



GOVERNMENT OF MAHARASHTRA

OUTLINE

OF

ACTIVITIES

For 1977-78 and 1978-79

IRRIGATION DEPARTMENT

OUTLINE OF ACTIVITIES

1977-78 AND 1978-79

IRRIGATION DEPARTMENT

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CHAPTER I INTRODUCTION

1. The erstwhile Public Works Department was continued unaffected after Independence in 1947, but on formation of the State of Maharashtra in 1960, was divided into two Departments, viz. (i) Buildings and Communications Department (now named as 'Public Works' and Housing Department) and (ii) Irrigation and Power Department, as it became evident that the Irrigation programme to be taken up would need a separate Department. The activities in both the above Departments have considerably increased since then and have necessitated expansion of both the Departments. Further due to increased activities of the Irrigation and Power Department the subject of Power (Hydro only) has since been allotted to Industries, Energy and Labour Department. Public Health Engineering wing is transferred to Urban Development and Public Health Department.

2. The activities of the Irrigation Department can be divided broadly into the following categories :—

- (i) Major and Medium Irrigation Projects.
- (ii) Minor Irrigation Projects (State Sector).
- (iii) Irrigation Management.
- (iv) Flood Control.
- (v) Research, Designs and Training.
- (vi) Command Area Development.
- (vii) Lift Irrigation Schemes (IDCOM).
- (viii) Khar Land Reclamation.

3. The State has a large scarcity tract where the rainfall is inadequate and uncertain, and is subject to frequent scarcity conditions except for patches covered by protective irrigation works. Even in other areas a change over from the existing crop pattern to a superior one with a view to increasing per hectare output may be possible only if facilities for irrigation are made available. The importance of irrigation as a means of improving and stabilising agricultural yields and for increasing the productivity by intensifying the cropping pattern, in this State, therefore, needs no emphasis. The scope for extension of irrigation is, however, somewhat limited due to the rugged topography of the land.

4. The level of irrigation development in Maharashtra is below the level of most other States. By the end of 1974-75 only 9.9 per cent of the cropped area was under irrigation against 25.5 per cent in the country as a whole. To bring the State abreast of other States, it was essential that the organisation and resources for the programme should be substantially stepped up and the maximum possible use made of the limited water resources available to the State. The Maharashtra State Irrigation Commission which had examined the water resources available had estimated that when all the sources of irrigation are tapped it may be

possible to irrigate an area of 61.94 lakh hectares of which 52.61 lakh hectares would be from surface sources. The Commission had recommended that the entire potential should be exploited by 1980. The ultimate potential, as assessed at present is 70.61 lakh hectares. Since about 1968-69 the intensification of plan activity in the irrigation sector in Maharashtra is in evidence and this State is leading all States since then in respect of annual expenditure on irrigation.

5. Major and Medium irrigation schemes :—

(i) The First Five-Year Plan was of small magnitude. It consisted of two major and 16 medium irrigation schemes only.

(ii) In the Second Plan a fairly significant irrigation programme was undertaken with an outlay of about Rs. 31.19 crores. The programme included 18 spill over schemes of the First plan and 31 new major and medium irrigation schemes. Of these, 8 major and 9 Medium Irrigation Schemes were undertaken in Western Maharashtra, 6 Major and 2 Medium in Vidharbha and 2 Major and 22 Medium Irrigation Schemes in Marathwada.

(iii) Third Five Year-Plan with a financial outlay of Rs. 69.06 crores contemplated continuance of 45 spill over projects carried out from the previous plan and taking up of 27 new schemes. It also provided for common schemes like Flood Control Works, Improvement and Extension of existing works, Survey and Investigation of Irrigation Projects and Irrigation Research. In addition, the building up of the Mechanical Organisation, which has been created for servicing and management of the machinery and for training and maintenance of the cadres of the operators for effective utilisation of machinery was also provided in the plan. Out of the 45 spill over schemes, 36 were physically completed during the Third Plan period and started yielding benefits. Out of the 27 new schemes, Manar Stage II, Managarh, Sangrampur, Wunna, Malangaon, Saikheda and Ghirni were in an advanced stage of construction. Out of Rs. 69.06 crores, an expenditure of Rs. 58.21 crores was incurred during the Third Five-Year Plan.

(iv) During the subsequent Annual Plans, Fourth Plan and Fifth Plan period (Part) from 1966-67 to 1976-77 these works were continued and efforts were made to remove the factors which had earlier created short falls in expenditure.

✓ (v) During 1951 to 1966 only one major project viz. Vir and 23 medium projects were completed and partial benefits from 4 major and 13 medium projects had commenced. During the period 1966 to 1977, 6 major projects viz. Ghod, Girna, Purna, Pus, Bagh and Itiadh and 58 medium irrigation projects were completed. Besides partial potential on 11 major projects viz. (1) Upper Godawari, (2) Khadakwasla, (3) Krishna (Dhom), (4) Kukadi, (5) Bhima (Ujjani), (6) Jayakwadi Stage-I, (7) Kal, (8) Tulshi, (9) Mula, (10) Pench and (11) Jayakwadi Stage-II has been

created and utilisation thereof has also commenced. In addition, partial benefit on 17 medium projects have also accrued.

(vi) During the first three years of the Fifth Five-Year Plan (1974-75 to 1976-77) an additional irrigation potential of 2.20 lakh hectares was created. It is targetted to create an additional irrigation potential 1.30 lakh hectares by June 1978, thereby raising the cumulative potential to 11.87 lakh hectares by the end of June 1978. It is targetted to create an additional irrigation potential of 1.20 lakh hectares by June 1979 i.e. during the first year of the medium term Five-Year Plan commencing from April 1978.

(vii) The programme of Minor Irrigation Works on a large scale is taken to provide irrigation facilities to the areas where irrigation benefits from major and medium projects cannot be had and also to the chronic scarcity and tribal areas. During the past eleven years from 1966 to 1977 potential of 1.96 lakh hectares has been created by State Minor Irrigation Works. During the Fourth Five-Years Plan period the programme of Minor Irrigation Works was very much accelerated and an additional potential of 1 lakh hectares with an investment of 47.90 crore rupees was created as against the target of 68,000 hectares with an outlay of 31 crore rupees. The cumulative potential created by June 1977 was 3.15 lakhs hectares till June 1977, 823 Minor Irrigation Schemes in the State sector were completed and partial benefits on 100 schemes had been realised.

(viii) Plan wise progress of creation of potential by major, medium and State Sector minor irrigation works (Irrigation more than 100 hectares) and expenditure incurred thereon is indicated below :—

Serial No.	Period	Plan outlay (Rs. in crores)	Potential during the period	Cumulative potential (in lakh hectares)
1	2	3	4	5
1	Pre-Plan 1951	16.60	2.74	2.74
2	First Five-Year Plan (1951 to 1956) ..	8.11	0.40	3.14
3	Second Five-Year Plan (1956 to 1961) ..	33.94	0.84	3.98
4	Third Five-Year Plan (1961 to 1966) ..	64.99	1.72	5.70
5	Three Annual Plans (1966 to 1969) ..	59.79	1.48	7.18
6	Fourth Five-Year Plan (1969 to 1974) ..	233.07	3.84	11.02
7	Annual Plan (1974-75)	61.61	1.03	12.05
8	Annual Plan (1975-76)	78.23	0.86	12.91
9	Annual Plan (1976-77)	124.02	1.84	14.75
10	Annual Plan (1977-78) Anticipated ..	165.76	1.55	16.30
11	Annual Plan (1978-79) Budget ..	122.32 *	1.30	17.60

* Exclusive of Employment Guarantee Schemes, share and that for Drought Prone Area Programme and Western Ghat areas for Minor Irrigation Works.

WATER DISPUTES

6. *Godavari Water Disputes.*—As the dispute regarding utilisation of Godavari waters by the States of Maharashtra, Madhya Pradesh, Andhra Pradesh, Karnataka and Orissa could not be settled by mutual co-operation, the Government of India referred this dispute, for adjudication, to a Tribunal in April 1969, under the provisions of Inter-State Water Disputes Act, 1956. The case is being heard by the Tribunal.

Under the auspices of Union Minister for Agriculture and Irrigation, the concerned party States came to an agreement on 19th December 1975 for a partial utilisation of Godavari waters by the concerned States till the decision of the Tribunal in the matter is available. Now the concerned party states are trying to settle the remaining issues of the dispute outside the Tribunal and discussions at the official level are being held. However the next hearing before the Godavari Water Disputes Tribunal was held on 2nd May 1978 and it was decided to meet again on 18th July 1978.

6 (A) *Narmada Water Disputes.*—The dispute regarding development of Narmada water resources amongst the States of Madhya Pradesh, Maharashtra, Gujarat and Rajasthan could not be settled by mutual discussions. The Government of India referred the dispute for adjudication to a Tribunal, in October 1969, under the provisions of Inter-State Water Disputes Act, 1956. The case is being heard by the Tribunal.

The Chief Ministers of the concerned States arrived at an agreement in July 1974 regarding the broad details of availability of Narmada waters and certain allocation to Rajasthan and Maharashtra for irrigation. The main questions now remained to be decided by the Tribunal are—

- (1) the share of Madhya Pradesh and Gujarat in balance of available water ;
- (2) the height of Navagam dam proposed to be built by Government of Gujarat.

The States of Madhya Pradesh, Maharashtra, Gujarat and Rajasthan have put up their respective cases before the Tribunal and the final hearing has been completed on 15th March 1978. The decision of the Tribunal is reserved.

7. *Inter-State Control Board.*—The State of Maharashtra and Madhya Pradesh decided to undertake construction of certain Irrigation and Hydro Projects of common interest to both the States as joint ventures of the two States. With a view to ensuring efficient, speedy and economical investigation and execution of these joint projects, the Government of Maharashtra and Madhy Pradesh constituted an Inter-State Control Board on 28th October 1970. The Board has so far held twelve meetings when problems of development of surface water resources of the Inter-State rivers in the two

States were discussed. The twelfth meeting was held on 22nd September, 1977 at Bombay under the chairmanship of the Chief Minister, Madhya Pradesh.

The two States have already entered into agreements to execute Bagh Irrigation Project, Jalsindhi Hydro Electric Project, Pench Hydro Electric Project, Upper Tapi State-II Irrigation Project as joint projects. Some other projects are also being studied for execution as joint projects, the notable amongst them being Bawanthadi Irrigation Project and Bhopalpatnam Hydro Electric Project.

CHAPTER II

MAJOR AND MEDIUM IRRIGATION PROJECTS

Major Projects (Continuing)

The details of the Major/Medium Irrigation Projects included in the Annual Plan 1978-79 are given below :—

1. *Upper Godavari Project.*—Estimated to cost Rs. 2,449 lakhs (revised) the Project envisages construction of four dams, viz., Karanjwan, Palkhed on Kadwa river, Waghad on Kalwan river and Ozarkhed on Unanda river. The Project will benefit an area of 48,600 hectares from Nasik and Ahmadnagar Districts.

The work of Karanjwan dam, Palkhed dam and 60 Kms. length of Palkhed Left Bank Canal is completed. The work of Ozarkhed dam, Waghad dam, Palkhed Left Bank Canal beyond 60 Kms. and Ozarkhed Canal is in progress. The provision for Upper Godavari Project for 1977-78 was Rs. 435 lakhs, including Rs. 50 lakhs from E.G.S. Additional allocation of Rs. 65 lakhs was given for this Project in February 1978. Against the ultimate potential of 48,000 hectares, a potential of 34,808 hectares will be created by June 1978. A provision of Rs. 325 lakhs has been made for 1978-79.

2. *Upper Tapi Project.*—Hatnur Project estimated to cost Rs. 3,803 lakhs (Revised) envisages construction of a weir across Tapi river near Hatnur Village, taluka Bhusawal in Jalgaon District with a Right Bank Canal of 97 Kms. The Project will benefit an area of 55,230 hectares in Jalgaon District. Against the ultimate potential of 55,230 hectares, potential of 9,700 hectares will be created by June 1978.

The work of Hatnur dam is nearing completion and the canal work between 0 and 65 Kms. is in progress. A provision of Rs. 650 lakhs including Rs. 100 lakhs under E.G.S. was made for 1977-78. A provision of Rs. 475 lakhs has been made for 1978-79.

3. *Khadakwasla Project.*—The project with an ultimate potential of 48,370 hectares and an estimated known cost of Rs. 8424 lakhs, comprises of strengthening of Khadakwasla dam, construction of Panshet dam on Ambi river and Warasgaon dam on Mose river, and construction of New Mutha R. B. Canal construction of Khadakwasla and Panshet Dam is completed. Contract for Warasgaon dam has been awarded in 1976, and the work has commenced since November 1976. During 1978-79 construction of Warasgaon dam will be in progress. Also construction of canal in reach beyond 125 Kms. will be in progress and 16 Kms. Bhigwan Branch Canal will be completed in all respects including distribution system. Potential of 27,200 hectares is targetted to be created by June 1978. An outlay of Rs. 430 lakhs including Rs. 65 lakhs under E.G.S. was made for year 1977-78. Additional allocation of Rs. 70 lakhs and advance plan assistance of Rs. 100 lakhs was given to this project during 1977-78. An outlay of Rs. 475 lakhs has been proposed for 1978-79.

4. *Warna Project.*—A project with an ultimate irrigation potential of 95,630 hectares and an estimated cost Rs. 8,197 lakhs. The project envisages construction of an earthen dam near village Chandoli in Shirala taluka, district Sangli. The Left Bank Canal off taking from the dam is 154 Kms. long. The Right Bank Canal Branches off from the Left Bank Canal in the 26 Kms. and is 194 Kms. long. The work of the project was started in March 1975. At present the work of earthen dam and masonry dam excavation, colony buildings, approach road, canal excavation etc. is in progress. An outlay of Rs. 480 lakhs including Rs. 30 lakhs from E.G.S. was provided during 1977-78. Advance plan assistance of Rs. 175 lakhs was given to this project during 1977-78. An outlay of Rs. 450 lakhs is proposed for the year 1978-79.

5. *Krishna Project.*—A project with an ultimate irrigation potential 1,06,300 hectares and an estimated cost is Rs. 7,131 lakhs. The project envisages construction of three dams viz. Dhom and Arphal on river Krishna and Kanher on river Venna. The canal system comprises of Dhom Left Bank Canal of 92 Kms. long. The Dhom Right Bank Canal 44 Kms. long, the Kanher Left Bank Canal 16 Kms. long and Kanher Right Bank Canal 48 Kms. long and the Arphal Left Bank Canal 169 Kms. long. The progress of various components is as follows :—

(i) *Dhom System.*—Work started in the year 1968. Head works are practically completed. Dhom Right Bank Canal upto 44 Kms. and Left Bank Canal upto 65 Kms. will be completed by the end of 1978-79. Left Bank Canal upto 93 Kms. will be completed in all respects including distribution system. A potential of 30,990 Hectares will be created by June 1978.

(ii) *Kanher System.*—Work on Kanher Dam was started in 1976. Work of earthen dam and canals are in progress.

(iii) *Arphal System.*—Work is in Preliminary stage. Canal alignment survey is in progress. An outlay of Rs. 625 lakhs including Rs. 50.00 lakhs from E.G.S. was provided during 1977-78. An additional allocation of Rs. 125 lakhs and advance plan assistance of Rs. 100 lakhs was given during 1977-78. A provision of Rs. 625 lakhs has been made in 1978-79.

6. *Kukadi Project.*—Kukadi Project comprises five independent storage dams viz. (1) Yedgaon, (2) Manikdoh, (3) Dimbhe, (4) Wadaj, (5) Pimpalgaon Joge. The project is estimated to cost about Rs. 120.38 crores and will create irrigation potential of 1,29,500 hectares on completion.

At present Yedgaon dam is completed and the work on Manikdoh dam is in full swing. The works of Dimbhe and Wadaj dam are also taken up recently. The agency for Dimbhe dam is being finalised. The Kukadi Left Bank Canal Ex-Yedgaon dam is completed upto Kms. 40 out of total length of 253 Kms. irrigation potential of 6,500 hectares is created on Kukadi Left Bank Canal. Additional potential of 7,000 hectares will be created by June 1978.

Expenditure already made on the project upto September 1977 is Rs. 22-07 crores. The allocation for 1977-78 is Rs. 730 lakhs, including Rs. 75 lakhs from E.G.S. and additional allocation of Rs. 170 lakhs and advance plan assistance of Rs. 100 lakhs was given to this project in 1977-78. For the next financial year i.e. 1978-79 the allocation provided is Rs. 755 lakhs. The project is expected to be completed by 1986-87.

7. *Bhima Project*.—The Bhima Project including Pawana component is estimated to cost about Rs. 139-30 crores. There are two components of the project, one is Pawana component and other is Ujjani component. The Pawana Component consists of construction of dam on Pawana river near village Phagne in Mawal taluka of Pune District. There are no direct canals ex-Pawana dam. Instead, 5 Kolhapur type weirs are constructed on down stream from which water is proposed to be lifted for irrigation. The Pawana component is almost completed and irrigation potential of 6,050 hectares is already created.

Regarding Ujjani Component, it is proposed to construct a dam across river Bhima near village Ujjani. The Bhima Project including Pawana Component will irrigate 1,64,050 hectares of land. The work of Ujjani dam is nearly completed and the work of Ujjani Left and Right Bank Canals is in progress. The Ujjani Left Bank Canal is completed upto 40 Kms. and potential of about 4,500 hectares is already created. Additional 7,500 hectares of irrigation potential is likely to be created by June 1978.

Expenditure already incurred on the Project as on December 1977 is Rs. 57-77 crores.

The provision for the financial year for 1977-78 for Bhima Project was Rs. 1225 lakhs including Rs. 125 lakhs from E.G.S. The provision for next year i.e. 1978-79 is Rs. 900 lakhs.

The Project is expected to be completed by 1983-84.

8. *Jayakwadi Project Stage-I*.—The Jayakwadi Project Stage-I envisages construction of a dam near Paithan on river Godavari to irrigate 1,41,640 hectares of land from Aurangabad and Parbhani Districts with Paithan Left Bank Canal of 208 Kms. The revised estimated cost of the project is Rs. 113-58 crores.

The Paithan dam is completed in all respect. The work on Paithan Left Bank Canal is in full swing and completed upto Kms. 122-50. An irrigation potential of 63,120 hectare is already created by June 1977 under Paithan Left Bank Canal. The likely additional irrigation potential by June 1978 is 20,880 hectares.

The upto date expenditure upto December, 1977 on this project is Rs. 80-55 crores. The budget plan provision for year 1977-78 is Rs. 1000 lakhs including Rs. 200 lakhs from E. G. S. Advance plan assistance Rs. 35 lakhs was given during 1977-78 for this project. The provision for the year 1978-79 is Rs. 800 lakhs. The project is planned to be completed by 1981-82.

The World Bank has accepted to give financial assistance of 62 million dollars for Jayakwadi Project (Stage-I and II).

9. *Kal River Project*.—Kal River Project envisages construction of diversion weir across Kundalika river near village Delwahal to divert tail race discharges from Bhira Power house and 158 Kms. canal system on both banks to irrigate 7,966 hectares (net) and 14,339 hectares (cropped) area in Roha and Mangaon Talukas of Kulaba District. The latest estimated cost (probable) of the project is Rs. 750.00 lakhs. The expenditure incurred on the project till March 1977 is Rs. 705.95 lakhs. Outlay for the year 1977-78 was Rs. 10.00 lakhs and that for 1978-79 is Rs. 10 lakhs. The work of construction of diversion weir near village Delwahal is completed in the year 1969. Work on the canal system is in progress and the project is nearing completion. The outlay will be used for the remaining items of the canal and distributories. The ultimate potential of 14,340 hectares will be created by June, 1978.

10. *Tulshi Project*.—Tulshi Project envisages construction of earthen dam across river Tulshi near village Burambe, Taluka Radhanagari of Kolhapur District to impound 2400 Mcft. of water and five Kolhapur type Bandharas on the down stream of the dam to facilitate lifting of the water for irrigation 2800 hectares (Net) and 3160 hectares (cropped) areas of Karvir and Radhanagari Talukas of Kolhapur District. The latest estimated cost of the project is Rs. 691.65 lakhs. The expenditure incurred on the project upto March 1977 is Rs. 556.61 lakhs. Outlay for the year 1977-78 was Rs. 80.00 lakhs and that for 1978-79 is Rs. 25.00 lakhs. The work of five Kolhapur type bandharas is completion. The work of five masonry spillway is nearing completion. The ultimate potential of 3160 hectares will be created by June 1978.

11. *Bagh Project*.—A joint venture between Maharashtra and Madhya Pradesh estimated to cost Rs. 1560 lakhs envisages construction of a dam at village Shirpur and pick up weir at Pujaritola across the Bagh river in Gondia taluka of Bhandara District with a Left Bank Canal 64 Kms. in length entirely in Maharashtra and Right Bank Canal 29 Kms. in Maharashtra and remaining in Madhya Pradesh State. The project will benefit 33,670 hectares in the Gondia Taluka of Bhandara District. The work on the project is almost completed and irrigation benefits have started accruing. The work on Kinhi branch and miscellaneous minor items are in progress. A provision of Rs. 45 lakhs was made for 1977-78. Provision of Rs. 20 lakhs has been made for 1978-79.

12. *Itiadh Project*.—The Project estimated to cost Rs. 918 lakhs envisages construction of an earthen dam across the river Garvi at village Gothangaon in Sakoli taluka of Bhandara District and Right Bank Canal to irrigate lands of about 40,080 hectares in Sakoli and Gadchiroli Talukas of Bhandara and Chandrapur Districts respectively. The Head works of the project is already completed and the project has started giving benefits. The entire work is expected to be completed by June 1978. A provision of Rs. 5 lakhs was made for the year 1977-78. A provision of Rs. 5 lakhs has been made for 1978-79.

13. *Mula Project*.—Mula Project comprises of a dam at Baregaon, Nandur, taluka Rahuri, district Ahmadnagar, and Mula L.B.C. 18 Kms. long and Mula R.B.C. 58 kms. long and Pathardi Branch Canal. The estimated cost of this project is Rs. 2,501 lakhs. The ultimate potential of the project is 79,590 hectares. It is targetted to create a potential of 68,910 hectares by June 1978. Work of the Mula dam and the main canals and the distribution syetem is already completed and water is being utilised for irrigation. The Pathardi branch canal which was introduced later on to serve the drought prone areas of Pathardi taluka is now in progress. For 1977-78 an outlay of Rs. 150 lakhs including Rs. 50 lakhs from E. G. S. was provided. Allotment provided for this work in 1978-79 is Rs. 75 lakhs.

14. *Upper Penganga Project*.—The project envisages construction of two dams viz. an earthen dam across river Penganga near village Isapur, taluka Pusad, district Yeotmal and other dam across river Kayadhu near village Sapli, taluka Kalamnuri, district Parbhani, L.B.C. of 85 kms. and R.B.C. of 177 kms. with one feeder canal of 13 kms. from Sapli Dam are proposed. The estimated cost of this project is Rs. 8,448 lakhs which is Administratively Approved. Revised cost is not yet received. The irrigation potential of the project is 11,15,448 hectares. About 30 per cent. work of Isapur dam is completed by 1977-78 work of Isapur Left Bank Canal is in progress upto 44 kms. Right Bank Canal is in progress upto 21 kms. An outlay of Rs. 700 lakhs including Rs. 140 lakhs from employment Gaurantee Scheme was provided for the year 1977-78. An additional allocation of Rs. 145 lakhs was given during 1977-78. An outlay of Rs. 560 lakhs is provided for 1978-79.

15. *Dudhganga Project*.—Project envisages construction of a Masonry dam across river Dudhganga near village Assangaon, taluka Radhanagiri, district Kolhapur and the Left Bank Canal 222 kms long and Right Bank Canal 190 kms long. The irrigation potential of the project in Maharashtra State is 77,000 hectares. The estimated cost of the Project is Rs. 7,453 lakhs. For this revised cost of Rs. 7,453 lakhs. Administrative Approval is not given. This is an intere-state project between Maharashtra and Karnataka. The project is commenced since 1976. Agency for the masonry dam is finalised and the work is in progress. Miscellaneous works such as construction of buildings, approach road etc. are completed. Excavation for masonry and earthen dam is in progress. An outlay of Rs. 225 lakhs including Rs. 25 lakhs from Employment Gaurantee Scheme was provided in 1977-78. Outlay of Rs. 362 lakhs is provided for the year 1978-79 for this work.

16. *Upper Wardha Project*.—The project estimated to cost Rs. 3,874 lakhs envisages a storage dam near Simbhora village in Amravati district across the river Wardha with Right and Left Bank Canals to irrigate 67,850 hectares cropped area in Amravati and Wardha disticts. The project has been cleared by the planning commission. The preliminary work for the dam at Simbhora have been taken up. A Budget provision of Rs. 150 lakhs was made for 1977-78, including Rs. 25 lakhs from Employment Gaurantee Scheme. A provision of Rs. 175 lakhs has been made for 1978-79.

17. *Manjra Project.*—Project estimated to cost Rs. 2,019 lakhs envisages construction of dam across river Manjra at Dhanegaon, taluka Kaij, district Bhir with two canals viz. Left Bank Canal 95 kms. long and Right Bank Canal 100 kms. long. The ultimate irrigation potential for this project is 23,690 hectares. The work of the project was started in 1974. Dam and head regulator work will be in progress during 1978-79 along with 20 kms. of canal on each flank. 75 per cent work of masonry dam will be completed in 1978-79. An outlay of Rs. 485 lakhs including Rs. 135 lakhs from Employment Guarantee Scheme was provided for the year 1977-78. An additional allocation of Rs. 136 lakhs and advance plan assistance of Rs. 100 lakhs was given during 1977-78. An outlay of Rs. 400 lakhs is provided for 1978-79.

18. *Pench Irrigation Project.*—The project estimated to cost Rs. 4069 lakhs envisages the construction of a dam across the river Pench at village Kamthikhedi in Ramtek taluka of Nagpur district and a Right Bank Canal of 57 kms. and Left Bank Canal of 64 kms. length to irrigate 94,000 hectares of cropped area in Nagpur and Bhandara districts. A potential of 11,600 hectares has been created by June 1977 and an additional potential of 11,000 hectares is irrigated by June 1978. In addition to this, the project is to supply water to the Thermal Power Station at Koradi and also to augment the water supply to Nagpur city.

The Project has been cleared by Planning Commission in October, 1977. The work of Kamthikhedi weir has been started since 1969 as deposit contribution work on behalf of Maharashtra State Electricity Board for supply of water to Koradi Power Station. The work of Kamthikhedi weir and Right Bank Canal is nearing completion. The work of Pench Left Bank Canal is in progress. A provision of Rs. 725 lakhs inclusive of Rs. 150 lakhs under Employment Guarantee Scheme was made during 1977-78. An additional allocation of Rs. 125 lakhs and advance plan assistance of Rs. 500 lakhs was given during 1977-78 for this project. A provision of Rs. 877 lakhs has been made for 1978-79.

19. *Surya Project.*—The project estimated to cost Rs. 2,573.57 lakhs envisages construction of dam near village Dhamni, taluka Jawahar, district Thane with a pick-up weir at village Kawadas and Right and Left Bank Canals. The project will benefit an area of 23,430 hectares of land in Jawahar, Palghar and Dahanu talukas of Thane district. In addition to this, power of 5 MW will be generated at the foot of the dam.

The work of Kawadas weir and canal work are in progress. A Budget provision of Rs. 225 lakhs including Rs. 25 lakhs under Employment Guarantee Scheme was made for 1977-78. Advance plan assistance of Rs. 75 lakhs was given during 1977-78 to this project. A provision of Rs. 200 lakhs has been made for 1978-79.

20. *Waghur Project.*—The project estimated to cost Rs. 1,493 lakhs envisages construction of a dam on Waghur River near village Raipur, taluka Bhusawal of Jalgaon district. The Project will benefit 23,580

hectares in Jalgaon district. The preliminary work of project works are in progress. A provision of Rs. 85 lakhs including Rs. 25 lakhs from Employment Gurantee Scheme was made for 1977-78. The provision of Rs. 50 lakhs has been made for the year 1978-79.

21. *Jaykwadi Project, Stage-II*.—The Jaykwadi Project, Stage-II includes construction of (i) Paithan Right Bank Canal of 132 kms., (ii) Majalegaon dam, (iii) Majalegaon Right Bank Canal of 165 kms. The estimated cost of the project is Rs. 8,890 lakhs. The total irrigation potential is 1,35,570 hectares.

At present the work on Paithan Right Bank Canal is in full swing. The canal is completed upto kms. 20 out of 132 kms. An irrigation potential of 3,000 hectares is already created by June, 1977. Additional irrigation potential of 5,500 hectares will be created by June 1978. The work of Majalegaon dam is recently started.

The total expenditure of Rs. 10.09 crores is incurred on this project upto December, 1977. The provision for 1977-78 for the project is Rs. 665 lakhs including Rs. 185 lakhs from Employment Gurantee Scheme. Advance plan assistance of Rs. 315 lakhs was given during 1977-78 for this project. The provision for 1978-79 is Rs. 450 lakhs.

The Paithan Right Bank Canal upto Majalegaon dam is included in the component of Jaykwadi Project (Stages I and II) for which World Bank loan of 62 million dollars has been approved.

The date of completion of the project is expected to be 1984-85.

22. *Upper Pravara (Nilwande)*.—This is an irrigation project with a dam near village Nilwande and Left Bank Canal about 80 kms. long off taking from the dam. The ultimate potential is 19,533 Hectares. The work of construction of Dam is in initial stage. Canal work was undertaken during the scarcity period and is in progress. During 1977-78 an outlay of Rs. 225 lakhs including Rs. 50 lakhs from Employment Gurantee Scheme was made. The outlay of Rs. 75 lakhs is provided for 1978-79.

23. *Upper Tapi Project, Stage-II*.—Upper Tapi Project, Stage-II contemplates construction of two dams across the river Tapi (1) Dam at Kharia Gutighat as Main Storage, (2) The lower dam at Nawatha purely for diversion, (3) Left Bank Canal Ex. Kharia dam, (4) Right Bank Canal Ex. Nawatha Dam, (5) Extension of Hatnur Right Bank Canal beyond Aner River upto Gomai River. Power Development is also contemplated at Kharia dam and Nawatha Weir. Stage-II project has an inter-state aspect of Madhya Pradesh and Maharashtra States as water resources in Upper Tapi Valley will benefit both Madhya Pradesh and Maharashtra States. Irrigation Potential contemplated in Madhya Pradesh is 46,691 hectares and that in Maharashtra 59,849 hectares.

The total estimated cost of Stage-II is Rs. 8,793 lakhs, as per the project report prepared in January, 1974. Share of Maharashtra has not been decided.

A provision of Rs. 25 lakhs. was made during 1977-78 for this project. A provision of Rs. 10 lakhs is made for 1978-79.

24. *Kalisar Project.*—The project is estimated to cost Rs. 322.451 lakhs. This is an inter-state project of Maharashtra and Madhya Pradesh. The project envisages construction of a dam across Kalisara Nalla near Mahajantola in Gondia taluka of Bhandara district. The water stored will be diverted through Bagh canals to benefit 3,522 hectares in Maharashtra. A provision of Rs. 50 lakhs including Rs. 25 lakhs from Employment Guarantee Scheme was made for 1977-78 to enable undertaking preliminary works. A provision of Rs. 10 lakhs has been made for 1978-79.

25. *Bawantthadi Project.*—The project estimated to cost Rs. 2347.26 lakhs (Maharashtras share Rs. 1165.52 lakhs) envisages construction of a dam near Sitakesa village in Bhandara taluka of Bhandara district with two canals on either bank benefiting 25,300 hectares in Maharashtra on Right Bank. The project has been submitted to the Planning Commission for clearance in July, 1975. Both the States have accorded Administrative Approval to their shares. The work was taken up as a scarcity work. A provision of Rs. 50 lakhs inclusive of Rs. 25 lakhs under Employment Guarantee Scheme was made during 1977-78. A provision of Rs. 10 lakhs has been made for 1978-79.

26. *Tillari Irrigation Project.*—The Tillari Irrigation Project contemplates construction of a storage on the river Tillari at Upper Tillariwadi, taluka Sawantwadi, district Ratnagiri with a pick-up weir on Kharari nalla to divert tail race discharge of Tillari Hydro-Electric Project. This is an inter-State Project between State of Maharashtra and Union, territory of Goa. The project will benefit both Maharashtra State and Goa territory. Irrigation contemplated in Maharashtra is 7,528 hectares and 29,340 hectares in Goa territory. The total estimated cost of the project is Rs. 4,787 lakhs as per the project report prepared in January, 1977. The share of Maharashtra is tentatively worked out as Rs. 957 lakhs. A provision of Rs. 10 lakhs was made in 1977-78. A provision of Rs. 10 lakhs is made in 1978-79.

27. *Vishnupuri (Lower Godavari).*—Vishnupuri project has been administratively approved by Government for Rs. 399.61 lakhs on 1st March 1978. Project envisages construction of a barrage on river Godavari near Vishnupuri village in Nanded district. Arrangements for lifting the water will have to be done by co-operative and private efforts. Water impounded in the weir is expected to irrigate 10,960 hectares. Project will also provide water supply to Nanded town. Preliminary works are in progress. A Budget provision of Rs. 150 lakhs, including Rs. 25 lakhs from Employment Guarantee Scheme was initially made for this project in 1977-78. This was, however, subsequently frozen by Finance Department as the Administrative Approval to the Project was not given till March 1978. Budget provision of Rs. 50 lakhs is made for 1978-79.

28. *Sawargaon Project*.—The Sawargaon Project was under investigation. It has now been decided to investigate an alternative dam site near Gosikhurd on Wainganga river in Bhandara District. As the investigation for the alternative sites have been recently taken up, no details are available at this stage.

A provision of Rs. 30 lakhs, including Rs. 10 lakhs from Employment Guarantee Scheme was made during 1977-78. A provision of Rs. 1 lakh is made during 1978-79.

29. *Chaskaman*.—The Project, estimated to cost Rs. 22,47.55 lakhs envisages construction of Dam across River Bhima near village Bibi, Taluka Khed, District Pune, with Left Bank Canal 127 Kms. long. Irrigation Potential of the Project is 36,430 Hectares. The Project work is started in April 1977 and is in initial stages. Preliminary works are in progress. An outlay of Rs. 75 lakhs including Rs. 40 lakhs from Employment Guarantee Scheme was made during 1977-78. An outlay of Rs. 5 lakhs is provided for 1978-79.

30. *Nira-Natambi Project*.—The project contemplates construction of a storage dam on the river Nira upstream of the existing Vir Dam.

The scope of the project is yet to be decided and hence no details can be given at this stage.

A provision of Rs. 10 lakhs, including 5 lakhs from Employment Guarantee Scheme was made during 1977-78. A provision of Rs. 1 lakh is made during 1978-79.

31. *Nandur Madmeshwar Project*.—Latest estimated cost is Rs. 5085 lakhs. Ultimate irrigation potential 51,850 hectares. The project benefits Nashik, Ahmadnagar and Aurangabad Districts. It envisages construction of four storage dams in Darna Valley, and a Left Bank Canal taking off from the existing Nandur Madmeshwar weir on river Godavari and also canals taking off from one of the Upper storages i.e. Bhavli. The project will irrigate 51,850 hectares including follow-on crops of land annually from Nashik, Ahmadnagar and Aurangabad Districts, at an estimated cost of Rs. 50.85 lakhs. The project report has been submitted to Central Water Commission and is yet to be approved by the Planning Commission. A provision of Rs. 25 lakhs including Rs. 15.00 lakhs from E.G.S. was made during 1977-78. A provision of Rs. 25 lakhs is made for 1978-79.

NEW MAJOR PROJECTS

32. *Sina Kolegaon Project*.—The Project envisages construction of a dam across Sina river near village Awati, taluka Karmala of Solapur District. The gross storage is about 173 M. cum. Estimated cost is Rs. 14.87 lakhs. The project will bring about 13,260 hectares of cropped area in Solapur District under Irrigation. A provision of Rs. 1.00 lakh has been made for this new work for the year 1978-79. The project is yet to be administratively approved.

33. *Poshir Project.*—The project envisages construction of a dam Poshir River near village Karung, Taluka Karjat, District Kulaba. The gross storage is about 281 M. cum. The estimated cost is Rs. 8.04 lakhs. The project will bring under irrigation about 11,350 Hectares of cropped area in Kulaba Taluka. A provision of Rs. 1.00 lakh has been made for this new work for the year 1978-79. The project report is yet to be approved by Government.

34. *Lendi Project.*—The project envisages construction of a dam across Lendi Nalla in Manjara basin. The gross storage is 208 M. cum. This is an interstate project between the states of Maharashtra and Andhra Pradesh. The estimated cost is about Rs. 12.50-38 lakhs and the project will bring cropped area of 19,580 hectares under irrigation. The project report is yet to be approved by Government of Maharashtra and Andhra Pradesh. A provision of Rs. 1.00 lakh for this new work has been made for the year 1978-79.

35. *Lower Dudhna Project.*—The project envisages construction of a dam across Dudhna river in Godavari basin, near Bramhawakdi village in Taluka Pathri of Parbhani District. The gross storage is 345 M. cum. and live storage is 242 M. cum. The estimated cost of this project is Rs. 22.30-00 lakhs and this will bring cropped area of 29,800 hectares under irrigation. The project report is yet to be approved by Government. A provision of Rs. 1.00 lakh for this new work has been made for the year 1978-79.

36. *Lower Penganga Project.*—The project envisages construction of a dam across Penganga River near Village Chikaldhara in Taluka Kelapur of Yeotmal District. The gross storage is 887 M. cum. This Project is an interstate project benefitting this state, as well as state of Andhra Pradesh. The estimated cost of this project is about Rs. 4287 lakhs and it will bring cropped area of about 1,12,910 hectares under irrigation. The project report is yet to be approved by both the States. A provision of Rs. 1.00 lakh for this new work has been made for the year 1978-79.

37. *Lower Tirna Project.*—The Project envisages construction of dam across river Tirna upstream of village Makul in Osmanabad District. The Administrative Approval was accorded to this project on 1st November 1977. The estimated cost of the project is Rs. 20.03-36 lakhs and it will bring 20,260 hectares of gross cropped area from Osmanabad District under irrigation. A provision of Rs. 1.00 lakh for this new work has been made for the year 1978-79.

MEDIUM IRRIGATION PROJECTS

Annual Plan 1978-79.

It is proposed to include 146 Medium Irrigation Projects estimated to cost Rs. 310.76 crores in the annual plan for 1978-79. There is a provision of Rs. 17.49 crores for these schemes.

2. Of the 146 Medium Irrigation Projects, 50 Nos. of Medium Schemes costing Rs. 129.99 crores, have been cleared by the Planning Commission vide Annexure I. These schemes carry a provision of Rs. 7.33 crores.

3. The remaining 96 schemes, costing Rs. 180.79 crores are yet to be cleared by the Planning Commission, and carry a provision of Rs. 10.16 crores.

4. Of the above 146 Nos. of schemes, 28 schemes which have been practically completed and full potential created, carry a provision of Rs. 0.59 crores for liquidating the liabilities. These schemes estimated to cost of Rs. 51.79 crores have created a potential of 1,32,000 hectares.

5. It is proposed to start 25 new projects for which Rs. 0.39 crores are provided. These projects with an estimated cost of Rs. 47.02 crores will create about 52,000 hectares of irrigation potential.

6. There are 93 Medium Irrigation Schemes estimated to cost Rs. 211.95 crores, which are at various stages of construction. These schemes have been provided with Rs. 16.51 crores for continuing their works.

7. *Tribal Sub-Plan*.—Government have laid particular importance for the schemes benefitting tribal areas. The details indicated above for the Annual Plan 1978-79 include 24 Nos. Medium Projects benefitting Tribal areas. The outlays proposed for these Schemes is Rs. 3.31 crores. These schemes when completed will benefit about 52,000 hectares in the tribal area.

ANNEXURE I

Medium Irrigation Projects to be included in the Annual Plan, 1978-79.

I—Approved by Planning Commission

Serial No.	Name of Project	District	Estimated cost	Proposed outlay for 1978-79
1	2	3	4	5
			(Rs. in lakhs)	(Rs. in lakhs)
1	Amba Valley	Kulaba	1000.00	16.00
2	Bhojapur	Nashik	185.69	0.10
3	Haranbari	Do.	415.63	28.55
4	Kelzar	Do.	239.25	13.50
5	Chankapur	Do.	328.91	1.10
6	Dinanadi	Chandrapur	511.56	5.00
7	Amalnala	Do.	350.00	40.00
8	Chargaon	Do.	312.00	55.00
9	Chandinala	Do.	98.89	44.00
10	Nirguna	Akola	240.98	2.00
11	Pimpri Barvat (Aran)	Do.	377.88	50.00

I—Approved by Planning Commission

1	2	3	4	5
			(Rs. in lakhs)	(Rs. in lakhs)
12	Katepurna	Do.	531-91	5-00
13	Uma	Akola	124-64	22-00
14	Kanholi (V)	Nagpur	288-68	8-00
15	Kesarnala	Do.	46-65	1-00
16	Khekranala	Do.	231-97	8-00
17	Chandrabhoga	Do.	105-16	4-00
18	Kolar	Do.	373-91	1-00
19	Mordham	Do.	74-05	6-00
20	Aner	Dhule	836-00	63-13
21	Burai	Do.	221-72	1-00
22	Panzara	Do.	319-06	1-00
23	Bori	Jalgaon	309-28	19-48
24	Suki	Do.	519-10	27-13
25	Taklinala	Yeotmal	56-96	0-50
26	Waghadi	Do.	250-68	56-25
27	Goki	Do.	416-26	60-00
28	Nagzari	Nanded	81-82	8-00
29	Karadkhed	Do.	111-29	2-00
30	Kudala	Do.	44-54	1-00
31	Manar Stage-I	Do.	316-48	3-00
32	Manar Stage-II	Do.	345-97	3-00
33	Dham	Wardha	498-30	35-00
34	Panchadhara	Do.	101-87	2-00
35	Sakhalinala	Amaravati	83-73	6-00
36	Yeralwadi	Satara	286-08	5-00
37	Ulup (Ramganga)	Osmanabad	73-20	1-00
38	Jakapur	Do.	181-93	5-00
39	Watephal (Khandeshwar)	Do.	99-35	20-00
40	Sina	Ahmadnagar	560-94	27-00
41	Adhala	Do.	255-91	3-00
42	Sindhewadi	Sangli	86-19	5-00
43	Nazare	Pune	128-00	2-00
44	Chulband	Bhandara	119-40	8-00
45	Pangaon Hingni	Solapur	279-10	20-00
46	Paldhag (Paidag)	Buldhana	107-33	1-24
47	Dongaragaon	Nanded	106-10	8-25
48	Mandohol	Ahmadnagar	178-18	0-50
49	Basappawadi	Sangli	97-48	27-00
50	Pendharinala	Nagpur	87-11	1-00
51	Pakadi Gudam			
	(Not included in the budget).			

II—Un Approved Schemes

1	2	3	4	5
			(Rs. in lakhs)	(Rs. in lakhs)
1	Bhatsa (Irrgn)	... Thane	622-47	50-00
2	Wandri	... Do.	325-71	43-25
3	Ghatshil	... Ahmadnagar	117-74	3-00
4	Taklibhan	... Do.	66-69	0-50
5	Erdha	... Do.	167-96	1-00
6	Kalu	... Do.	276-26	0-10
7	Ambhidhumala	... Do.	28-74	0-10
8	Khairi	... Do.	219-14	0-10
9	Tavarja	... Osmanabad	268-71	50-00
10	Whati	... Do.	100-05	15-00
11	Shahajani Aurad	... Do.	30-71	20-00
12	Turori	... Do.	94-48	5-00
13	Bokardi	... Do.	119-61	1-00
14	Deorjan	... Do.	117-29	1-00
15	Rui	... Do.	129-12	1-00
16	Waki	... Do.	85-51	1-00
17	Arsuli	... Do.	100-40	1-00
18	Giratsal	... Do.	46-10	1-00
19	Masalga	... Do.	170-00	1-00
20	Badur	... Do.	55-25	1-00
21	Raigwan	... Do.	162-87	1-00
22	Masoli	... Parbhani	190-99	28-00
23	Karpara	... Do.	112-31	0-10
24	Natuwadi	... Ratnagiri	637-00	90-00
25	Gadnadi	... Do.	389-40	0-50
26	Talera	... Do.	159-84	0-50
27	Deogad	... Do.	1326-36	0-25
28	Chiknotri	... Do.	274-55	0-25
29	Dup	... Do.	439-70	0-25
30	Alandi	... Nashik	275-07	17-00
31	Girna (Panzan)	... Do.	355-74	21-50
32	Punad	... Do.	393-33	5-00
33	Koradi	... Buldana	250-28	70-00
34	Mas	... Do.	201-90	13-00
35	Mandava	... Do.	60-43	25-00
36	Lower Pus	... Yavatmal	501-00	20-00
37	Deogaon	... Do.	59-94	0-50
38	Antargaon	... Do.	76-36	1-50
39	Lahuki	... Aurangabad	114-06	10-00
40	Ambadi	... Do.	158-97	21-25
41	Kalyan	... Do.	176-98	0-10
42	Girija	... Do.	238-07	1-00
43	Purna (Neupur)	... Do.	146-03	—
44	Anjana (Palshi)	... Do.	246-89	—

II—Un Approved Schemes—contd.

1	2	3	4	5
			(Rs. in lakhs)	(Rs. in lakhs)
45	Tembapuri	Aurangabad	233-46	—
46	Waghrol	Do.	233-79	—
47	Ajantha Andhari	Do.	85-05	—
48	Pethawadaj	Nanded	130-42	6-00
49	Mahalingi	Do.	45-59	4-00
50	Talni	Do.	147-11	1-00
51	Loni	Do.	111-49	7-00
52	Jawalgaon (Hatiz Hingni)	Solapur	381-42	21-00
53	Kundalika	Beed	266-99	24-00
54	Saraswati	Do.	99-90	25-00
55	Borna	Do.	110-62	16-00
56	Belpara	Do.	115-65	2-00
57	Waghe Babulgaon	Do.	93-88	1-00
58	Makardhokra	Nagpur	169-44	40-00
59	Khumarinala	Do.	73-84	1-00
60	Sonal	Akola	222-60	60-00
61	Motsawanga	Do.	44-66	0-25
62	Morna (V)	Do.	197-21	1-50
63	Giroli	Do.	42-87	0-25
64	Ekburji	Do.	—	0-25
65	Shekadari	Amravati	78-70	23-10
66	Malkhed	Do.	—	0-40
67	Chikotra	Kolhapur	482-49	16-00
68	Gudavale	Do.	303-86	—
69	Jangamhatti	Do.	132-74	—
70	Kasari	Do.	615-18	2-00
71	Kadvi	Do.	347-30	16-00
72	Kumbhi	Do.	304-16	1-00
73	Jambhai	Do.	—	1-00
74	Rengepar	Bhandara	44-84	4-00
75	Betekar Bothali	Do.	49-27	7-00
76	Umarzari	Do.	69-16	0-50
77	Kalimatitola	Do.	124-53	0-50
78	Chennanadi	Chandrapur	182-56	0-50
79	Labansarad	Do.	139-18	38-00
80	Morna (W. M.)	Sangli	176-85	34-00
81	Doddanala	Do.	95-67	26-00
82	Pothra	Wardha	213-24	26-00
83	Bor	Do.	—	2-75
84	Abhora	Jalgaon	115-54	5-00
85	Mangrul	Do.	107-16	5-00
86	Mor	Do.	122-90	5-00
87	Bahula	Do.	266-42	5-00
88	Bhokarbari	Do.	66-89	5-00
89	Hivra	Do.	198-38	5-00

II—Un Approved scheme—contd.

1	2	3	4	5
			(Rs. in lakhs)	(Rs. in lakhs)
90	Agnavati	Jalgaon	46.74	5.00
91	Tondapur	Do.	84.52	5.00
92	Rangavali	Dhule	237.50	36.00
93	Yeoti Masoli	Satara	132.50	—
94	Andhali	Do.	114.85	—
95	Nher Tank	Do.	—	4.00
96	Wadivle	Pune	330.11	5.00
			18079.24	1016.75

World Bank Assistance for Major and Medium Irrigation Projects.

Composite Major Irrigation Project comprising of following six Major Irrigation Projects is posed to World Bank for loan assistance :—

- (i) Bhima.
- (ii) Kukadi.
- (iii) Krishna.
- (iv) Warna.
- (v) Upper Penganga.
- (vi) Upper Wardha.

The work of preparation of a project report on this composite Major Irrigation Project, for appraisal by World Bank has been entrusted to Water and Power Development Consultancy Services (India) Limited, which is a Government of India undertaking. World Bank Missions have visited these six projects in November-December 1977, and March 1978 and also had detailed discussions with the various officers of Irrigation Department, Agriculture Department, and Planning Department, of the State regarding the project preparation and collection, compilation and analysing of data required by the World Bank for project appraisal. The expenditure that would be incurred on these six projects including that on Command Area Development Works, on these six projects during a period of five years from 1st April, 1979, would be eligible for loan assistance by the World Bank after an agreement is reached with the World Bank for loan assistance to these six projects.

CHAPTER III

MINOR IRRIGATION WORKS (STATE SECTOR) AND LIFT IRRIGATION

Minor Irrigation Schemes

Minor Irrigation Works in the State Sector received a considerable impetus during the fourth plan. In order to spread irrigation benefits to large areas of the State, the programme of Minor Irrigation Works, has been intensified in the recent years particularly in the areas which are not or cannot be served by major and medium projects and in Adivasi and Chronically drought affected areas of the State. Financial Limits laid down by Government of India, for Minor Irrigation schemes was Rs. 25.00 lakhs for plain area and Rs. 30.00 lakhs for hilly area. However, from April 1978, schemes having irrigation potential upto 2,000 hectares Culturable Command Area have been classified as Minor Irrigation Schemes.

2. An amount of Rs. 47.80 crores was spent during the fourth plan period of State Sector, Minor Irrigation Works, creating a potential of 1 lakh hectares.

3. In the draft Fifth-Five Year Plan, for the State Sector, Minor Irrigation Works, a provision of Rs. 97 crores was proposed for creating potential of 1.28 lakh hectares. This was further revised and provision has been reduced to Rs. 63.73 crores. With reduced provision the potential has also come down from 1.28 lakh hectares to 0.90 lakh hectares. The actual provision for the first three years is Rs. 31.73 crores only.

4. An outlay of Rs. 12.16 crores was approved for the year 1977-78 in consultation with District Planning Development Council. Out of the 567 schemes in progress during 1976-77, the canal work of 73 works (whose gorge filling was completed in June 1975), was practically completed during the year. The remaining work on canal of 62 Minor Irrigation Works, whose gorge filling has been completed in June 1976, was under progress in the year 1977-78. In addition to these, gorge filling of about 80 works is expected to be completed by June 1978. Additional potential to be created will be 15,000 hectares. In addition (gross) to the outlay of Rs. 12.16 crores an additional assistance of Rs. 1.50 crore under Normal Plan and Rs. 1.00 crores under Tribal Sub-Plan was released from the Government of India to speed up the works in progress.

5. During the year 1977-78 there was a provision of Rs. 90.00 lakhs for 19 Minor Irrigation Schemes under Western Ghat Development Programme and Rs. 232.18 lakhs for 64 Minor Irrigation Schemes under Drought Prone Area Programme.

6. During the 1978-79 an outlay of Rs. 6.41 crores for 387 continuing schemes under Normal Plan has been approved. In addition, an outlay of

Rs. 1.68 crores for 74 continuing Minor Irrigation Schemes under Tribal Sub-Plan has been approved. It is proposed to provide Rs. 6.7 lakhs for new Minor Irrigation Schemes, under Normal Plan, and Rs. 5.50 lakhs for new Minor Irrigation Schemes under Tribal Sub-Plan.

Lift Irrigation Schemes.

For speeding up creation of Irrigation facilities in Maharashtra, the State Government set up the IDCOM Ltd., in November 1973, under the Company's Act, 1956 with an authorised share capital of Rs. 20 crores. The Minister (Irrigation) is the Chairman of the Corporation which has 19 other Directors.

338 Lift Irrigation Schemes have so far been completed, against the 366 Lift Irrigation Schemes handed over to the corporation by Government on 1st January 1974, for completion, maintenance and operation. The work on the remaining schemes is in progress and they will be completed by end of June 1978. On completion of 366 Lift Irrigation Schemes total irrigation potential of 1,12,344 hectares (cropped) will be created. The expenditure to the tune of Rs. 1,637.28 lakhs has so far been incurred on these Lift Irrigation Schemes. The question of taking up new Lift Irrigation Schemes by IDCOM is under consideration of Government. A provision of Rs. 25 lakhs has been made as capital contribution to IDCOM for piped distribution system in Sangli District. A loan of Rs. 176.25 lakhs is provided for M. and R. including the expenditure on payment of loan and interest during the year 1977-78 and also to cover the gap between receipts and the expenditure.

Efforts to obtain loan from Commercial Banks are being made. So far, in all Rs. 7,96,54,428 have been sanctioned from the Commercial Banks to the corporation for the Lift Irrigation Schemes.

CHAPTER IV

STEPS TAKEN TO ACCELERATE THE PACE OF IRRIGATION DEVELOPMENT

(1) *Survey and Investigation of Major and Medium Irrigation Schemes in the State.*—For investigation and preparation of project reports of major and medium irrigation projects, Irrigation Department has two Special Investigation Circles two other Circles and eleven Divisions spread out in the entire State. Through this organisation the State Government is accelerating survey and investigation activities of irrigation projects and keep stock pile of project reports ready for implementation in future plan programmes. This is quite a substantial work which requires to be completed expeditiously. As a matter of fact, more than 35 major irrigation schemes and more than 230 medium irrigation schemes are in various stages of investigation during 1977-78 and the said activities will be continued during 1978-79. The State Government also takes assistance of the Geological Survey of India and the Survey of India for survey and investigation of irrigation projects. In addition to the survey and investigation of major and medium schemes, the survey organisation also looks after installation and maintenance of hydrological observation stations and collection and compilation of data at these stations and preparation of Master Plans for all the river basins in the State.

During the year 1977-78, Government has finalised 2 Major Projects and 35 Medium Projects and State Government has submitted 13 Medium Projects to Government of India for clearance. During this period the Government of India has cleared three major schemes (viz. Upper Pravara, Chaskman and Pench), and five medium schemes (viz. Mandohol, Basarpawadi, Pendhari Nalla, Dongargaon and Pakadigudam).

Special efforts were made to obtain the clearance to the above projects pending with Government of India and such efforts will be continued to obtain clearance to the remaining projects.

Plan provision for survey and investigation activities during 1977-78 was Rs. 105 lakhs. This important activity will be continued vigorously during 1978-79 so that the project reports of feasible projects are expeditiously prepared and included in the development plan of the State.

(2) *Mechanical Organisation.*—A specialised mechanical organisation has been set up for execution of earthwork and for providing various types of gates on various irrigation projects. The primary functions are : (a) operation, maintenance and repairs of the heavy earthmoving equipment including vehicles and boring machinery, (b) the centralised manufacture of sluice gates and heavy radial gates for waste weirs and (c) the procurement of spare parts required for machinery used by the Irrigation Department. The heavy earthmoving machinery is maintained and operated on various projects sites. This organisation has also established workshops at Dapori, Pune.

Nanded and Akola, while two more sub-divisional workshops are functioning at Nasik and Satara. The Government Central Workshop and Stores, Nagpur, has been transferred to this Department, by the Industries, Energy and Labour Department with effect from 1st October 1974 for its better utilisation. So also for their better utilisation, the Agricultural Engineering District Workshop at Bhandara, Wardha, Satara and Ahmednagar, have been transferred to this Department by the Agriculture Department with effect from 1st July 1975 on the condition that this department undertakes their work on payment. With the expansion of activities of the mechanical organisation a central pool of machinery has been created and it is functioning from 1st April 1967. Since January 1974 however, machinery costing over Rs. 25,000 has been transferred to the Irrigation Development Corporation of Maharashtra Limited, Pune which is a Government of Maharashtra undertaking.

The former Mechanical Circle has been split up into three Circles, viz. Mechanical Circle (Construction Plant), Pune, Mechanical Circle (Construction Plant), Nanded and Mechanical Circle Gates), Pune, to cope up with the increased workload of the organisation. Recently, one more mechanical circle has been opened at Kolhapur. The present capacity of production of earthwork by the Mechanical Organisation during working season 1977-78 on various projects is of the order of 450 Mcft. and 2,500 tonnes of fabrication and erection of various types of steel gates.

(3) *Central Designs Organisation*.—A large number of irrigation projects was under taken in the Five Year Plans. A need was therefore felt of a special organisation for designing of major projects. Accordingly, the Central Designs Organisation was established in 1957

2. In the beginning there were two Superintending Engineers, eight Executive Engineers and thirty-two Deputy Engineers in the organisation. As the number of works and the scope increased it became necessary to strengthen the organisation. However, having gained the experience of preparing the designs, the capacity of the organisation also increased and it was therefore, not necessary to strengthen the organisation though the number of major irrigation projects in the Five-Year Plans or the yearly expenditure thereon increased.

3. At present there are three Superintending Engineers, seventeen Executive Engineers and sixty-three Deputy Engineers. Out of these, two Superintending Engineers are working at Nasik while one is working in New Bombay.

4. Apart from this there is a designs organisation for designs of Power Houses at Pune consisting of one Superintending Engineer, five Executive Engineers and twenty-three Deputy Engineers.

5. On completion of buildings at Nasik all the S.E.s are likely to start functioning at Nasik from about May 1978. Apart from the designs work of Major Irrigation Projects the work of designs of Medium Irrigation Projects is also done by the organisation according to the necessity and

nature of work. So also the type designs of medium and minor works, which can be conveniently used every-where are prepared in the organisation.

(4) *Command Area Development Authority*.—The Government of Maharashtra has set up five Command Area Development Authorities for the following groups of projects in the State :—

- (1) Purna-Jayakwadi Projects Aurangabad.
- (2) Ghod-Bhima Projects, Pune.
- (3) Girna-Upper Tapi (Hatnur) Projects, Jalgaon.
- (4) Krishna Project, Satara.
- (5) Bagh-Itadoh-Pench Projects, Nagpur.

A High Power Sub-Committee of the Cabinet lays down policies and guidelines for the integrated development programme for the command areas, reviews the progress of work being carried out and gives directions on the problems facing the effective implementation of the activities in the command areas of CADA projects.

2. A super time scale (L.A.S.) Officer functions as Command Area Development Commissioner and Secretary in Mantralaya to co-ordinate work expected of the various Government departments at Mantralaya level. At present, the post is vacant and the Secretary, Agriculture and Co-operation Department (Agriculture) is holding additional charge of the post of Command Area Development Commissioner and Secretary to Government Irrigation Department.

3. Each Command Area Development Authority has a Board with the Minister of the region in which the project lies as its President. The Board has to approve the annual programme of the Command Area Development Authority, review its implementation, effect co-ordination between the different departments and development agencies connected with the activities in the command areas of CADA projects. Board has full powers to take decisions pertaining to the development of command areas within the limit of annual plan, budget provision and subject to the general policy directions given by the Government from time to time.

4. Each Command Area Development Authority Board has an Executive Committee consisting of a Chairman and some members to attend day-to-day matters relating to activities under CADA and to take decision on them. A full time officer appointed as Administrator in each Command Area Development Authority is responsible for integrated development of the command area in his charge.

5. Due to the efforts made by the Command Area Development Personnel in close co-operation with the Agriculture and Co-operation Department, Personnel and active involvement of the cultivators in the command area of CADA projects, the irrigation utilisation on CADA projects has been increasing fairly. The figures of utilisation on CADA projects from 1974-75 to 1976-77 and anticipated during 1977-78 are given below. The

figures of actual utilisation during 1977-78 will be available after 1st July, 1978 as the Irrigation Year is from 1st July to 30th June.

Year	Area irrigated on CADA Projects in Hectares
1974-75	81,788
1975-76	1,40,500
1976-77	1,88,020
1977-78	2,78,760

(anticipated utilisation).

6. Plan provision for 1977-78 was Rs. 64.27 lakhs i.e. Rs. 1.50 lakhs for CADA establishment in Mantralaya and 62.77 lakhs for CADA break-up of which is given as under :—

	Rs. in lakhs
(1) Administration, CADA for Purna Jayakwadi Projects, Aurangabad.	38.58
(2) Administrator, CADA for Ghod Bhima Projects, Pune.	9.64
(3) Administrator, CADA for Krishna Projects, Satara.	4.73
(4) Administrator, CADA for Girna-Upper Tapi (Hatnur) Projects, Jalgaon.	5.00
(5) Administrator, CADA for Bagh-Itiadhoh-Pench Projects, Nagpur.	4.82

62.77

Under CADA for Purna-Jayakwadi projects, Aurangabad, activities viz. Trial-cum-demonstration farm at Viha-Mandva, implementation of Paithan-Shahagad Road, other road works in Purna command drainage works, extension and improvement to Purna Project were undertaken. The expenditure on office of the Administrator is also covered under the plan provision. Under CADA for Ghod-Bhima Projects, Pune, extension and improvement to Ghod Projects and Socio-Economic Survey in the command of Bhima (Ujjani) Project were undertaken. Expenditure on the office of the Administrator is also made from the plan allocation. Under CADA for Girna-Upper Tapi (Hatnur) Project, Jalgaon, Socio-Economic Survey in the command area of Upper Tapi (Hatnur) Projects, Jalgaon was undertaken. Afforestation of canals of Girna Project was also undertaken. Expenditure on the office of the Administrator is also met from the plan allocation. Under CADA for Krishna Project, Satara Socio-Economic Survey in the command area of Krishna Project has been undertaken and the cost of the establishment of the office of the Administrator is also covered under the plan allocation. Under CADA for Bagh-Itiadhoh-Pench Projects, Nagpur, the works relating to Trial-cum-Demonstration farm at Malhi and Socio-Economic Survey and Agriculture Extension in the command areas of Bagh

and Itiadho Projects in Chandrapur and Bhandara Districts were undertaken. The expenditure on the office of the Administrator is also met from the district plan allocations for CADA.

7. Out of the plan allocation of Rs. 62.77 lakhs, for 1977-78, unbudgetted plan allocation of Rs. 14.52 lakhs was earmarked on certain items. However, the Government decided to divert the unbudgetted plan allocations for meeting the expenditure on village water supply schemes. This unbudgetted plan allocation of Rs. 14.52 lakhs could not, therefore, be utilised during 1977-78.

8. For 1978-79, a plan allocation of Rs. 87.76 lakhs has been provided for CADA under Agriculture sector. Out of this, Rs. 1.50 lakhs is towards the CADA establishment in Mantralaya. The balance of Rs. 86.26 lakhs is for five CADAS break-up of which is as under :—

	Rs. in lakhs.
(1) CADA for Purna Jayakwadi Projects, Aurangabad ...	61.33
(2) CADA for Ghod Bhima Projects, Pune ...	10.20
(3) CADA for Krishna Project, Satara ...	4.73
(4) CADA for Girna Upper Tapi (Hatnur) Projects, Jalgaon.	4.00
(5) CADA for Bagh-Itiadoh Pench Projects, Nagpur ...	6.00
Total ...	86.26.

From 1978-79, Government has decided to provide the funds for extension and improvement to CADA Projects under State level scheme under "Irrigation Sector Common Scheme of extension and improvement." A Plan provision of Rs. 30 lakhs has been provided for extension and improvements to CADA projects mainly for Purna, Ghod and Girna Projects for 1978-79.

9. Activities for 1978-79 will broadly be as under :—

CADA for Purna-Jayakwadi Projects Aurangabad.—The activities such as road works in the command areas of Purna and Jayakwadi Projects, drainage works in Purna command, extension and improvement of Purna Project, Trial-Cum-Demonstration farm at Vihamandawa, agriculture extension and irrigation units will be undertaken, during 1978-79.

CADA for Ghod Bhima Projects, Pune.—The extension and improvement to Ghod Projects and drainage works in the command of Ghod projects will mainly be taken up under this Authority. Irrigation Units for carrying out agriculture extension programme are also proposed to be provided under this Authority, during 1978-79.

CADA for Girna-Upper Tapi (Hatnur) Projects, Jalgaon.—Activities such as afforestation on Girna canals, agriculture extension, road works and Socio-Economic Survey are proposed to be carried out under this Authority after administrative approval to the schemes such as agriculture Extension scheme.

CADA for Krishna Project, Satara.—Schemes such as Socio-Economic Survey, agriculture extension and Trial-cum-demonstration farm are proposed to be taken up during 1978-79 under this Authority after the schemes such as Trial-cum-Demonstration farms are administratively approved.

CADA for Bagh-Itiadh-Pench Projects Nagpur.—Activities such as completion of remaining work of Trial-cum-Demonstration Farm at Malhi Link roads; Agriculture Extension, Socio-Economic Survey, setting up new Trial-cum-Demonstration Farm at Visova in Chandrapur district are proposed to be undertaken under this Authority during 1978-79.

The funds required for the establishment of the office of the Administrators, CADAs are also met from the plan allocation year-marked for each CADA. The target of utilisation of the potential of CADA Projects is kept at 2.95,800 and it is 90% of the effective potential that may be available during 1978-79.

The World Bank has approved a financial assistance of 70 million dollars (Rs. 63 crores) for Purna and Jayakwadi Projects against the phased programme of Rs. 126 crores for a period of 4 years. The World Bank will release the central assistance at the end of each year after our reports containing physical achievements and expenditure incurred are reported to the World Bank through the Government of India. Two more Command Area Development Authority Projects i.e. Krishna Project and Bhima Project are also being posed to the World Bank for financial assistance for the Civil Engineering and Command Area Development Authority components along with other four non Command Area Development Authority Projects i.e. Kukadi, Upper Wardha, Warna and Upper Penganga.

Soil Testing Programme.—The Estimate Committee has been insisting to undertake soil testing programme on a large scale in the command areas of Command Area Development Authority Projects to determine the quantity of doses and quality of fertilisers to the crops suited to the soils. The Agriculture and Co-operation Department has proposed a Section I—New Item for Rs. 10-15 lakhs for strengthening existing Static Soil Testing Laboratories at Pune, Dhulia, Parbhani and Nagpur and to set up a new Static Soil Testing Laboratory at Aurangabad to cope up with the soil testing programme in the command areas of CADA projects. The Administrators, CADAs will formulate a programme for soil testing in command areas of CADA Projects in consultation with the authorities of Soil Testing Laboratories and implement it effectively during 1978-79.

Centrally sponsored Soil and Water Management Pilot Projects in the command areas of CADA Projects.—The Government of India, Ministry of Agriculture have sanctioned four centrally sponsored Soil and Water Management Pilot Projects in the command areas of (i) Itiadh Project in Bhandara District, (ii) Bhima-Ujjani Project in Solapur district, (iii) Krishna-Dhom Project in Satara district and (iv) Upper Tapi (Hatnur) Project in Jalgaon district. The Schemes have started functioning from

1977-78 and will have three years duration period. Studies for improvement in Soil and Water Management Practices are contemplated under the above Scheme. The Government of India had also sanctioned a Pilot Project for Land Development in Jayakwadi command for evolving the cheap methods which would reduce the cost in implementation of land development works in command areas of irrigation projects. The year 1978-79 will be the last year of the scheme when a Report on the achievements under this Pilot Project will be sent to the Government of India. The entire expenditure on these pilot Projects is borne by the Government of India. A provision of Rs. 24.26 lakhs has been proposed for these five pilot projects in the Budget Estimates, 1978-79. Expenditure on these Pilot Projects during 1977-78 is expected to be of the order of Rs. 22.50 lakhs.

Loan for Construction of Field Channels.—The Government of India, Ministry of Agriculture and Irrigation, Department of Agriculture has accorded approval to the payment of Rs. 50 lakhs as a loan for construction of field channel in the command areas of CADA Projects, during the year 1977-78. An amount of Rs. 50 lakhs provided in Budget Estimates, 1977-78 has therefore, been passed on to the Maharashtra Land Development Corporation Limited, Pune for the said work as a loan to the corporation. A provision of Rs. 50 lakhs has also been provided in the Budget Estimates, 1978-79 as a loan to the Maharashtra Land Development Corporation Limited, Pune for construction of field channels in the command areas of CADA Projects during 1978-79 against the loan expected from the Government of India, during 1978-79.

4(A) World Food Programme Project No. 2299 Irrigation Department.—In pursuance of Fifth Five Year Plan to provide irrigation and to develop the areas under the command of the irrigation schemes, World Food Programmes assistance has been sought in respect of the Jayakwadi and Bhima Projects, World Food Programme assistance will be in food supplies free of charge for distribution to the labourers and Government servants under low income group category at subsidised prices (i.e. 75 per cent of the fair price shop prices or local market prices whichever is lower). The food will be supplied in following quantities :—

- (1) 10,1250 metric tonnes of wheat,
- (2) 7594 metric tonnes of dried skim and
- (3) 7594 metric tonnes of edible oil.

The totall value of the above quantities is estimated at U.S. \$ 42,145,000 (i.e. Rs. 37,93,05,000) approximately inclusive of the cost of freight, superintendence and local supervision. The period of the scheme is 3 years i.e. from 1977-78 to 1980-81.

The plan of operations, in this regard has been signed by the Government of India with Word Food Programme Authorities on 17th September 1976.

The gross proceeds collected by making WFP commodities available to the labourers will be used for the following purposes :—

(i) Recruitment of additional workers and provision of additional supplies and services to expedite completion of the project including all necessary irrigation works.

(ii) Establishment of infrastructure such as roads, storage and markets.

(iii) Increase in health and sanitary facilities including the provision of additional medical and para-medical personnel, the regular spraying of the area for the control of malaria, the taking of smears and other measures of malaria control and provision of additional drugs, insecticides and laboratory equipment.

(iv) Provision of safe drinking water to the workers on the project.

(v) Establishment of social facilities.

(vi) Development of the command area of the Jayakwadi and Bhima projects.

(vii) Any other purpose to further the project as mutually agreed upon by the W.F.P. and the Government.

The gross proceeds were anticipated amounting to Rs. 17,44,56,000 approximately. As against this, expenditure on this W.F.P. Project estimated to the tune of Rs. 3,32,98,000 approximately will have to be borne by this Government.

The W.F.P. commodities have been received during the year as under :—

Wheat	...	...	5,000 metric tonnes.
Butter oil	...	...	240 metric tonnes.
Dried Skim milk	...	...	500 metric tonnes.

The first W.F.P. shop was opened on 21st April 1977 at Wathnagar (Pai-than) and since then 88 W.F.P. shops have been opened so far.

Jayakwadi Project.		No. of shops.
(1) Parbhani District	...	38
(2) Beed District	...	22
Bhima Project.		
(3) Solapur District	...	28
Total		<u>88</u>

The prices at which the W.F.P. commodities are to be sold, have been fixed as under :—

Wheat	...	...	Rs. 1-00 p.kg.
Butter oil	...	...	Rs. 10-50 p.kg.
Dried Skim milk	...	...	Rs. 7-50 p.kg.

The sale proceeds as collected are to the extent of Rs. 44 lakhs upto 28th February 1978. This amount is to be utilised for the purposes in accordance with the Plan of operation as stated above for which Secretaries of I.D. (Proper) U.D.P.H.D. (P.H.), P.D., A. & C.D. (Co-op. & Marketing), F. & C.S.D., S.W., C.A.S. & T.D., & P.W. & H.D. and their local officers have been requested to draw up schemes which would be within prescribed purposes.

So far following numbers of beneficiaries have availed of the facilities of this scheme.

Jayakwadi Project	...	...	...	74,527
Bhima Project	...	...	...	1,06,339
			Total	1,80,866

The collected sale proceeds are much lower than were anticipated earlier (i.e. Rs. 5 crores approximately) inspite of all efforts and propoganda, during the current year. This is mainly because of the following reasons :—

(i) Demand for W.F.P. articles is not to the extent expected because the labourers in both projects areas are accustomed to Jawar as their staple food instead of W.F.P. articles.

(ii) The purchase of W.F.P. article is voluntary one.

(iii) The general food position in this state is much improved and jawar, wheat and rice are freely available in the open market at reasonable rates.

However, efforts are being made to persuade the labourers for lifting the articles. The concerned collectors have also been requested through the regular civil supply staff, to make wide propoganda, and publicity about the programme.

The expenditure so far incurred on the scheme is as under :

1976-77	...	15,71,000
1977-78	...	30,61,500 (upto 31st March 1978)
		46,36,200
1978-79 (proposed)	...	41,20,000

Further the coverage of W.F.P. scheme is proposed to be extended to the following projects for the distribution of Wheat and Butter oil/Sweet oil.

	No. of Labourers
(1) Kukadi Project	78,000
(2) Upper Penganga Project	49,000
(3) Krishna Project	66,000
(4) Manjra Project	65,000
Total	2,58,000

The quantity of WFP commodities which will be supplied by WFP as mentioned above will be sufficient to meet the requirement of above four projects including the Jayakwadi and Bhima projects, considering the number of labourers working on the projects and command area of the projects. As soon as the consents of Government of India and WFP authorities are received, the WFP programme will be extended to these projects.

(5) *The Maharashtra Engineering Research Institute, Nashik.*—This institute is in charge of the work of applied research in Engineering. It was established in 1959, for the purpose of carrying out testing and applied research in all field of P. W. Engineering viz. irrigation Hydro-Electricity, Structural Engineering, Roads, Ports, Environmental Engineering and Rural Engineering. It has also undertaken a long-term programme of research in fundamental problems of irrigation under the co-ordinating authority of the Central Board of Irrigation and Power. In addition, fundamental and Basic Research Problems, not connected with any particular Project, and Research of minor irrigation and water use are also dealt with by this organisation. The testing of construction materials as well as the testing of calibrating of measuring instruments is the responsibility of this Institute. Model experiments required in the construction of Hydraulic structures for the projects in the construction stage are carried out by this organisation.

Rock Mechanics Laboratory has also been established at this Institute to study and test the characterisation of rocks formations.

(5) *Directorate of Irrigation Research and Development, Pune.*—Directorate of Irrigation Research and Development, headed by the Director of the rank of Superintending Engineer, has jurisdiction all over the State. There are 5 Divisions under the Directorate. The Irrigation Research Divisions at Pune, Nasik and Aurangabad look after the work of annual demarcation of areas affected by salinity and waterlogging in the command of Irrigation Projects and preparation of land drainage schemes for their reclamation.

The Soil Survey Divisions at Pune and Nagpur look after the work of pre-irrigation soil surveys for Western Maharashtra and Vidarbha for the projects to be submitted to Central Water Commission. One Sub-Division at Aurangabad looks after the soil survey of projects in Marathwada.

Directorate also tackles problems related to soil salinity, alkalinity, waterlogging, new techniques of drainage studies related to soil plant water relationship with the new theories to formulate a workable irrigation schedule for canal irrigation efficiency of irrigation and means to improve upon the same, new techniques of irrigation are also made by the Directorate.

(7) *Khar Lands Development Programme.*—In furtherance of the policy of Government for "grow more food" in 1947-48 one of the measures envisaged as most urgent and important was bringing as much land as possible under cultivation in the three coastal districts Thane, Kulaba and Ratnagiri of Maharashtra State. With that object in view Government

enacted the Bombay Khar Lands Act. The Khar Land Development Board has implemented several schemes of Khar Lands in Thane, Kolaba and Ratnagiri Districts. The total land reclaimed upto the end of IVth Five-Year Plan was about 49,900 hectares. During the first three years of the Vth Five-Year Plan the land reclaimed is to the tune of 1,819 hectares.

2. The entire expenditure on Khar Lands Development Works is borne by the Government in the initial stages and 50 per cent of this expenditure is treated as subsidy and 50 per cent as loan. The loan portion being recovered after three years, from the completion of the scheme in 10 annual equal instalments from beneficiaries concerned. The yardstick for sanctioning a scheme is Rs. 550 per acre in Kulaba and Thane Districts and Rs. 650 per acre in Ratnagiri District. For a double protection scheme the limit is Rs. 950 per acre.

In view of the emphasis to be given on increase in the agricultural production and in view of the fact that crash programme of Khar Lands Scheme is to be prepared for intensifying the paddy cultivation a Study Group was formed in August 1975. The report of the Study Group has been received and recommendations made therein are being examined by Government. The Estimate Committee for 1976-77 has also made a number of recommendations in respect of organisation and working of Khar Land Development Board. These are under active consideration of Government.

The requirement of plan allocation during next two years may vary depending on the acceptance of the various recommendations made by the Study Group and the Estimate Committee.

The District Planning and Development Council has approved the following outlay for the year 1978-79 for implementation of Khar Lands Schemes in progress in Thane, Kulaba and Ratnagiri Districts.

			Rs. in lakhs
Thane	...	...	2.00
Kulaba	...	...	2.00
Ratnagiri	...	...	5.00
			<u>Rs. 9.00</u>

STATEMENT
Khar Lands Development Works
Annual Plan, 1978-79

Name of District	Reclamation of Khar and Khajan Lands			
	Actual for 1975-76	Actuals, 1976-77	Approved outlay, 1977-78	Proposed outlay, 1978-79
	(Rs. in lakhs).			
1	2	3	4	5
Thane	3.67	4.00	1.00	2.00
Kolaba	3.00	2.00	2.00	2.00
Ratnagiri	2.00	3.00	4.80	5.00

Name of District	Total physical achievements during					Targets for the year	
	4th Plan, 1974-75	1975-76	1976-77	1977-78	1978-79		
	(All figures in Hectares).						
1	6	7	8	9	10	11	
Thane	49,900	600	619	600	1,000	1,200	
Kolaba	Districtwise figures for physical achievements and targets are not available and hence this information relates to the three districts.						
Ratnagiri							

(8) *Creation of Additional charges.*—(a) Maharashtra is a very backward state in irrigation and therefore, this state has given considerable emphasis on development of irrigation in the State in its various 5 year plans. The outlay on irrigation in the State is also being increased every year substantially. In order to cope up with the increased workload of investigation of projects, designs of major and medium projects, construction of Major, Medium and Minor Irrigation Projects and management of irrigation of additional area which is being brought under irrigation every year, it was found necessary to strengthen the organisation of the Irrigation Department on the basis of increased workload. Government therefore, sanctioned creation of the following charges with immediate effect upto 28th February 1979 in the first instance, vide G. R. No. EST. 1077/735/77-PLN-2, dated the 24th February 1978.

	Circles	Divisions	Sub-Divisions
Civil	3	23	113
Mechanical	—	2	8
Total	3	25	121

In order to cope up with the additional workload in Mantralaya due to Major and Medium Irrigation Projects, a post of Under Secretary (Technical) in scale of Rs. 650—45—1,100—50—1,200, has also been sanctioned with a special pay of Rs. 150 as admissible under the rules.

(b) *Creation of Nucleus Cell.*—The State Government has included six Major Irrigation Projects viz. Bhima, Krishna, Warna, Kukadi, Upper Penganga and Upper Wardha in one "Maharashtra Composite Major Irrigation Projects", posed to the World Bank for loan Assistance. The World Bank Team need a great deal of data about various aspects of the Command Area Development component of the irrigation projects which are required to be compiled and analysed in a time bound fashion. There are at present command Area Authorities for Krishna and Bhima Projects only for collecting such data. Since there are no separate CADA authorities exist for the remaining four projects, viz. Kukadi, Warna, Upper Wardha and Upper Penganga independent 4 Nucleus Cells each comprising of the staff mentioned below were created under the respective Superintending Engineers of the aforesaid four projects under G. R., I. D. No. MON-5177/6897-MON-I, dated 22nd February 1978 for the period upto 28th February 1979 in the first instance.

Serial No.	Designation of the post	No. of posts	Scale of pay Rs.
1.	Agricultural Officer, Class III	1	275—15—380—EB—20—480.
2.	Research Assistant	2	210—10—270—15—330—EB—15— 390—20—450.
3.	Clerk	... 1	115—4—135—5—160—EB—5—180— 6—215.
4.	Typist	... 1	115—4—135—5—160—EB—5—180— 6—215.

The posts of Agricultural Officers and the Research Assistant will be filled in by drafting out Officers from Agriculture and Co-operation Department and Directorate of Economics and Statistics respectively.

CHAPTER V

TRAINING PROGRAMME FOR VARIOUS TECHNICAL AND NON-TECHNICAL COURSES

With a view to keeping abreast the knowledge of the Engineering subjects by the Officers in service for proper and effective functioning of the Department, this Department took the steps right in earnest in 1964 to establish a training Institute at Nasik known as Engineering Staff College, Nasik. The College is conducting a number of courses useful to the officers of Irrigation, Public Health and Public Works Departments throughout the year. However, as the specialized courses such as Water Resources Development, Hydrology etc. are not being conducted as the College, the officers of the Departments are deputed to the courses conducted by the University of Roorkee. In addition to this, the officers of the Departments are deputed to the courses conducted by the A. S. C., Bombay, I. I. P. A., New Delhi etc. and also for the courses conducted by the foreign agencies. The list of the courses to which the officers are normally deputed is in the enclosed annexure.

ANNEXURE**TECHNICAL***The Engineering Staff College, Nasik*

1. Concrete and Masonry course for Deputy Engineers
2. Orientation course for Direct recruits.
3. Management course for Superintending Engineers.
4. Highway Engineering course for Deputy Engineers.
5. Foundation Engineering course for Deputy Engineers.
6. Quality Control course for Deputy Engineers.
7. Irrigation Management course for Deputy Engineers.
8. P. C. C. Designs (Buildings).
9. Soil Mechanics.
10. Refresher course for Ex. Engineers and Deputy Engineers.

Univesity of Roorkee

1. Training course in Water Resources Development.
2. International post graduate course in Hydrology.
3. Earthquake Engineering post-graduate Diploma course.
4. Refresher and Specialist course programme.

NON-TECHNICAL.*Administrative Staff College, Bombay*

1. Programme for Junior Executives.
2. Condensed Foundational Programme for Direct recruits Class I and II.
3. Course on Project Implementation Monitoring and evaluation Irrigation.
4. Senior level programme on theory and Techniques of Management.

I.I.P.A. New Delhi

1. Workshop on Management Information System.
2. Administrative Leadership and Behaviour.
3. Introduction to Computers.
4. Introduction to Operations Research.
5. Materials Planning.
6. Performance Budgetting.
7. Project Appraisal and Investment Planning.
8. Training Methodology.

3. Courses conducted by the foreign agencies abroad.

1. Training under Colombo Plan.
2. Netherlands Government Fellowship.

CHAPTER VI
IRRIGATION MANAGEMENT, FLOOD CONTROL AND
EXTENSION AND IMPROVEMENT

1. Irrigation Management

(1) After an irrigation project is completed and commissioned, it is handed over to the Management Organisation for Management and Maintenance.

(2) Management includes many functions, such as regulation of flood and storage in the reservoir, proper estimation of the available water and planning its distribution, calling of water applications and sanctioning after scrutiny, regulation of canal and distribution system, proper distribution of water amongst the sanction holders, checking and preventing unauthorised irrigation, crop measurements and assessment of water rates.

(3) Maintenance includes ordinary and special repairs, extension and improvement, and proper upkeep of the dam canals and distribution system, including periodical painting of steel work, gates, regulators etc. removal of silt and weeds in the canal and upkeep of inspection bungalows and canal chowkies.

The Budget allotment for M. & R. for 1977-78 is Rs. 256 lakhs and Rs. 274 lakhs for 1978-79.

(4) For encouraging food crop production the following concessions were granted during the year 1977-78.

Concessional water rates at 1/3rd of normal rate were allowed during the Kharif season of 1977 for Kharif Hybrid Jowar grown on the irrigation projects in the traditional Rabi area and also in the districts of Ratnagiri, Kolaba-Thane-Nagpur, Chandrapur and Bhandara where paddy crop is prominently grown. Similarly, such concessional rates were allowed for paddy crops grown under the Irrigation projects through the State of Maharashtra excluding the districts of Ratnagiri-Kolaba-Thane-Nagpur, Chandrapur and Bhandara and the talukas in the assured rainfall zone in the districts of Kolhapur, Sangli, Satara, Pune and Nasik where paddy crop is prominently grown.

(5) The State Government has launched a programme for increasing oil seeds production during H. W. seasons in 1978. The local Irrigation Officers are accordingly instructed to sanction available irrigation water for both cotton and groundnut cultivation. They have been further informed that if there is a shortage of water, the priority for sanctioning of water should be given to groundnut cultivation during the current year (1978) only.

(6) Government has decided that, the community items under the ayacut development programme such as construction of field channels, field drains and ancillary works which hitherto, were being carried out by the Government or the MLDC on behalf of the beneficiaries from the institutioning finance should now be taken up as a part of irrigation projects and executed initially at the cost of the project in respect of all continuing and new

irrigation projects, leaving to the beneficiaries the individual items such as land levelling, grading, shaping and ancillary works. The outlays on community items will be treated as loan to the individual beneficiaries and will be recovered from them as per the provision of the Maharashtra Land Improvement Schemes Act, 1942.

The maintenance of these works will however, continue to be with the beneficiaries and for this purpose all the relevant provisions in the Maharashtra Irrigation Act, 1976 are applicable.

These works will continue to be executed by the Maharashtra Land Development Corporation through the Land Development agency of the Agricultural Department under the B.L.I.S. Act 1942.

2. Flood Control :—

This is tackled by two ways—(1) Construction of flood protection works, and (2) Moderation of floods by operating Flood Forecasting System on main river basins.

During 1977-78 works on 12 F. P. Schemes were in progress and an allotment of Rs. 6.10 lakhs has been provided. In addition works on some F.P. works has been taken up under E.G.S. and the same are in progress. In 1977-78 some schemes in progress could not find place in District Plans approved by D.P. & D.C. and had to be kept in abeyance. There are 21 F. P. Works costing Rs. 55.00 lakhs in progress and upto now expenditure on these schemes is Rs. 14.43 lakhs till the end of March 1977. During 1978-79 works of 14 Nos. of Schemes are included in budget and the budget of Rs. 5.38 lakhs has been given for these works.

Flood Forecasting System formulated by Irrigation Department was in operation in 1977-78 during monsoons on Godawari Basin including main tributaries for portion between Paithan Town and area below this dam site to Nanded town. As previously requested to Government of India, Flood Forecasting Stations have been established by the Central Flood Forecasting Division Hyderabad in the Godawari Basin and its main tributaries and C.F.F.Dn. would now be in a position to forecast flood situations which can be awaited by the C. E., Aurangabad. Central Flood Forecasting Division, Hyderabad, of the Government of India is also considering establishing similar stations in the Wardha, Vainganga and Pranahita Basins and also Krishna and Bhima Basins. C.F.F.D. is being provided with necessary details for locating the stations.

3. *Extension and Improvement.*—A Committee consisting of some of Superintending Engineers was appointed to review the existing irrigation works particularly dams after the Koyna earthquake. As per findings of the review groups, the following Major Irrigation Works were found to require special attention for strengthening them :—

- (1) Darna.
- (2) Chanakapur.
- (3) Bhatghar.
- (4) Radhanagari.
- (5) Ekruk Tank.

Out of the 5 works, strengthening of Chankapur Dam has been completed. The position of remaining 4 works is as below :

1. *Darna Dam*.—The review group had suggested the strengthening of this dam by increasing the capacity of waste weir and strengthening the dam by masonry buttresses. The first work was started in November 1972 and is now completed. For the second work revised plans and estimates amounting to Rs. 137.69 lakhs have been administratively approved by Government and an expenditure of Rs. 15.26 lakhs was incurred in 1977-78. Tender for the strengthening of Darna Dam by masonry buttresses have been received and are under process of finalisation. Budget provision of Rs. 15.92 lakhs has been made for the year 1978-79 for this work.

2. *Bhatghar Dam*.—Strengthening of this dam has been proposed by masonry buttresses and work is in progress. The work is estimated to cost Rs. 517 lakhs. Out of this an expenditure of Rs. 252.63 lakhs has been incurred till March 1977. A provision of Rs. 95.52 lakhs is made from 1977-78. Budget Provision of Rs. 79.54 lakhs is made for the year 1978-79.

3. *Radhanagari Dam*.—The dam is proposed to be strengthened in 3 ways—(i) Grouting the foundation and masonry of the existing dam, (ii) Strengthening the existing dam by masonry buttresses, (iii) Remodelling the existing spillway. First work of grouting, costing Rs. 42 lakhs is completed. Plans and Estimates for second stage of work for strengthening the masonry dam have been administratively approved for Rs. 292 lakhs. Tenders for the work of strengthening of Radhanagari Dam by masonry buttresses have been approved and works are now in progress. An expenditure of Rs. 35.52 lakhs has been incurred on departmental works till March 1977 and allotment of Rs. 59.70 lakhs was made during 1977-78. A budget provision of Rs. 45.72 lakhs has been made for the year 1978-79.

4. *Ekrak Tank in Solapur District*.—This earthen dam is proposed to be strengthened by masonry casing on downstream and plans and estimates amounting to Rs. 58.44 lakhs have been administratively approved. An expenditure of Rs. 26.77 lakhs has been incurred till March 1977. Provision of Rs. 27.86 lakhs exists for the year 1977-78. A budget provision of Rs. 11.94 lakhs has been made for the year 1978-79. Revised estimates for strengthening Ekrak Tank on upstream of the embankment are under preparation with the field officers. This has necessitated due to slip in the upstream section of the earth dam during the monsoon of this year.

In addition to above the following important works are in progress—

(1) Increasing free board of the Gangapur dam estimated to cost Rs. 12 lakhs. Expenditure of Rs. 3.99 lakhs is incurred upto March 1977. Provision of Rs. 2.39 lakhs exists during the year 1977-78. A budget provision of Rs. 3.98 lakhs is made during the year 1978-79.

(2) Extension of Krishna Canal mile 41 to 53 and 66 to 86. Revised estimated cost is Rs. 117.86 lakhs. Expenditure of Rs. 36.98 lakhs is incurred upto March 1977. A provision of Rs. 15.92 lakhs is made during 1977-78 and budget provision of Rs. 15.92 lakhs is made for the year 1978-79. Additional potential of 2,000 hectares will be created by June 1978 by work of extension of Krishna Canal, and 2,000 hectares by June 1979.

The two more works are included in this years programme by token budget provision. Those are (i) Construction of Branch No. 4 of N. R. B. C. mile No. 104/7 estimated to cost Rs. 45.95 lakhs and (ii) Constructing Deputy No. 44 in mile No. 53 of N. R. B. C. estimated to cost Rs. 18 lakhs. During the year 1978-79 budget provision of Rs. 15.00 lakhs and Rs. 6.00 lakhs are made respectively for these works. Irrigation Potential of 1700 hectares will be created on account of the above budget provision.

Proposals for modernisation of old canal systems are under preparation and Government of India has been approached for financial assistance to the extent of Rs. 16 crores which is the rough estimated cost of the proposal of modernisation. Detailed estimates of (i) Strengthening old C. D. works and (ii) Lining of canal are being prepared under modernisation.

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