 2002, after discussions with Government of India, five schemes namely Kolar, Bargi, Wainganga, Bah and Harsi were taken up by four formation of CAD with Headquarter at Bhopal, Jabalpur, Seoni and Gwalior. With reorganization of CAD by the Government, four additional CAD formations have been established with HQ Rewa, Sagar, Indore and Datia under the administrative Control of Director CAD/CE WRD, Bhopal in August 2007.

The main objectives of CAD are as follow:

- To construct field channels in fields
- PIM activities
- To introduction New Crop and bringing change in Cropping Pattern
- To impart trainings to the farmers

In addition, department is responsible for Correction of System Deficiency, Renovation of existing irrigation tanks and Bio-drainage techniques.

Bundelkhand Special Package:

A special package for drought mitigation and integrated development of bundelkhand region of the state has been granted by central government. Under the package, Water resource department has been entrusted with the responsibility of modernisation and development of irrigation system in the districts of Chattarpur, Damoh, Panna, Sagar and Tikamgarh.

Repair, Renovation and Restoration of Water bodies:

A special emphasis is laid for Repair, Renovation and Restoration of Water bodies which have gone non-functional due to some reasons in present annual plan.

The important points are being mentioned below:

The work of maintenance and management of irrigation has been entrusted to the elected three-tier Farmer’s Organisations. 1687 Water User Associations (WUAs) have been elected in Feb 2006 for a term of five years. The details of WUAs are as under:

Table 8.1.1

S.No	Classification	No. of WUAs	Command Area under WUAs in lakh hectare
1	Major Project	542	8.94
2	Medium Project	209	2.25
3	Minor Project	936	5.73
	Total	1687	16.92

- WUAs are being given the maintenance grant @ Rs.80/- per hectare and Rs.5000/- for annual administrative expenses.
- Approval from World Bank has been obtained for Water Sector Restructuring Project for Rs.1919 crores. It is proposed to have integrated development in the command of 654 schemes completed prior to the year 1986, spread over in 30 districts of five river basins (i.e. Betwa, Chambal, Sindh, Ken and Tons). The project period is 6 years commencing from 2006.
- It is proposed to increase water rates for irrigation gradually every year so that at the end of 5th year, the water rates are adequate to take care of maintenance of canal system, as per guidelines issued by the 11th finance commission.
- In view of the deficit of power, priority is being accorded to projects like Bansagar (425 MW), Rajghat canal (13MW), Sindh phase-II (60MW) and they have been included in Accelerated Irrigation Benefit Programme (AIBP) of Government of India.
- The proposals of interstate link projects, like Ken-Betwa and Parwati-Kalisindh-Chambal link are under consideration with respective other states. The M.O.U for preparation of DPR for Ken-Betwa project has already been signed between M.P. and U.P. in August 2005 and that for Parwati-Kalisindh-Chambal link, discussions are going on.
- Continuous efforts are also being made to reduce the gap between potential created and actual irrigation. Field officers have been directed to increase Rabi irrigation and to encourage kharif irrigation also.
- Irrigation tanks are being availed by the Fisheries department and approximately 45,000 tonnes of fish are being produced annually.

8.2 Narmada Valley Development Authority

The Narmada basin covers 27% area of M.P. The development of Narmada Basin is the most ambitious plan in irrigation and power sector. In July, 1985 the State Govt. constituted the Narmada Valley Development Authority for implementing major irrigation and power projects in the Narmada Valley. An integrated master plan has been prepared to enable full utilization of 18.25 MAF, of allocated water under Narmada Water Disputes Tribunal (NWDT) award, before the stipulated period of review in the year 2025. The present use, 27 years after Narmada Award of December, 1979, is about 5.00 MAF only against 18.25 MAF water allocated to the state by Narmada Tribunal.

The big challenge for the state is to utilize its allocated share as awarded by Narmada Water Dispute Tribunal in December 1979. The full utilization is to be achieved before 2018 otherwise state may lose its share, which will result in further backwardness of majority of its rural population depending on agriculture. NVDA has planned a number of projects to utilize allocated water.

In pursuance of above, it is proposed to construct 29 major projects, 135 medium projects and more than 3,000 minor projects in the valley. The 29 major projects will be able to use 11.36 MAF of water on completion. The medium and minor irrigation projects, which are under the Water Resources Department of the state, will be able to use additional 5.39 MAF of water by completing all the proposed projects. The remaining 1.50 MAF of water, which is meant for municipal and industrial use, is to be developed by Public Health Engineering and Industrial department.

These projects on completion may serve as life line of the state and especially rural Madhya Pradesh. To implement all of them in a stipulated period before 2018 not only big investment is required timely approval and clearance of all projects within minimum period is must. Commitment to complete all the projects in time is also needed at all the levels. It is therefore extremely important for the state to assign higher priority for the development of the Water Resources of Narmada.

To enhance the pace developing irrigation facilities, state at its own end is exploiting various source of funding such as Accelerated Irrigation Benefit Programme, NABARD and foreign agencies.

2.0 Performance of Annual Plan 2008-09

2.1 An outlay of Rs. 74157.00 lakh was approved for Annual Plan 2008-09. Against which, actual expenditure incurred by the department was Rs. 79116.81 lakh.

Table 8.2.1: Progress on Outcome Indicators

Outcome Indicators		Unit	11th Five Year Plan Target		Position as on 31th March 2008		2008-09	
Additional Irrigation Potential Created		Lakh Hectare	5.30		0.52		0.81	
Additional Power Generation Created		MW	1075.00		520.00		15.00	
Use of Narmada Award Water			Potential created in hectare	Water use in MAF	Potential created in hectare	Water use in MAF	Potential created in hectare	Water use in MAF
I	Indira sagar Project	MAF	92038	1.017	9651	0.106	13686/12931	0.151
II	Omkareshwar Project	MAF	116450	0.832	1350	0.009	22650/11250	0.162
III	Jobat Project	MAF	9848	0.039	4348	0.039	0	0.000
IV	Rani Avanti Bai Sagar Project	MAF	45587	0.238	17748	0.092	16000/17880	0.083
V	Bargi Diversion Project	MAF	230859	1.413	18473	0.113	18312/8441	0.112
VI	Upper Beda Project	MAF	25008	0.090	0	0.000	0	0.000
VII	Punasa lift irrigation	MAF	5875	0.041	0	0.000	2975/0	0.021
	Total		520165	3.670	51570	0.359	73623	0.529

3.0 Review of Annual Plan 2009-10

- 3.1.** An outlay of Rs. 106449.45 lakh was approved for Annual Plan 2009-10. Against which, budgeted outlay of Rs. 119659.83 was granted. It is anticipated that expenditure of Rs. 114240.95 lakh will be incurred by the end of financial year 2009-10.
- 3.2.** The works of Bargi Diversion Project, Indira Sagar Project, Rani Awanti Bai Lodhi Sagar Project, Omkareshwar Project, Upper Narmada, Lower Goi, Halon, Punasalift Irrigation, Projects were accelerated. The Man project has been completed and an irrigation potential of 15000 hectares has been created. The work of Jobat project is almost completed, and an irrigation potential of 9848 hectare has been created from this project.
- 3.3.** Resettlement of the project affected families (PAFs) and the Environmental works, such as afforestation, catchments area treatment, etc. have also been brought in full swing and are being completed ahead of the engineering works.
- 3.4.** Out of 11.36 MAF, the water use to be developed by Narmada Valley Development Authority from major Irrigation and multipurpose projects, the present position of development of water resources in the Narmada is as under :-

Table 8.2.1 Project wise position of Water Resources Development

Sno.	Project	Irrigation (hectares)	Water use MCM/(MAF)
1.	Five major irrigation projects completed by WRD (Tawa, Barna, Sukta, Kolar and Matiari)	3,77,618	3641.39/(2.95)
2.	Four major irrigation projects in progress (Bargi, LBC & RBC, Indirasagar, Omkareshwar and Upper Beda) and Man and Jobat completed	7,06,758	6409.02/(5.19)
3.	Four major irrigation projects whose scopes have been defined and are under clearance by the Planning Commission (Upper Narmada, Halon, Punasa Lift & Lower Goi)	80,416	556.27/(0.45)
	Total 15 Projects	11,64,792	10606.68/(8.59)

3.4. Thus, 15 major irrigation projects, which for a use of 8.59 MAF of Narmada waters have been finalized. Remaining major irrigation projects for a use of 2.77 MAF (11.36 – 8.59) are under survey and investigations. Based on the outcome indicators of department, anticipated progress is given below:

4.0 Annual Plan 2010-11

4.1 Annual plan of Rs. 113372.00 lakh has been proposed for 2010-11 Out of the total outlay, Rs. 52518.91 lakh; Rs. 53309.16 lakhs, and Rs. 7543.93 lakh has been proposed under Normal Plan, Tribal Sub Plan and Schedule Caste Sub Plan respectively. During current annual plan, emphasis has been laid on completion of ongoing projects and also on those projects, which can be completed quickly in order to realize the benefits from investment made so far. Break up of total outlays in terms of irrigation and power is given below: -

Areas	Total	Normal Plan	TSP	SCSP
Irrigation proportion including AIBP	93593.99	32805.23	53260.83	7527.93
Power	19778.01	19713.68	48.33	16.00
Total	113372.00	52518.91	53309.16	7543.93

4.2. Scheme wise break up of proposed outlays are given below:

(Rs. in Lakhs)

S.No.	Scheme Name	Total	Normal	TSP	SCSP
A	IRRIGATION				
1	Indira Sagar Project (Irr.)(AIBP)	4760.48	3232.72	1127.76	400.00
2	Omkareshwar Project (Irr.)(AIBP)	2779.60	408.65	2370.09	0.86
3	Surveys i/c H.Q. Estt. (Pow.)	1865.95	1865.95	0.00	0.00
4	Sardar Sarovar Project (M.P.) Share	84.33	20.00	48.33	16.00
5	Survey, Afforestation R & R Works of SSP	11291.10	11291.10	0.00	0.00
6	Raghavpur	2.40	2.40	0.00	0.00
7	Basania	2.40	2.40	0.00	0.00
8	Indira Sagar Project	4721.68	4721.68	0.00	0.00
9	Omkareshwar Project	27.70	27.70	0.00	0.00
10	Man Project (Irr.)(AIBP)	62.45	0.00	62.45	0.00
11	Jobat Project (Irr.)(AIBP)	90.23	0.00	90.23	0.00
12	Rani Avanti Bai Sagar Project (Irr.)	12378.48	12378.48	0.00	0.00
13	Bargi Diversion Project (Irr.)(AIBP)	12402.71	9023.41	0.00	3379.30
14	Upper Narmada Project (Irr.)(AIBP)	420.64	0.00	420.64	0.00
15	Upper Beda Project (Irr.)(AIBP)	141.99	0.00	141.99	0.00
16	Lower Goi Project (Irr.)(AIBP)	559.78	0.00	559.78	0.00
17	Hallan Project (Irr.)(AIBP)	402.56	0.00	302.56	100.00
18	Survey i/c H.Q. Estt.(Irri)	6441.00	4801.00	1600.00	40.00
19	(-) Deduction of Contribution (Irr.)	-19128.99	-19127.01	-1.98	0.00
20	Rosara	2.40	2.40	0.00	0.00
21	Small & Micro Hydel	0.50	0.50	0.00	0.00
22	Punasa lift Irrigation (Irr.)(AIBP)	500.20	500.20	0.00	0.00
23	Macro management /CAT (Irr.)	1601.12	1601.12	0.00	0.00
24	Bargi Canal Bed Power House	137.33	137.33	0.00	0.00
25	Canal Bed Power House of ISP	373.02	373.02	0.00	0.00
26	Decretal	20.00	20.00	0.00	0.00
27	Special Polic (Irr.)	589.03	589.03	0.00	0.00
28	Decretal (Irr.)	25.00	20.00	5.00	0.00
29	SSP Sale of Power	900.00	900.00	0.00	0.00
30	Hydel Project Survey	18.00	18.00	0.00	0.00
31	Water Transport (Irr.)	4.00	4.00	0.00	0.00
32	Fisheries (Irr.)	146.04	143.40	2.64	0.00
33	Garlanding (Irr.)	929.28	929.28	0.00	0.00
34	Narmada Kshipra Link (Irr.)	700.00	700.00	0.00	0.00
35	Sher, Shakkar, Machrewa Project (Irr.)	627.38	627.38	0.00	0.00
36	Dudhi Project (Irr.)	186.00	186.00	0.00	0.00
37	Morand Ganjal Project (Irr.)	480.00	480.00	0.00	0.00
38	Canal bed power house of OSP	160.00	160.00	0.00	0.00
39	Ataria Project (Irr.)	4.00	4.00	0.00	0.00

S.No.	Scheme Name	Total	Normal	TSP	SCSP
40	Hiran(Chink)Hydel Project	28.00	28.00	0.00	0.00
41	Sitarewa Hydel Project	1.20	1.20	0.00	0.00
42	AIBP	66395.74	16208.30	46579.67	3607.77
3	Maheshwar Project	50.00	50.00	0.00	0.00
44	Upper Bhurner project (Irr.)	40.00	40.00	0.00	0.00
45	Raghavpur, Rosara, Basania Multipurpose project (Irr.)	20.00	20.00	0.00	0.00
46	Intra Basin MNI plan Study (Irr.)	20.00	20.00	0.00	0.00
47	Gopal pura -Handia ROR (Run of River)Survey	40.00	40.00	0.00	0.00
48	Gopalpura Project	52.00	52.00	0.00	0.00
49	InformationTechnology	4.00	4.00	0.00	0.00
50	Narmda Control Board	11.27	11.27	0.00	0.00
	Total	113372.00	52518.91	53309.16	7543.93

4.3 Progress during the Eleventh Five Year Plan

The **Eleventh** Five Year Plan allocation for irrigation and power sectors was Rs. 5269.06 crore.

During the **Eleventh** five year plan, the works of Bargi Diversion Project, Indira Sagar Project, Rani Awanti Bai Lodhi Sagar Project, Omkareshwar Project, Upper Narmada, Lower Goi, Halon, Punalift Irrigation, Projects were accelerated. Resettlement of the project affected families (PAFs) and the Environmental works, such as afforestation, catchments area treatment, etc. have also been brought in full swing and are being completed ahead of the engineering works.

Short information of on-going and future major irrigation projects

Upper Narmada Project:

This project is proposed on the river Narmada at village Reenatola, district Dindori which is 72 km. from Amarkantak (origin of the Narmada). Maximum height of dam is 31.80 M and length is 2112 M. Proposed irrigation is 18616 hectare. 89 villages of Dindori district and 27 villages of Shahdol will be benefited from this project. 2952 hectare of land is coming under submergence. There is no forest land in submergence.

Hydrology of the project was approved in 1991 by Central Water Commission. The detailed project report was submitted to CWC in 1996.

For pre-construction work of the project, administrative approval of Rs. 41.0 lakhs was given in 1980. The CWC has approved the cost of the project at Rs. 345.77 crore. The State Narmada Control Board has recommended granting of administrative approval at this cost in the 24th meeting held on 24.3.2003 with a proviso that work should be started only after getting funds from outside. State Government has accorded administrative approval of Rs.345.77 crore on dated 02.06.2003. The project has been cleared from all directorate of GOI except the union ministry of environment & forest, accordingly Turn key Tender expected to be established up to June 2010.

Halon Project:

Halon irrigation project is proposed on the river Halon, a tributary of the river Narmada in the block Bichiya, district Mandla. Total length of dam is 975 meters and maximum height is 31 meters. 1938.50 hectare of land will be affected due to submergence, out of which 250.60 hectare of land is under forest. Proposed irrigation potential of this project is 11736 ha.

The hydrology of dam was approved by Central Water Commission in 1991. Detailed project Report (DPR) was submitted to Central Water Commission in 1999.

The CWC has approved the cost of the Halon project at Rs. 221.60 crore. The State Narmada Control Board has recommended granting of administrative approval to the project at this cost in the 24th meeting held on 24.3.2003 with a proviso that work would be started only after getting funds from outside. Accordingly State has accorded administrative approval on dated 20.06.2003 for Rs. 221.60 crore.

Clearance from all directorate of CWC has been given except the environment & forest ministry of GOI.. It is expected that project will be cleared from planning Commission during this year and tender on turn key basis may be established by June 2010.

Bargi Diversion Project:

The Bargi dam on the river Narmada was completed and power generation was started in the year 1988-89. The Right Bank Canal has been proposed to irrigate land in Jabalpur, Katni, Satna and Rewa districts. Satna and Rewa districts are in the Sone basin. This is why it is, called the Bargi Diversion Project (BDP). The BDP will irrigate 2,45,000 hectare of land. The estimated cost of the project is Rs. 5127.21 crores. Total length of Main canal is 196 km. The Planning Commission has accorded investment clearance for BDP on 8.7.1998.

The construction of first 35 km. of the main canal is nearly completed and irrigation potential of 4900 hectre has been created.

NABARD has sanctioned a loan of Rs. 135.49 crores for completion of canal and its distributory etc. up to 16 km in November/December 2001 under RIDF-VII. This work has been completed

The work of R.B.C. (B.D.P.) from km. 16 to km 63 costing Rs. 196.06 crore was included under Prime Minister's fast track programme for completing the work upto 31.5.2003. But due to various reasons, mainly the failure of the contractors, the work is now included under regular AIBP of GOI.

As the works of Bargi Dam Project has been completed in 1988-89 and project has started storing water since 1988-89. The storage is being used to generate power of 90 MW. But the irrigation for 2.45 lakh hectare could not be achieved due to non-construction of right bank canal.

The work from R.D.-43 m. to km. 16 of canal has been completed taking NABARD loan. The works from km. 16 and onward is now included under AIBP and works is in

progress from km. 16 & km. 104(phase-1&2). To accelerate the work, a new strategy in being adopted in Dec. 2007 According to this new strategy, tender are now being called on turnkey basis. The tender for works of canal from km. 104 to km. 129 (including 12 km. tunnel) amounting to Rs. 799.00 crore and tender for works from 129 to km. 155 amounting to Rs. 138 core in Phase III, works of Madna distributory amounting to Rs. 32.5 crore has been established. Tender for phase IV from km. 155 to km. 194 amounting to Rs 184.00 crore, Satna Branch canal from km .0 to 33 amounting to Rs. 175 crore totally amounting to Rs. 1328.50 is now in full swing.

Turnkey tender for Satna Branch canal from 33 km. to 130 amounting to Rs. 953.00 crore, Rewa, Branch canal km. 0 to 39 amounting to Rs. 596 crore & Vijay Raghogarh Branch canal and pilongi distributory amounting to Rs.197 crore totaling to Rs. 1746.00 crore will be established till June 2010.

Rani Avanti Bai Sagar Project (Multi Purpose):

The Bargi dam in Jabalpur district is the first completed major dam on Narmada river. It started storing water in the reservoir of 3.181 MCM from the year 1988-89. The storage in Bargi dam is to be utilized for irrigating 4.02 lakh hectare under the left and right bank canals. The LBC is included under the RABSP and the RBC is called Bargi Diversion Project (B.D.P.). The approved project cost of RABS is Rs. 566.34 crore at 1990 price level which is updated to Rs. 1563.42 crore. It will irrigate 1.57 lakh hectare under LBC (length 137 km) and have a hydro-power generation capacity of 100 MW (90 MW in river bed Power House and 10 MW in the Canal Power House). At present the storage is being mostly utilized for almost continuous power generation of 90 MW. An irrigation potential of 147041 hectares has been created under RABLS project by March 2009. The works of canal of RABLS project is being completed by taking loan from NABARD as under:-

S.No.	Nabard Phase	Amount of loan sanctioned by Nabard (Rs. lakh)	Status
1.	RIDF-V	8760.59	Closed by NABARD
2.	RIDF-VI	8363.63	Closed by NABARD
3.	RIDF-VIII	17122.64	Closed by NABARD
4.	RIDF IX	5835.20	Running
5.	RIDF X	13287.19	Running
	Total	533369.25	

Most of canal works has been completed by taking by NABARD loan. NABARD has sanctioned NABARD loan for complete canal of 136.87 km.. For Balance works Rs. 58.89 crore will needed in 2010-11

Indira Sagar project (Multi Pusrpose):

The Indira Sagar Project is the key project on the Narmada River for irrigation and power generation. The regulated releases from Indira Sagar Project will be utilized by Omkareshwar, Maheshwar and Sardar Sarovar Projects proposed on the down stream of Indira Sagar Project. The Narmada Tribunal has directed that regulated releases from ISP would be made available for use at Sardar Sarovar to the extent of 8.12 MAF per year, ex-Maheshwar.

The Indira Sagar Project is of 92 m. height and 653 m. long concrete dam near village Punasa in district Khandwa which is the highest dam of the State and formed a lake of gross capacity of 12.220 MCM (9.9 MAF) the biggest in India. The project has power generation with an installed capacity of 1000 MW and enable irrigation with 249 km length of the main canal over 1.23 lakh hectares in Khandwa and Khargone districts. In Khandwa district 76 villages and in Khargone district 488 villages in all 564 villages would be benefited.

In May 2000 it was decided to implement the power portion of Indira Sagar Project through the joint venture of NHPC (GOI) & GOMP. The joint venture is named as NHDC (Narmada Hydro electric Development Corporation Ltd.). The works of dam and power house were entrusted to NHDC Ltd. on 25.9.2000 and are completed (June 2005). NHDC has worked out the cost of dam and power house as under:-

Unit	Rs. in crore
I (Dam)	2634.77
III(Power)	1232.43
I DC	488.37
Total	4355.57

The works of canal of ISP are being executed by NVDA. The work of canal is being completed by taking loan of Rs. 750 crore under Accelerated Irrigation Benefits Programme (AIBP) of GOI. The Indira Sagar Project has been receiving assistance under AIBP since 1996-97. The work on the canal system from 0 km to 131.00 km is in progress. As the Dam unit-I and power house unit-III has been completed and Dam has started storing water. The power generation is being done but water storage is not being used .for irrigation. as canal construction is yet to be completed.

To accelerate the works of canal, in Dec. 2007 NVDA has made new strategy to complete the canal system in time. In New strategy the tender are now being called on Turnkey Basis. In Dec. 2007 the tender for works of canal from km. 131 to 155 in phase II amounting to Rs. 242.55 crore & tender for canal from km. 155 to 206 amounting to Rs. 478.47 crore were established and the works is in full swing.

Besides the above Tender for works from km. 206 to km. 248 amounting to Rs. 298.00 crore will be established by Feb. 2010. Thus looking to the above works it is assessed that Rs. 1059.70 crore is needed in 2010-11. But due to ceiling of Rs. 1123.05 crore only Rs. 357.80 crore would be available in 2010-11 for this project.

Bargi Canal Head Power House

It is proposed to generate power at the left bank canal head power house at Bargi with an installed capacity of 5x2=10 Mega Watt. The present cost of the Bargi canal power house is Rs. 48.53 crore. Nabard has sanctioned a loan of Rs. 37.71 crore for the work. The work is completed and power generation has been started since July 2006. Total of 15.09 million units were generated up to Oct.2009

Indira Sagar Canal Head Power House

It is proposed to generate power at the Indira Sagar Canal power house with an installed capacity of 5x3=15 Mega watt. The cost of the Indira Sagar canal power house is Rs. 61.61 crore. Civil &E/M work or Power House has completed upto 95% by Oct. 2009. Erection of T.G. Equipment is in progress. The Project is likely to be

the completed by March. 2010 and the target of commissioning of first unit is set for 31 Dec. 2009.

Omkareshwar Multipurpose Project:

The Omkareshwar multipurpose project is constructed below the Indira Sagar Project. It is utilizing regulated releases from Indira Sagar Project for the production of 520 MW power and to provide irrigation facilities to an area of 1.47 lakh hectares on both the banks of the Narmada river.

The project includes 949 meter long 73.12 meter high dam with 8 units of 65 MW. Total installed capacity for power generation is 520 MW. The dam and power house works are entrusted to NHDC Ltd. under MOU dated 16.5.2000. NHDC has estimated the cost of dam & power house at the price level of 11/2002 as under:-

Unit	Cost Rs. in crore
I (Dam)	1091.32
III(Power)	900.29
L DC	233.12
Total	2224.73

The work of dam and power house has been completed in all 8 units of 65 MW each has commissioned and started power generation.

The canal system (cost Rs. 2175.59 crore) will be completed by about 2011-12 with funds under AIBP. The work of Narmada Acqueduct costing Rs. 31.50 crore has been completed. The unit-I dam and unit-III power house has been completed, but, proposed irrigation in 1.47 lakh hectare would not achieve due to non completion of canal.

In Dec. 2007, according to new strategy adopted in NVDA, tender for canal from 9.775 to km. 68 in Phase II amounting to Rs. 193.00 crore and tender for works from 68.92 km. to 162.95 km. in Phase III amounting to Rs. 312.20 crore are established on turnkey basis. Besides the above tender for Phase IV to complete right bank lift canal amounting to Rs. 580.00 crore on turnkey basis will be established before June 2010.

Omkareshwar Canal Head Power House

It is proposed to install 2x2 Mw. Canal head power house on main canal OSP Multipurpose Project. Intake power house has been completed and consultant has been appointed for providing consultancy services. NIT for Turnkey execution of power house is to be invited march 2010.

Man Project:

The project envisages construction of composite dam across the river Man, a tributary of the river Narmada in Gandhvani Tehsil of Dhar district for irrigation in a net CCA of 15000 hectares. The main earth dam is 333 m. long with maximum height of 32 m. The masonry dam is 311 m long with maximum height of 51 m. The present cost of the project is Rs. 142.27 crores and accordingly revised administrative approval for Rs. 142.27 has been accorded vide GOMP NVDD letter No. 2/12/27/2/2/301 Bhopal dated 24.4.2002. Total submergence area at FRL in 17 villages is 1111.30 hectares; in all 1176 nos. of families are affected due to the project but lands of 183 families are affected by less than 25%. The Man dam and the canals have been completed in

September 2006 and Designed Irrigation Potential of 15000 Hectare was developed by the end of March 2007. Lining of canal system is remaining, for which proposal under AIBP has been submitted.

Shahid Chandra Shekhar Azad (Jobat) Project:

The project envisages construction of a composite dam across the river Hathni a tributary of river Narmada near Waskal village in Alirajpur district for irrigation of a net CCA of 9848 hectare in Dhar district. The main earthen dam is be 230 mtrs. long with a maximum height of 27.76 meters. The masonry dam is 233 mtrs. long with a maximum height of 34.60 m. The administratively approved cost of project is Rs. 117.45 crores.

Total land coming under submergence is 1212 hectare out of which forest land is 123 hectare 790 hectare private land is affected. 13 villages are partially affected. 548 families are affected due to submergence.

Upper Beda Project:

Upper Beda irrigation project is proposed on river Beda near village Nemit, Tehsil Jhiranya, district Khargone of Madhya Pradesh. Project envisages the construction of 208 M. long and 37 m. high masonry dam and 2206 m. long 23.83 m. high earth dam. It is proposed to irrigate 9900 hectare land in Khargone district comprising 58% tribal population.

The Planning Commission has accorded investment clearance for the project on 10.9.1998. Administrative approval for the project amounting to Rs. 87.86 crores has been accorded by Govt. of M.P. in May 2001. For the construction of the project NABARD has sanctioned loan of Rs. 80.32 crores in March'03. The work of Dam is under Progress and 80% work is completed. The project is likely to be completed by 2010-11.

Lower Goi Project:

Lower Goi irrigation project is proposed on Goi River near village Panchpula, district Barwani. 13760 hectare area is proposed for irrigation through 5.71 km. long tunnel. Estimated cost of the project is Rs. 360.37 crores.

The survey work is completed and detailed project report has been submitted to Central Water Commission in 1992 and approval is awaited. There is no forest area in the submergence due to the project. The tunnel for taking irrigation water, however, passes through forest area for which clearance has been obtained.

Punasa Lift Project:

In the Master Plan (1972) Chhota Tawa major project was proposed on the Chhota Tawa River a tributary of Narmada, for irrigating, mostly by lift the areas at higher level near the head regulator of the ISP canal. During examination it was found that under a better alternative most of the area could be irrigated by lifting water from the ISP canal. It is proposed to irrigate 32,300 hectare area by such a lift. The project is named as Punasa Lift Project. Concurrence of CWC, in principle, was received for the project in October 2002. Survey estimate amounting to Rs. 14.50 lakh was sanctioned in October 2001. Now the project is cleared from all directorates of Planning Commission & tender on turnkey basis for complete project amounting to

Rs. 418.50 crore is established in Sept. 2008. The works of this project will be in full swing from March 09. The work of Punasa Lift Project is proposed to be completed in the 11th five year plan i.e. by 2011-12.

Survey and Investigations for the remaining major irrigation projects:

Action for survey, investigation (S&I) and preparation of detailed project reports (DPR) is being taken for the following remaining major irrigation projects:-

S. No.	Project	Proposed area for irrigation (hectare)
1.	Upper Burhner	5000
2.	Ataria	1950
3.	Chinki	70000
4.	Sher	65000
5.	Shakkar	
6.	Machherewa	
7.	Dudhi	51000
8.	Morand	52000
9.	Ganjal	
	Total	244950

It is proposed to complete the survey and investigation, preparation of DPR and obtaining clearance from Planning Commission in the 11th plan.

Garlanding Project:

The work of implementation of garlanding scheme around the periphery of ISP in Khandwa District is in progress. In this scheme electrical infrastructure is being created to facilitate farmers to irrigate the fringe area falling within the range of five km. of ISP reservoir in the Khandwa District. Approx: 70% of work has been completed.

In the similar manner the garlanding scheme of Harda District is being formulated and case under process to get approval from GOMP. Estimated cost of this scheme is 6.37 crore.

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A brief note on status of Hydro Electric Projects (HEPs) of Narmada Basin:

Boras, Hoshangabad and Handia HEPs:-

Looking to the higher generation cost per MW and involvement of large submergence area in above projects, NVDA has taken a decision to execute these projects on the principal of wier and barrage system. M/s WAPCOS has been requested to prepare a concept paper on it. On the basis of concept paper decision for execution of these projects shall be taken up with the target date of completion by 2012.

Raghavpur, Rosra, Basania, Hirenpur (Chinki) and Sitarewa HEPs:-

The work of S&I, and preparation detailed project reports of five HEPs namely Raghavpur (20 MW), Rosra (35 MW), Basania (20 MW), Hirenpur (45 MW) and Sitarewa (15 MW) has been assigned to WAPCOS, Gurgaon, DPRs of all five projects has been submitted by WAPCOS. The viability of RRB & Hirenpur projects has not been established as hydel power projects alone. It has therefore been decided to explore the possibilities of developing these projects as multipurpose projects. The DPRs of RRB as multipurpose project is likely to be submitted by WAPCOS by end of Dec. 2009 and that of Hirenpur by Dec. 2010. After receipt of DPRs and its clearance from GoI/GoMP, the process of implementation of these projects will be initiated. The viability of Sitarewa HEP has been established as hydel project alone and process has been initiated to develop the project on BOT basis under new Incentive Policy for development of SHP in M.P.

Gopalpur Hydro Electric Project:

150th meeting of NVDA it has been decided that the Gopalpur HEP should be executed by NVDA. The project Survey and Investigation work and preparation of DPR should be carried out through engaging consultancy services through NIT and the project will be executed by NVDA's own budget and or through Financial aid from NABARD or other financial institution.

Mini Hydel Projects:

Six mini hydel projects as below are identified in Narmada Basin

Laxman Mandwa	-	5 MW
Deori	-	6 MW
Kachra Tola	-	7 MW
Dokarghat	-	7 MW
Kanchan Goan	-	7 MW

LOI has been issued to private developer for preparation of DPR of these projects under Incentive Policy for development of SHP in M.P.

Identification of new potential sites:

AHEC, IIT Roorkee has completed the work of preparation of Master plan for identification of new small hydro project sites in Narmada Basin. IIT Roorkee has identified 186 new sites with the total potential 215.06 MW. The sites have been identified in three categories

- i. ROR 79 sites of 144.10 MW Capacity
- ii. Canal fall. 44 sites of 30.21 MW Capacity
- iii. Canal Head 63 sites of 40.75 MW Capacity

It has been decided to retain canal fall and canal head sites with NVDA and offer all ROR sites in private sector under Incentive Policy for Development of SHP in M.P.

Maheshwar HEP:

The work of Maheshwar Hydro Electric project is being carried out by Shree Maheshwar Hydel Power Corporation Ltd. (SMHPCL) in private sector with the target date of completion by the year of 2009-2010.

Additional Power Projects Proposed:-

1.Sardar Sarovar Project	826.50
2. Bauras	60.00
3. Hoshangabad	45.00
4. Handia	55.00
5 Gopalpur	25.00
6 Small & Mini Hydel Project(6 nos.)	34.00
Total	1045.50

5.0. Identification of new potential sites:

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6.0. Status of water allocation to the State by the Narmada Tribunal

The Narmada water Disputes Tribunal (NWDT) Considered 28 Million Acre Feet (MAF) as the utilizable flow in the Narmada Basin upto Sardar Sarovar and allocated it to the four States as under in its decision given in December 1979 :-

State	Allocated Share (MAF)
Madhya Pradesh	18.25
Gujrat	9.00
Maharastra	0.25
Rajasthan	0.50
Total	28.00

The Allocated share of 18.25 MAF to the State is proposed to be utilized by the different projects as indicated below:

S No.	Projects	Water (MAF)	Remarks
1.	Major Projects	11.36	To be developed by Narmada Valley Development Department
2.	Medium Project	2.88	To be developed by water Resources Department
3.	Minor Irrigation Projects	2.51	To be developed by water Resources Department
4.	Municipal & Industrial use	1.50	To be developed by public Health Engineering department and Industries Department
	Total	18.25	

Under Major projects, water resources of 2.95 MAF have been developed and of 5.19 MAF are in progress. Four projects of 0.45 MAF are pending with Planning Commission, GoI, for clearance.

The details of the 29 major projects under Narmada Valley are given below. The medium and minor irrigation projects are under the judiciary of Water Resources Department of the State.

PROPOSED MAJOR PROJECTS IN THE NARMADA VALLEY

Sl. No.	Name of Project	Propose Irrigation (Hectare)	Proposed Power Generation (M.W.)
1.	Upper Narmada	19000	--
2.	Raghavpur	--	20
3.	Rosra	--	25
4.	Singarpur (Basania)	50000	20
5.	Upper Burhner	5000	
6.	Halon	13000	
7.	Dhabotoria –Matiyari (completed)	10000	--
8.	Bargi (Dam completed)		
	(a) Rani Awanti Bai Sagar (RABS)	157000	
	(1)From river bed power house		90
	(2)From canal bed power house		10
	(b) Bargi Diversion (BDP)	245000	--
9.	Atariya	1950	--
10.	Chinki	70000	25
11.	Sher	--	--
12.	Machhareva	65000	--
13.	Shakkar	--	--
14.	Sitareva	--	15
15.	Dudhi	51000	--
16.	Barna (completed)	55000	1.9
17.	Tawa (completed)	247000	13.50
18.	Kolar (completed)	45000	2.00
19.	Morand } Ganjial }	52000	1.0
20.		---	--
21.	Sukta (completed)	17000	--
22.	Punasa Lift (Chhota Tawa)	35000	--
23.	Indira Sagar	123200	
	(1)From river bed power house		1000
	(2)From canal bed power house		15

Sl. No.	Name of Project	Propose Irrigation (Hectare)	Proposed Power Generation (M.W.)
24.	Omkareshwar	146800	
	(1)From river bed power house		520
	(2)From canal bed power house		5
25.	Maheshwar	--	400
26.	Upper Beda	9900	--
27.	Man (Completed)	15000	--
28.	Lower Goi	13760	--
29.	Shahid Chandrashekhar Azad Sagar Project (Jobat) (Completed)	9848	--
	Total	1456458	2168.40