

CHAPTER 13

IRRIGATION AND FLOOD CONTROL

13.1 Rajasthan is predominantly an agricultural state where 70% of the population is dependent on agriculture and allied activities. Contribution of agriculture sector to State Domestic Product varies between 40-45 percent. The surface water resources in the State besides being scarce are mainly confined to south and south eastern part of the State. There is no perennial river in the State but for Chambal which traverses some parts of the south-eastern portion of the State. Therefore, Rajasthan has to depend upon its share of water from Inter-State river basins.

13.2 The geographical situation and distinct physio-graphical conditions of Rajasthan is such that it receives last residual share of monsoon rainfall from both the branches of South-West monsoon. Hence, the monsoon rains are scanty, erratic and unevenly spread over the State. Some times both the branches of monsoon reach at the same time which results in severe floods in some areas.

13.3 The total surface water potential within the State is 15.86 MAF. Rajasthan has therefore, to depend on water from Inter-State River basins for development. Rajasthan has been allocated 14.50 MAF water from various Inter-State River basins agreements as under :

Gang Canal	1.11	MAF
Bhakra Canal	1.41	MAF
Ravi Beas	8.60	MAF
Narmada	0.50	MAF
Yamuna Water	0.91	MAF
Chambal/ Kota Barrage	1.60	MAF
Mahi Water	0.37	MAF
Total	14.50	MAF

Irrigation Potential Created

13.4 Before commencement of the plan period i.e. 1951 the potential available through major and medium project was 4.00 lakh hect. Potential created up to the end of Eighth Plan i.e. 1992-97 was 26.64 lakh hect. It is anticipated that by the end of Ninth Five Year Plan irrigation potential is 29.40 lakh hect. would have been created.

		(Potential in lakh hect.)		
Plan		Potential created Major/Medium (including IGNP, Mahi etc.)	Minor	Total
Pre-Plan	Pre-1951	3.20	0.80	4.00
I-Plan	(1951-56)	0.90	0.13	1.03
II-Plan	(1956-61)	1.11	0.30	1.41
III-Plan	(1961-66)	3.26	0.22	3.48
Annual Plans	(1966-69)	1.52	0.10	1.62
Plan		Potential created		

		Major/Medium (including IGNP, Mahi etc.)	Minor	Total
IV-Plan	(1969-74)	1.38	0.25	1.63
V-Plan	(1974-80)	4.06	0.48	4.54
VI-Plan	(1980-85)	1.70	0.54	2.24
VII-Plan	(1985-90)	2.01	0.37	2.38
Annual Plan	(1990-92)	1.02	0.20	1.22
VIII-Plan	(1992-97)	2.74	0.33	3.08
IX Plan	(1997-02) Anticipated	2.51	0.29	2.28

Strategy for Tenth Five Year Plan

13.5 The strategy for IX Plan was that to promote efficiency of existing system through adequate maintenance and vertical expansion, completion of ongoing projects, besides harnessing of untapped resources through selected new major/medium projects and taking up minor irrigation works having short gestation period. Projects posed for external assistance be accorded high priority. Involve beneficiaries in management of irrigation system and collection of water charges.

13.6 The strategy for the tenth plan will be to improve upon i) the efficiency of existing system ii) management techniques and iii) involvement of farmers in operation, maintenance and management of the irrigation systems for equitable distribution of water within the command. Water conservation through water harvesting schemes, adoption of improved methods of irrigation with a gradual shift from gravity irrigation to pressure irrigation and continued investigation, Planning and design of new irrigation project in the sub basins having balance water potential will also be addressed during the tenth plan. Optimum utilisation of the water allocated under various Inter-State agreements and completion of the pre-ninth plan irrigation projects shall be given priority during the tenth plan.

Tenth Five Year Plan Proposals

13.7 Total outlay for Irrigation and Flood Control excluding IGNP, CAD, GWD & Minor Irrigation through SSO works out to 2116.17 crores. Break up of this outlay according to broad classification is as follows :

	(Rs. in crores)	
	Tenth Plan	Annual Plan 2002-03
Multipurpose project	146.10	34.20
Major Project	943.41	158.75
Medium Project	248.18	35.00
Modernization	350.60	50.40
Flood Control	22.00	4.00
Minor Irrigation	329.55	63.73
Water Management	76.33	11.03
Total	2116.17	357.11

13.8 It has been targeted to complete all the four ongoing medium Irrigation projects out of which 2 projects namely pachna and chhapi are pre VIII plan projects. 71 on going Minor Irrigation project which will be spill over to Tenth Plan will also be completed during Tenth Plan. A target of creation of additional irrigation potential in 2.09 lakh hect. is proposed during the Tenth Five Year Plan period. Detailed proposals are as under :

Externally Aided Projects

Sidhmukh & Nohar project

13.9 Utilisation of 0.47 MAF water of Rajasthan's share in Ravi- Beas rivers is envisaged. This project is designed to provide irrigation in CCA of 1.12 lakhs hect. of western desert area in Nohar & Bhadra Tehsil of Hanumangarh District. The latest estimated project cost is Rs. 309.00 crores and external assistance of Rs. 135 crores, would be made available by EEC.

13.10 The work on Sidhmukh & Nohar Feeder has been completed leaving some liabilities which are to be cleared during Tenth Five Year Plan. A token provision of Rs. 0.01 lakh is kept.

Rajasthan Water Sector Restructuring Project

13.11 The project has been conceived for improvement of surface irrigation systems performance and efficiency of selected scheme through increased involvement of users and for strengthening the capacity for strategic planning and environmentally sustainable development and management of surface and ground water. The cost of the project is Rs. 733.6 crores of which the World Bank assistance will be of the order of Rs. 590 crores. The project stands cleared by the World Bank and TAC of the ministry of Water Resources, government of India. Final negotiations with the World Bank have also been held in November, 2001. The World Bank Board's approval is awaited. Work on this project will be started in financial year 2002-03. A provision of Rs. 650 crores is kept for this project in Tenth Plan and Rs. 100.00 crores have been kept in Annual Plan 2002-03.

FRG Assisted Minor Irrigation Project

13.12 Assistance amounting to a loan of DM 12.30 million and a grant of DM 2.76 M was sought under Minor Irrigation project phase-I from Federal Republic of Germany (FRG). Under the agreement 70% of expenditure on Minor Irrigation project was reimbursable by KFW. Fifteen projects were taken up under this project. Out of which 9 projects have already been completed and remaining project are in advance stage of completion. Phase II of the project is under negotiation, but after nuclear explosion done at Pokran by the Government of India in 1998, sanctions were imposed by the KFW. Negotiation is being made with KFW for receiving the assistance on Minor Irrigation Projects. A provision of Rs. 40.00 crores is kept in Tenth Five year Plan and Rs. 1.00 crore has been kept in Annual Plan 2002-03.

Multipurpose Projects

LOTC Works of Chambal Project

13.13 Although the Chambal project was completed and commissioned in 1964, but during operation of the project various technical short comings were observed. Therefore, a technical committee was appointed to examine and give recommendations for improvement of the system. The committee recommended a large number of works which included Bye-Passing of RMC in five old tanks. All other works except Bye-Passing of RMC in 5 tanks are completed. It is proposed to take up Bye-Passing of RMC in at least the first tank that is Chatra Bilas tank. A sum of Rs. 1.00 Crores is proposed in Tenth Plan.

Mahi Project

13.14 Mahi Bajaj Sagar is an inter state project between the states of Gujarat & Rajasthan for development of irrigation and power generation. Thr project was approved by the Planning Commission in the year 1971. As per the revised estimate submitted to the CWC in the year 1977 the project envisaged to provide irrigation in an area of 80.000 ha. and construction of two power houses with an installed capacity of 140 MW. As per the latest estimate furnished to the state government & CWC the project cost is Rs. 813.47 crores. The construction of Main Dam, the two power houses and the two Main Canals alongwith part distribution system has already been completed and an area of 57,500 ha. has already been opened for irrigation. Construction of canal net work in the balance CCA of 18,500 ha. is proposed to be taken up during the Tenth Five Year Plan period (2002-07) in a phased manner for which a provision of Rs. 132.00 crores has been kept. The work to be completed during the Tenth Five Year Plan are as under:-

1. Balance work of Anandpuri canal system
2. Balance work of Bhungra canal system
3. Balance work of Kanthav, Jagpura and Narwali disty. system of RMC
4. Balance work of Mahi Sagwara canal RD upto 8.0 Km including Nithava disty. system

The yearwise targets proposed for CCA opening and corresponding expenditure during the year 2002-03 to 2006-07 are as under :-

Year	Additional CCA creation	Estimated cost in crores
2002-2003	2500 ha.	24.00
2003-2004	3500 ha.	28.00
2004-2005	4000 ha.	28.00
2005-2006	5000 ha.	28.00
2006-2007	3500 ha.	24.00
Total	18500 ha.	132.00

Indira Gandhi Nahar Project

Stage-I

13.15 Against the total CCA of 5.53 lac ha. 5.43 lac ha. has been covered by this project with the total expenditure of Rs. 381.48 crores upto March 2001. Due to financial stringencies this year only Rs. 2.74 crores have been made available to this project i.e. to Kanwar Sen Lift Scheme under ERM Project. No funds have been made available to the reaches failing with irrigation and CAD Departments. This project was completed in the year 1992, and now only Extension. Renovation and Modernisation (ERM) works are under executed under a separate Project approved by the C.W.C. and Planning Commission. It was proposed to be completed ERM works in Tenth Plan but in accordance with the new guide lines of Planning Commission for projection of Tenth Plan outlay the completion schedule has to spill over in next plan. For the year 2002-03 Rs. 3 crores have been proposed for this part of the project thereby to increase the potential from 5.42 lac ha to 5.43 lac ha by March, 2003.

13.16 The area under this Stage has already been transferred to irrigation Department (excluding K.S. Lift) for maintenance and water management purpose. Therefore establishment & maintenance expenditure of this areas has already been transferred to non-plan as desired in point G-(iii) of the Guidelines for preparation of Xth Five Year Plan and Annual Plan 2002-03 proposals.

Stage-II

13.17 Under this Stage 256 km long main canal alongwith its 5606 long distribution system has to be constructed to create irrigation potential of 9.64 lac ha. the works are in progress accordingly.

13.18 Upto March, 2002, 6.08 lac ha irrigation potential would be created on this project by constructing canals in 3727 Kms. with the outlay of Rs. 110.00 crores for current financial year, it is proposed to create 15000 ha. irrigation potential in Stage-II, making total irrigation potential as 6.08 lac ha. In the year 2002-03 with proposed amount Rs. 110 crores (for Stage-II) it is proposed to create irrigation potential of 17000 ha. This will increase of irrigation potential from 6.08 lac ha. to 6.25 lac ha.

13.19 The outlay for the IX plan of Indira Gandhi nahar Project was proposed Rs. 160.00 crores. The outlay approved by the Planning Commission, New Delhi was Rs. 1100.00 crores. The outlay for IX Plan (Rs. 1100.00 crores) has been worked out at 1996-97 prices with deflator is Rs. 900.34 crores.

13.20 During the IX Five Year Plan the budget allotted to Indira Gandhi Nahar Project is Rs. 802.35 crores (Tentative) & the same has been worked out at 1996-97 price level with deflator as Rs. 672.72 crores.

13.21 For the Tenth Five Year Plan (2002-07) the proposed outlay at 2001-02 price level is Rs. 880.00 crores by which 1045 km canal lining & an additional Irrigation potential 236.00 Th. Ha. shall be created.

Major Irrigation Projects

13.22 Four ongoing major projects of IX Plan will spillover to X Plan. Narmada Canal project was taken up to utilise 0.5 MAF of Narmada water allocated to Rajasthan in 1979, Project envisages drawl of water from Sardar Sarovar Project main canal from Gujarat-Rajasthan border in Jalore district and constructing a net work of canal system in a CCA of 2.50 lac Hect. in Rajasthan and providing drinking water to 124 enroute villages.

13.23 A consultancy was assigned to M/s WAPCOS Ltd to examine whether the command area would get water-logged and saline as a result of implementation of this project. The consultants reported that the area was prone to be water-logged unless water allowance was reduced. Therefore, it is proposed to review and revise the project report. A consultant is being appointed for this purpose. The main canal has been constructed in a length of 8.00 Km. The construction of Canal from 9.00 km. to 52.00 km. is taken up for which Tender have already been invited and are in final stage of allotment.

13.24 The latest estimated cost of the project is about Rs. 1392 crores. Out of which 500 crores is to be paid to Gujarat as State's share, the balance is to be spent in Rajasthan.

13.25 The Gujarat will provide Narmada water to Rajasthan border by June, 2004. Hence to create a distribution and utilisation network within the benefited districts of Jalore and Barmer. The work for construction of Narmada canal system ranks a top priority. An outlay of Rs. 500 crores is required but due to lack of resources a provision of Rs. 162.00 crores has been kept in Tenth Plan for this project.

Gurgoan Canal and Yamuna Water Projects

13.26 The work of project remained almost closed during IX Five Year Plan Period. The project is being redesigned and will be taken up in X Plan.

Ratanpur Distributory

13.27 Sidhmukh Nohar Project was sanctioned to be completed with EEC loan assistance for utilisation of Rajasthan Share of water from Punjab. While accepting project for providing loan assistance, EEC excluded the proposed Sidhmukh Ratanpura distributory.

13.28 To provide irrigation facility in the left out area, a separate scheme was prepared named as Sidhmukh Ratanpura Distributory costing to Rs. 227.53 crores with potential of 9350 ha. The scheme was administratively approved on 25th June 1999 and was accepted by NABARD for giving the loan assistance of Rs. 21.44 crores under RIDF IV. The work on the project has been started from 2000-2001. An outlay of Rs. 16.00 crores is proposed in X Plan for this project and Rs. 8.00 crores has been kept in Annual Plan 2002-03.

Bisalpur Project

13.29 The project is irrigation cum drinking water project. Both Irrigation and P.H.E. sector are sharing the cost. The project was initially taken up in the year 1986 during VII Plan. The irrigation component of the project comprises

construction of dam and two canal systems on each flank. The irrigation department has also constructed the pump house for supply of drinking water.

13.30 The entire compensation of land and property amounting to Rs. 95.85 crores has already been paid upto the level of 311 M. Compensation of the land and property of villages submerged upto 311 M has also been paid except a few disputed cases. Compensation of the land and properties of villages submerged from 311 M to 315.50 M (Full reservoir level) will be paid in two phases. The activities of paying compensation, rehabilitation and resettlement are at peak stage and the manner in which it is progressing the entire compensation shall be paid by the end June 2002. A provision of Rs. 114.95 crores is kept in X Plan for this project and Rs. 20.90 crores have been kept in Annual Plan 2002-03.

Medium Projects

13.31 Out of the seven ongoing projects of IX Plan, three namely Sawan Bhado, Parwan Lift and Som Kamla Amba have been completed. Projects namely Panchana, Chappi, Chauhi, Belthi are in advance stage of completion and targeted to complete in 2002-03 but due to inadequate Plan ceiling provided by the Government for medium projects, these are likely to spillover for 2-3 years of X Plan. Pachna, Chhapi and Chauhi projects have been taken up with central loan assistance under AIBP and Bethli project under RIDF (NABARD) for expeditious completion. A provision of Rs. 248.18 crores has been kept in X plan and Rs. 35.00 crore have been kept in Annual Plan 2002-03.

13.32 Survey work of three new medium projects namely Sukli, Bandisendra and Garada has been completed. Efforts are being made to start the construction work on these project during 2002-03. A token provision of Rs. 0.01 crores is proposed on each project in X plan.

New Medium Irrigation Projects

13.33 Most of the ongoing medium irrigation projects are likely to be completed during IX plan, therefore some new medium irrigation projects would be started during X plan. A sum of Rs. 248.18 crores has been kept for medium projects in Tenth Plan Period (2002-07).

Modernisation

13.34 Out of four ongoing modernisation projects namely Gang Canal, Meja modernisation, Jaisamand and Gambhiri modernisation projects, three projects namely Jaisamand, Gambhiri and Meja have been completed. The Gang canal system was constructed in 1927, the canal system has badly been destroyed, as such carrying capacity would further reduced unless special repairs are taken up. Lining of the Bikaner Canal in Punjab territory is required to be taken up on priority. Looking to the damage of canal and seepage of water a scheme of modernisation of Gang Canal was prepared. The proposal for relining of Bikaner Nahar and distributories & sub-distributories were also included in the scheme. The Planning Commission of India has given sanction for expenditure of Rs. 445.73 crores under State Plan on this modernisation scheme. The work on Gang modernisation has been started during current financial year (2001-2002) and about Rs. 190.00 crores are targeted to be spent in next four years.

13.35 A provision of Rs.350.60 crores has been kept for Gang Modernisation in X Plan. Besides, a provision of Rs. 0.50 crores and Rs. 0.10 crores has been kept to clear pending liabilities of completed Gambhiri and Jaisamand modernisation projects respectively and Rs. 50.40 crores have been kept for Annual Plan 2002-03 of which 50.00 crores for Modernisation of Gang Canal.

Flood Control

13.36 The major problem in Rajasthan is due to Ghaggar river in Ganganagar and Hanumangarh district. Bharatpur, Alwar, Dholpur Dausa & Jaipur faced the fury of flash folds from Ruparail, Gambhiri & Ban Ganga rivers. Besides heavy rains often flood areas in Jaipur & Ajmer cities.

Ghaggar Flood Control Project

13.37 The Study for flood control measures in Ghaggar river was entrusted to WAPCOS. A scheme costing Rs. 1.01 crores is prepared as per recommendations given by WAPCOS for taking necessary measures to control flood of Ghaggar river. The scheme has been approved by CWC. The work of construction of intact structures has been started. A provision of Rs. 50.00 crores is required but due to lack of ceiling a provision of Rs. 21.76 crores is kept in X Plan for this project and Rs. 3.76 crores have been kept in Annual Plan 2002-2003.

Other Flood Control Works

13.38 There are three ongoing flood protection schemes, namely Jaipur, Ajmer, and Bharatpur city flood protection works. The works consists of chennalisation of drains and protection bundh to protect these cities from floods during heavy monsoon rains. A provision of Rs. 0.24 crores is kept in Annual Plan 2002-03 & Tenth Five Year Plan to clear the old liabilities of Jaipur City Flood work.

Minor Irrigation

13.39 Minor irrigation works, low cost development works with short gestation period, such works create potential in arid and semi-arid region of the State where scope of surface water is limited. The scope of exploitation of ground water is very much limited. Therefore, besides completion of ongoing works, new projects are to be taken up. A provision of Rs. 329.55 crores is proposed in Tenth Five Year Plan including 1.55 crores for Chambal Lift, Rs. 40.00 crores for KFW phase II and Rs. 40.00 crores on Augmentation of Traditional Water Source (EFC), similarly a provision of Rs. 63.73 crores have been kept in Annual Plan including 72.00 lakhs for Chambal Lift, Rs. 1.00 crores for KFW phase II and Rs. 1.00 lacs for Augmentation of Traditional Water Source (EFC).

Water Management

13.40 The provision sought under this head consists of survey and investigation, irrigation management training institute, computerization and Science and technology development and such erratic behaviour of monsoon, a some of Rs. 76.32 crores are proposed for this head for X Plan including 10.00 crores for new water management schemes and Rs. 11.03 crores have been kept for Annual Plan 2002-03.

GROUND WATER DEPARTMENT

13.41 Ground water exploration activities are being carried out in the State which include updating of ground water resources, detailed hydrogeological investigations, studies on conjunctive use of surface and ground water and artificial recharge methods for augmentation of recharge to aquifers, studies on evaluation of ground water reserves and change in its quality. The evaluation studies during the period 1984-2001 reveal that 27 districts out of total 32 districts have a depleting trend and water levels in these districts have dropped in the range of 2 to 8 mtrs. In last 4 years, to check this depleting trend department proposed to undertake recharge projects to replenish ground water by using surplus rain water.

Ground Water Exploitation

13.42 The department owns its fleet of different type of rig with technically trained staff to undertake construction of tubewells. Department also undertakes deepening of wells in hard rock formations to augment its discharge under poverty alleviation programmes for poor families belonging to SC, ST categories etc.

13.43 For the Tenth Five Year Plan an allocation of Rs. 302.50 lacs has been made and Rs. 55.00 lacs has been kept in Annual Plan 2002-03.