E.C. No. 875

ESTIMATES COMMITTEE (1977-78)

(SIXTH LOK SABHA)

TWELFTH REPORT

MINISTRY OF AGRICULTURE & IRRIGATION

(DEPARTMENT OF IRRIGATION)

Development of Irrigation Facilities

Presented in Lok Sabha on 6 APR 1978

LOK SABHA SECRETARIAT
NEW DELHI

March, 1978/Phalguna, 1899 (Saka)

Price : Rs. 10.80

LIST OF AUTHORISED AGENTS FOR THE SALE OF LOK SABHA SECRETARIAT PUBLICATION

Sl. No.	Name of Agent	Agency No.
	ANDHRA PRADESH	
1.	Andhra University General Cooperative Stores Ltd. Waltair (Visakhapatnam)	8
2.	G.R. Lakshmipathy Chetty and Sons, General Merchants and News Agents, Newpet, Chandragiri, Chittoor District.	94
	ASSAM	
3.	Western Book Depot, Pan Bazar, Gauhati.	7
	BIHAR	
4.	Amar Kitab Ghar, Post Box 78, Diagonal Road, Jamshedpur.	37
	GUJARAT	
5.	Vijay Stores, Station Road, Anand.	35
6.	The New Order Book Company Ellis Bridge, Ahmedabad-6.	63
	HARYANA	
7.	M/s. Prabhu Book Service, Nai Subzimandi, Gurgaon, (Haryana).	14
	MADHYA PRADESH	
8.	Modern Book House, Shiv Vilas Palace, Indore City.	13
	MAHARASHTRA	
9.	M/s. Sunderdas Gianchand 601, Girgaum Road, Near Princess Street, Bombay-2.	6
10.	The International Book House (Private) Limited 9, Ash Lane, Mahatma Gandhi Road, Bombay-1.	22
11.	The International Book Service Deccan Gymkhana Poona-4.	26
12.	Charles Lambert & Company, 101, Mahatma Gandhi Road, Opposite Clock Tower, Fort, Bombay.	30
13.	The Current Book House, Maruti Lane, Raghunath Dadaji Street, Bombay-1.	60
14.	Deccan Book Stall, Ferguson College Road, Poona-4.	65
15.	M/s. Usha Book Depot, 585/A, Chira Bazar Khan House, Girgaum Road, Bombay-2 B.R.	5
	MYSORE	
16.	M/s. Peoples Book House, Opp. Jaganmohan Palace, Mysore-1.	16
	RAJASTHAN	
17.	Information Centre, Government of Rajasthan, Tripolia, Jaipur City.	38
	UTTAR PRADESH	
18.	Swastik Industrial Works, 59, Holi Street Meerut, City.	2
19.	Law Book Company, Sardar Patel Marg, Allahabad-1.	48
	WEST BENGAL	
20.	Granthaloka, 5/1, Ambica Mookherjee Road, Belgharia, 24 Parganas.	10
21.	W. Newman & Company Ltd. 3, Old Court House Street, Calcutta.	44
22.	Firma K.L. Mukhopadhyay, 6/1 A, Banchharam Akrur Lane, Calcutta-12.	82
23.	M/s. Mukherji Book House, 8B, Duff Lane, Calcutta-6.	84

CORRIGENDA

TO

The 12th Report on the Ministry of Agriculture & Irrigation (Department of Irrigation) - Development of Irrigation Facilities.

Page	Para	Line	For	Read
(iii)		8	Dalip Chakra-varty	Dilip Chakra-varty
(vii)	2	3	represcenta-tives	representatives
(vii)	5	3	delete 'and'	
2	1.4	1	V Five Plan	Fifth Plan
29	2.46	3	felt	fell
31	2.51	12	Ministries	Ministers
67	3.27	7	significally	significantly
73	3.43	7	Govari	Godavari
75	3.50	8	mode	model
78	3.60	3	held	help
88	4.19	11	these	those
89	4.22	10	insparable	inseparable
91	4.30	3	Plan. The	Plan, the
98	5.5	1	tentamount	tantamount
10	5.37	25	even	event
11	5.38	1	As other	Another
11	5.40	1	occurrane	occurrence
21	5.70	6	delete 'to be'	
35	5.101	14	emphasis	emphasise
36	5.105	12	emphasis	emphasise
41	6.8	3	Add 'in' after sanctioned	
41	6.8	16	During the Fifth Plan	at end of 1978-79
52	8.8	2	Add 'Bill' after Irrigation	
52	8.9	5	mendations	In pursuance of the recom-mendations
52	8.9	24	busis	basis
57	8.28	1	rtsult	result
62	9.3	13	dissenina-tion	dissemina-tion
32		15	their	other

Page	Para	Line	For	Read
171	10.5	1	satted	stated
174	10.16	5	33&50	33-50
178	10.26	9	short-time	short-term
183	10.44	7	delete 'the end of'	
183	10.44	12	met	meet
186	11.3	3	power	par
192		(last line)	Estimate	Estimates
217	2.51	12	Ministries	Ministers
234	4.30	3	Plan. The	Plan, the
225	3.27	13	significa-lly	significantly
225	3.27	18	cross	crores
244	5.70	6	delete 'to be '	
249	5.101	10	emphasis	emphasise
250	5.101	1	emphasis	emphasise
251	6.8	3	Add 'in' after	sanctioned
251	6.8	15	during the	at end of Fifth Plan 1978-79
254	8.9	8	activity	actively
260	10.26	12	short-time	short-term

CONTENTS

31 LSS/77—1

ESTIMATES COMMITTEE

(1977-78)

CHAIRMAN

Shri Satyendra Narayan Sinha

MEMBERS

2. Shri V. Arunachalam
3. Shri Yashwant Borole
4. *Shri Dalip Chakravarty
5. *Shri K. S. Chavda
6. Shri K. Gopal
7. Smt. Mrinal Gore
8. Smt. V. Jeyalakshmi
9. *Shri Sarat Kar
10. Shri Basant Singh Khalsa
11. Shri Krishan Kant
12. Shri Nihar Laskar
13. Shri Mahi Lal
14. Shri Mukhtiar Singh Malik
15. Shri Mritunjay Prasad
16. Shri Amrit Nahata
17. Shri M. N. Govindan Nair
18. Shri S. B. Patil
19. Shri U. S. Patil
20. Shri Mohd. Shafi Qureshi
21. Shri K. Vijaya Bhaskara Reddy
22. Dr. Saradish Roy
23. Shri N. K. Shejwalkar
24. Shri Annasaheb P. Shinde
25. Shri Ganga Bhakt Singh
26. *Shri Ugarsen
27. Shri K. P. Unnikrishnan
28. Shri Shankersinhji Vaghela
29. *Shri Vinayak Prasad Yadav
30. *Shri Roop Nath Singh Yadav

---

*Elected w.e.f. 30-11-1977 *vice* Shri Samar Guha resigned and Shri [illegible]mati Renuka Devi Barkataki, Sarvashri S. Kundu, Janeswar Mishra, Fazlur Rehman and Sher Singh ceased to be members on their appointment as Ministers of State.

SECRETARIAT

Shri B. K. Mukherjee—*Joint Secretary.*

Shri K. S. Bhalla—*Chief Financial Committee Officer.*

Shri H. C. Bahl—*Senior Financial Committee Officer.*

SUB-COMMITTEE ON DEVELOPMENT OF IRRIGATION FACILITIES

Shri Satyendra Narayan Sinha—*Chairman.*

2. Shri Mukhtiar Singh Malik—*Convener.*
3. Shri Mritunjay Prasad
4. Shri K. Gopal
5. Smt. V. Jeyalakshmi
6. Shri Basant Singh Khalsa
7. Shri K. Vijaya Bhaskara Reddy
8. Shri Ganga Bhakt Singh

INTRODUCTION

I, the Chairman of Estimates Committee having been authorised by the Committee to submit the report on their behalf, present this Twelfth Report on the Ministry of Agriculture and Irrigation (Department of Irrigation) Development of Irrigation Facilities.

2. This subject was taken up for examination by the Estimates Committee (1976-77). Necessary information was obtained and evidence of non-officials and represcentatives of the Ministry of Agriculture & Irrigation (Departments of Irrigation and Agriculture), Central Water Commission and Planning Commission was taken by them. The Committee, however, could not finalise their report due to the dissolution of the Lok Sabha on 18 January, 1977.

3. The Estimates Committee (1977-78) appointed a sub-Committee to finalise the report on the subject. On the basis of the evidence tendered before the previous Committee (1976-77) and also the additional information obtained by the Sub-Committee of Estimates Committee (1977-78), the Sub-Committee finalised the report at their sittings held on 26 August, 11 and 12 October and 15 December, 1977. The report of the Sub-Committee was considered and adopted by the Estimates Committee (1977-78) at their sitting held on 23 December, 1977.

4. The Committee place on record their appreciation of commendable work done by the Chairman and Members of the Estimates Committee (1976-77) in taking evidence and obtaining information for this report.

5. The Committee wish to express their thanks to the officers of the Ministry of Agriculture and Irrigation (Deptt. of Irrigation) for placing before them material and which they desired in connection with the examination of the subject and for giving evidence before the Committee.

6. The Committee also wish to express their thanks to Shri Balwant Singh Nag, ISE (Rtd.), Dr. G. Rangaswami, Vice-Chancellor, Tamil Nadu Agricultural University, Coimbatore and Dr. Kanwar Sain, Ex-Chairman, Central Water and Power Commission for furnishing memoranda to the Committee and also for giving evidence and making valuable suggestions.

7. The Committee also wish to express their thanks to all the institutions and individuals who furnished memoranda on the subject to the Committee.

8. For facility of reference the conclusions/recommendations of the Committee have been printed in thick type in the body of the Report. A summary of the observations/recommendations is appended to the report (Appendix V).

SATYENDRA NARAYAN SINHA
Chairman
Estimates Committee

NEW DELHI
March 3, 1978
Phalguna 12, 1899(*S*)

CHAPTER I

INTRODUCTORY

In a country like ours, where over 70 per cent of population depends on agriculture for its livelihood, the crucial importance of agricultural development needs no emphasis. Indian Agriculture is, however, to a very large extent vulnerable to vagaries of weather, as more than 70 per cent of the country's gross cropped area depends exclusively on rainfall which is unevenly distributed in respect of time and space. In large part of the country, rainfall is inadequate and even in areas having high rainfall, enough residual moisture is not available to support multiple cropping. Severe drought conditions occur in many parts when monsoon fails. Development of adequate and dependable irrigation facilities is, therefore, essential to banish famines.

1.2. India's population is rising at a very fast rate. For meeting the food and fibre needs of rising population agricultural production has to keep pace with rising needs. The scope for bringing additional area under plough being limited, bulk of the increase has to brought about by increasing the yield from existing lands. For this various inputs particularly irrigation, fertilizers, improved seeds etc. are needed. Irrigation is, however, the master input, without which other inputs cannot be effective. The high yielding varieties of crop growing cannot be left to the vagaries of rainfall. Development of irrigation is thus a crucial factor towards not only realising self sufficiency of food grains but making food production less dependent on the monsoons. It would also help in exporting certain agricultural commodities on a dependable basis.

Water Resources

1.3. Estimates of the country's water resources have been made from time to time. At the beginning of the present century, the first Irrigation Commission (1901—03) had placed the surface water resource at 144 million hectare metres for India of that time but excluding Burma, Assam and East Bengal. In the absence of adequate data for this assessment, that Commission had described this estimate as "mere approximation". In the late forties, A.N. Khosla, then Chairman of the Central Waterways, Irrigation and Navigation Commission, figured out, on the basis of an empirical formula which he had evolved, the total annual surface and groundwater resources to be 167 Mham. In the basin-wise assessment made by the Irrigation Commission (1972) in volume III of the Report the surface water resources of various river basins aggregate to 180 Mham.

1.4. According to the Draft V Five Plan it has been estimated that about 67 million hectare metres of surface water and 26.5 million hectare metres of ground water can be utilised.

1.5. According to the National Commission on Agriculture (1976), on an average, precipitation in the country contributes about 400 million hectare metres of water annually. Of this, only about 105 million hectare water can be utilised in the long run.

1.6. The average annual flow of the various rivers or groups of rivers and the amounts at present considered utilisable excluding evaporated losses reservoirs and streams are shown below.

(million hectare metres)

	Average Annual flow	Utilisable flow	Approximate present utilisation (1974)
Indian Basin	7.7	4.6	3.7
Ganga Basin	51.0	25.0	8.5
Brahmputra Basin (including Barak)	54.0	2.4	0.5
Mahanadi and other east flowing rivers upto Godavari	12.3	9.1	2.8
Godavari, Krishna and other east flowing southern rivers	22.5	19.0	7.3
West flowing rivers south of Tapi	21.8	3.0	1.1
Narmada and Tapi	6.2	4.9	0.6
West flowing rivers north of Narmada	2.5	2.0	0.5
Total	178.0	70.0	25.0
or	180 0		

1.7. The National Commission on Agriculture (1976) supported the recommendation of the Irrigation Commission (1972). The Commission has observed that where feasible, surplus waters in river, such as in the Brahmputra, the Ganga and the West flowing rivers south of the Tapi, should be utilised in the basins where there is paucity of water. This, however, would in most cases involve considerable pumping and would be somewhat expensive. All these possibilities need to be examined and considered.

1.8. The Irrigation Commission (1972) observed that so far no systematic study or analysis of utilisable water resources of the country has been

done except for the Indus River system. Some preliminary studies have, however, been carried out in respect of the Godawari, the Krishna, the Narmada and the Tapti rivers.

1.9. In a written reply the Ministry of Agriculture and Irrigation (Deptt. of Irrigation) informed the Committee that a separate Directorate of Surface Water Resources was sanctioned in the Central Water & Power Commission which was opened on 8-1-1965. The Directorate is entrusted with surface water resources studies for all river basins excluding Ganga, Brahmputra and Indus basins. 31 basins have been identified for studies. Some of these basins represent a group of a number of streams flowing through them and will need preparation of separate basin reports.

1.10. The studies for assessment of surface water resources involved (i) collection and processing of daily hydrological and withdrawal (major, medium and minor irrigation, industrial, and domestic utilisation etc.) data of all the sites on each river and its tributaries from the State Govt. Deptts., project reports, hydrological data books etc. (ii) collection of hydrometeorological data of the basin for a period of 30 to 35 years from the records of IMD and CWC etc. (iii) determination of historical flows. (iv) determination of losses and gains in various reaches (v) projecting future water requirements in the basin for irrigation, navigation, drinking water and industry uses etc. (vi) determination of ultimate surplus of shortage in the basin.

1.11. During evidence, the Chairman, Central Water Commission stated that studies had been completed for about 7 basins out of 31. Data of Cauvery was not being made available but recently they had come to an understanding and got the data. With regard to the other 24 basins, data would not be made available easily. Data about Ganga was being collected by Ganga Basin Water Resources Organisation. In respect of Brahmputra, data was being collected for the main river and not tributaries. There was a proposal to set up Brahmputra Control Board.

1.12. In a note furnished to the Committee the Department of Irrigation have stated :

"Out of 31 basins, 11 basins consisting of 4 sub-basins of the Krishna and 7 sub-basins of the Godavari involve reference to the Tribunals because of inter-State disputes, and the availability and requirement of water in the case of Krishna has already been gone into by the Tribunal, and is being looked into in the case of the Godavari. The water of river Pennar has been largely utilised and no further study has been considered necessary.

Of the remaining 19 basins, studies of 5 basins *viz.*. Tapi, Mahanadi, Narmada, Sabarmati and Damodar have been completed. Study for one

more basin *viz.* Cauvery has also been completed in the form of the Report of the Cauvery Fact Finding Committee.

According to the present availability of data, it will be possible to make a reasonably accurate assessment and complete the reports for another two basins of Tambraparni and Subarnarekha by the end of this year.

1.13. The position in respect of the remaining 11 basins is as under :—

The data for 6 basins i.e. (i) rivers between Cape Comorin to Cauvery, (ii) Cauvery to Pennar, (iii) Pennar to Krishna, (iv) Mahanadi to Godavari, (v) Cape Comorin to Tadri and (vi) Mahi, is being obtained from the States and it has been possible to collect the data to an extent of 15 to 30 per cent only. The collection of data for the remaining 5 basins (streams of Kutch, Luni, streams of Kathiawar, streams between Tadri to Tapi and streams between Subarnarekha to Damodar), which are relatively small, is also being arranged.

1.14. The bulk of the required hydrological data has to be obtained from the States concerned. Invariably, this data is not forthcoming for the full period because of its non-observance. The data, where available, in many cases has not been observed for continuous block of years, and has periodic gaps. The reliability of data of some of the less important sites is generally poor. The States also have difficulties in locating and copying out the voluminous records and at times are reluctant to supply this data because of inter-State aspects.

1.15. In the case of limited availability of data, long term run-off series are established by multiple regression co-relation between rainfall and run-off. Short duration gaps of few days of weeks are filled by statistical methods and developing recession equations, etc. The data is also examined and rationalised wherever considered unreliable. Application of the statistical approach obviously introduces a certain degree of approximation in the water assessment, which may be of the order of $+20$ per cent if reasonably good correlation is obtained during the statistical analysis.

1.16. The assessment of surface water resources is a continuous process and its progress depends upon the availability of reliable data for adequate periods and on the response of the States.

The Irrigation Commission (1972) observed :

> "Our water resources are insufficient to meet the long-term requirements of agriculture, industry and other users. There will thus be increasing competition for available supplies as more and

more water gets harnessed and committed. We, therefore, recommend a well-defined policy for the development of the water resources of each region or basin, to obtain the maximum benefit for the largest number of people. At the same time we realise that planning for the development of water resources cannot be rigid. The demand for water and its availability change with time and at successive stages of development, it is therefore, necessary to maintain an intelligent flexibility in planning, to keep pace, not only with the latest developments in technology.

1.17. The Irrigation Commission recommended that planning of water resources should be on the basis of river basins. The Commission observed :

"The planning of water resources has to be related to a defined area or region, with due regard to inter-regional needs. A river basin, and in the case of large rivers, a sub-basin, is a natural unit. It has a defined water-shed boundary, and within it there is an inter-relationship between the surface and groundwater resources. A river basin, therefore becomes a suitable unit for planning. An overall plan for the development of water resources requires not only a full knowledge of the quantity, quality, and distribution of water resources, but also an evaluation of land uses and their effects on stream flow and the production and movement of sediments.

1.18. The Irrigation Commission recommended the following policy for the formulation of river basin plans :

(a) The basin plan should present comprehensive outline of the development possibilities of land and water resources to meet the anticipated regional and local needs.

(b) The plan should :

(i) indicate a broad frame-work of various engineering works to be taken up in the basin, the reasons why they are preferred to alternatives and the inter-relationship between them ;

(ii) establish priorities in respect of water use for various purposes ;

(iii) indicate *inter se* priority of projects;

(iv) indicate the need for earmarking water for any specific future purposes.

(c) The plan should be periodically reviewed and revised as required in the light of changing needs and supplies.

Land Resources

1.19. The geographical area of the country is 328 million hectares. The total cultivable area on the basis of the latest land use statistics for the year 1974-75 is about 185 million hectares and the net area sown is about 138 million hectares out of which net irrigated area was 33 million hectares and the unirrigated area was 105 million hectares.

1.20. According to the Report of the Irrigation Commission (1972) the total irrigation potential of the country, both from surface and ground water resources would be of the order of 81 million hectares.

1.21. According to the Draft Fifth Plan, 107 million hectares of land can be ultimately irrigated both from surface and ground water sources the contribution being 72 and 35 million hectares respectively, as shown below:

Item	Ultimate Potential (Million hectares)
Surface water	
(a) Major, medium schemes	57
(b) Minor schemes	15
Ground water	35
Total	107

1.22. According to the Report of the National Commission on Agriculture (1976), taking various factors into account, the ultimate irrigation potential for the purposes of broad assessment, may be around 110 million hectares. This would be about 52 per cent of the sown area of 210 million hectares expected in the early part of the next century. In view of the inadequacy of water resources to meet the requirement there is need for a great deal of efficiency and economy in water use.

1.23. In India over 70 per cent of population depends on Agriculture for its livelihood. The Indian Agriculture is to a very large extent vulnerable to vagaries of weather as more than 70 per cent of the country's gross cropped area depends exclusively on rainfall which is unequally distributed in respect of time and space, Rainfall is

inadequate even in areas having high rainfall. Irrigation is required not only in low rainfall areas and during non-rainy season but also during long breaks in rains, in good rainfall areas. Severe drought conditions occur in many parts when monsoon fails. With the growth of population and consequent need for larger agricultural production, the requirement of irrigation has increased a great deal. The scope for bringing additional area under plough being limited, the bulk of the increased production has to be brought about by increasing the yield from the existing lands for which irrigation is the master input.

1.24. The Committee note that the net sown area in the country in 1974-75 was 138 million hectares, out of which the net irrigated area is 33.6 million hectares which works out to about 24 per cent. By the early part of the next century, the sown area is expected to increase to 210 million hectares and the ultimate irrigation potential is estimated at 110 million hectares only i.e. about 52 per cent. According to the Report of the Irrigation Commission, 1972, our water resources are insufficient to meet the long term requirements of agriculture, industry and other users. There will thus be increasing competition for available supplies as more water gets harnessed and committed. The Commission, therefore, recommended a well defined policy for development of water resources of each region or basin to obtain the maximum benefits for the largest number of people. It felt that a river basin or in the case of large rivers a sub-basin is the natural unit for planning water resources.

1.25. The Committee note that so far no systematic study or analysis of utilisable water resources of the country has been done except for the Indus River system. A separate Directorate of Surface Water Resources was however set up in the Central Water and Power Commission in 1965 to undertake studies in regard to surface water resources for all river basins excluding Ganga, Brahmputra, and Indus basin. Out of the 31 basins identified for these studies, the Directorate has so far completed studies in respect of 5 basins only. 11 basins consisting of 4 sub-basins of the Krishna and 7 sub-basins of the Godavari involve reference to Tribunals and the availability and requirement of water in case of Krishna has already been gone into by the Tribunal and is being looked into in the case of Godavari. In one case (Pennar) no further study is stated to be necessary as the water has been largely utilised. Study for one more basin viz. Cauvery has been completed in the form of the Report of the Cauvery Fact Finding Committee.

1.26. The Committee have been informed that there is difficulty in obtaining the requisite data in regard to the 7 basins. The Committee

regret the slow progress in completing these studies which would form the basis for the development and utilisation of the water resources of these basins economically and efficiently. They urge that Government should take effective measures to collect the requisite data and lay down a time bound programme for the completion of the studies at the earliest. A careful watch should be kept regarding the progress made in completing these studies so as to take remedial measures without delay.

1.27. The Committee further note that data about Ganga was being collected by Ganga Basin Water Resources Organisation and that there is a proposal to set up Brahmaputra Central Board. The Committee would like Government to expedite the collectiton of data and completion of studies in respect of these major rivers so that the potential of these rivers is fully utilised for irrigation and other purposes in an integrated and coordinated manner in the best interest of the country.

1.28. The Committee note that at present the average annual flow of the various rivers or groups of rivers in the country is estimated at 180 million hectare metres and utilisable flow is about 70 million hectare metres. Of this, only about 25 million hectare metres has been utilised at present. The Committee consider that to meet the food and fibre needs of the increasing population of the country, it is of the utmost importance that high priority is given to the utilisation of the utilisable flow of the various rivers or groups of rivers in the country. It is a matter of regret that only about one-third of the utilisable irrigation potential has been harnessed so far. The Committee need hardly stress that concerted measures should be taken by Government for the maximum utilisation of the irrigation potential of the country so as to derive the maximum benefit from the existing water resources. The Committee urge that detailed plans for harnessing, managing and utilising the existing water resources economically and efficiently to the optimum, should be drawn up and that special attention should be paid to meet the irrigation needs of drought prone areas.

Responsibility of the Central and State Governments Regarding Development of Irrigation

1.29. Under the Constitution, water is a State subject. The Central Government has been given some powers only regarding making arrangements for adjudication of inter-State Water Disputes and for regulation and development of inter-State rivers to the extent Parliament considers it necessary in the public interest. The relevant provisions in the Constitution are contained in Article 262, Entry 56 of the Union List and Entry 17 of the State List.

1.30. Article 262 of the Constitution states as under :

(1) "Parliament may by law provide for the adjudication of any dispute or complaint with respect to the use, distribution or control of the waters of, or in, any inter-State river valley.

(2) Notwithstanding anything in this Constitution Parliament may by law provide that neither the Supreme Court nor any other court shall exercise jurisdiction in respect of any such dispute or complaint as is referred to in Clause (1)."

1.31. Entry 17 of the List II—(State List) and Entry 56 of the List I—(Union List) of the Constitution relate to the subject of water. They read as under :

ENTRY 17—STATE LIST

"Water, that is to say, water supplies, irrigation and canals, drainage and embankments, water storage and water power subject to the provisions of entry 56 of the List I."

ENTRY 56—UNION LIST

"Regulation and development of inter-State rivers and river valleys to the extent to which such regulation and development under the control of the Union is declared by Parliament by law to be expedient in the public interest."

1.32. Under the provisions of the Article 262 of the Constitution, the Inter-State Water Disputes Act, 1956 has been enacted by Parliament, providing for reference of any water dispute to a tribunal for adjudication on receipt of a formal request in this behalf from any of the concerned States, provided that the Central Government is of opinion that the water dispute cannot be settled by negotiations.

1.33. Under the provisions of Entry 56 of List I (Union List) of Seventh Schedule of the Constitution, the River Boards Act, 1956, has been enacted by Parliament. This statute was intended to promote integrated and optimum development of inter-State river valleys. The Act envisages setting up of River Boards by the Central Government on a request by interested States or otherwise. It has not been possible so far to set up any River Board on account of unwillingness/opposition shown by States.

1.34. The Union executive cannot exercise its executive power in respect of regulation and development of inter-State river and river valley referred to in Entry 56 of the Union List unless such regulation and

development under the control of the Union is declared by Parliament by law to be expedient in the public interest. Regulation and development of inter-State rivers and river valleys referred to in Entry 56 of the Union List become subject to the legislative and executive power of the Union only to the extent to which Parliament has by law declared such regulation and development to be expedient in the public interest.

1.35. There are laws enacted by the Centre to meet a specific situation such as D. V. C. Act, 1948, for development of the Damodar Valley, the Andhra Pradesh State Act of 1953 making provision for the Tungabhadra Project Punjab Reorganisation Act, 1966 specifying arrangements for Bhakra-Nangal and Beas Projects, the Betwa River Board Act, 1976 to deal with development of the Betwa river waters.

1.36. Development of water resources being essentially a State subject, the responsibility for investigations, formulation, implementation and operation of irrigation projects vests mainly with the State Governments/Union Territories. This being the position, the powers of control and regulation exercised by the Central Government are mostly advisory in nature.

1.37. Major and medium irrigation projects fall under the responsibility of Department of Irrigation and minor projects including groundwater fall under the Department of Agriculture, both in the Ministry of Agriculture and Irrigation.

1.38. The Department of Irrigation with the help of Central Water Commission is responsible to examine and advise the planning Commission on all major and medium projects that are formulated by the State Governments. The project reports after scrutiny in the Central Water Commission are put up to the Technical Advisory Committee constituted by the Planning Commission for consideration regarding their acceptance for inclusion in the States Development plans. The Technical Advisory Committee comprises representatives of the Department of Agriculture, Ministry of Finance, Central Water Commission and the Planning Commission. After acceptance by the Technical Advisory Committee, the Planning Commission after considering the availability of funds, approves the projects.

1.39. To ensure participation of Centre during the construction stage of a project and in order to provide efficient administrative set up to facilitate quick decision making, Central Government has been responsible in establishing a number of control boards for the efficient execution of various major inter-State projects. These control boards deal with all aspects relating to problems in regard to specific projects including inter-State aspects, if any keep a close watch on the progress of works, expenditure, etc., scrutinise project estimates and accord administrative approval and arrange expert advice and consultancy as necessary.

1.40. Subject to various safeguards and assistance provided by the Centre, each State carries out projects generally within its jurisdiction through its appropriate departments and agencies. There is a regular system of communication between the Centre and States/Union Territories about the progress of irrigation development. Progress status of individual projects is reported to the Centre periodically in prescribed proformae. The Centre assists the States in removal of bottlenecks reported in execution of projects and provides technical guidance when such requests are received. Through periodical reviews of progress of projects with State officers, Department of Irrigation, keeps a close watch on the physical progress achieved. Such reviews enable Centre to make periodic assessment of performance and outlays required for the programme and make future plans for development.

1.41. By adopting well coordinated working mechanism and by rendering assistance to States the Centre by and large is able to promote a national policy for irrigation development and play an effective role in ensuring orderly development of country's water resources.

1.42. In a note the Department of Irrigation has stated that in the absence of proper authority, the Centre finds itself handicapped in the following ways :

(i) Water is necessary for various development purposes, viz., agriculture (irrigation), hydro-power generation, domestic use like water supply etc., industrial use, pisciculture and wild life, management of river and waterways for flood control, drainage, navigation, and salinity control, recreation and pollution and environmental control. In a particular river basin, the demands for the purpose mentioned above can sometime be conflicting. In such case, it is necessary to lay down the policy and priorities for various uses. It will be possible to resolve the conflicting claim of the various users in different parts of the country only if Central Government has power to lay down the policies and to decide the priorities of allocation of water for different purposes.

(ii) Since most of the rivers in the country are inter-State, traversing more than one State and quite a few rivers are international, the proper management of rivers and waterways for flood control, navigation drainage etc., cannot be done unless the rivers are treated as one unit irrespective of the State boundaries. This cannot be done unless the Centre has power to regulate and develop the rivers.

(iii) Water resources can be developed in an optimum measure if the river basins or watershed is taken as a unit for planning

and development. This has not been possible so far, as the rivers or a river basin covers many States who plan their development in a limited sense. If the Centre assumes the power, it will prepare river basin plans and make arrangements for transferring surplus water within the river basin from one State to other deficit States or even from one river to another in the overall interest of the country.

1.43. The States were addressed in February, 1973 at the highest level seeking their views on the setting up of a National Water Resources Council to evolve a National Water Policy and to resolve disputes and to set up River Commissions to draw Master Plans and to indicate the best ways of utilising waters. The amendments to the Constitution needed for the purpose were also indicated.

1.44. During evidence, the Irrigation Secretary stated that the views of the State Governments were sought with regard to the constitutional amendments so that the Centre might have control on certain aspects, particularly with regard to water development. But the majority of the States including the important ones did not favour this idea. The witness added that the States had not expressed any specific reasons, but it was felt that the States had apprehensions that full justice would not be done to their respective interests. The witness further stated that the Ministry felt that if a national Water Policy could be evolved in consultation with the States, better climate would prevail where the States would cooperate with the Centre with respect to planning aspect on water. The witness added that the matter was referred to the Attorney General by the Law Ministry. His opinion regarding the extent to which Centre could legislate under the provisions of Entry 56 was under consideration. In reply to a question the witness stated that amendment to the constitution in this regard was again considered along with other amendments in 1976, but Government felt that it was not appropriate to go in for any amendment.

In reply to S.Q. 18 answered in Lok Sabha on 14th November, 1977, the Ministry of Agriculture & Irrigation stated that the question of direct involvement of the Centre in the planning of the uses of Water of inter-State rivers and other related matters is under active examination.

1.45. The Committee note that development of water resources is essentially a State subject and therefore the responsibility for investigation, formulation, implementation and operation of irrigation projects, vests mainly in the State Governments. Under Entry 56 of Union List, the Central Government can be entrusted with the regulation and development of inter-State rivers and river valleys to the extent to which such regulation and

development under the control of Union is declared by Parliament by Law to be expedient in the public interest. The powers of control and regulation exercised by the Central Government are thus mostly advisory in nature. The Committee however note that certain laws have been enacted by the Centre to meet specific situations such as DVC Act, 1948 for development of Damodar Valley, Andhra Pradesh State Act of 1953 making provisions for the Tungbadhra Project, Punjab-Re-organisation Act, 1956, specifying arrangements for Bhakra Nangal and Beas Project, the Betwa River Board Act, 1976 to deal with the development of Betwa River Waters. The Central Government have also been responsible in establishing a number of Control Boards for efficient execution of various major inter-State Projects. Under provisions of Entry 56 of the Union List, the River Boards Act, 1956 has been enacted by Parliament but it has not been possible so far to set up any River Board on account of unwillingness or opposition shown by States.

1.46. The Committee note that in the absence of proper authority in the matter of regulation and development of water resources, the Centre finds itself handicapped in various ways, such as resolution of the conflicting claims of the various users of water in different parts of the country, proper management of inter-State rivers and waterways in regard to flood control, navigation, drainage etc., planning and development of river basins in an integrated manner which cover many States etc. To overcome this difficulty the Centre addressed the States in February, 1973 at the highest level seeking their views on the setting up of National Water Resources Council to evolve a National Water Policy and to resolve disputes as also to set up river commissions to draw up Master Plans etc. The Committee note that the majority of the States did not favour the idea of amending the Constitution which could give sufficient powers to the Centre in this regard. The matter was also referred to the Attorney General and his opinion regarding the extent to which Centre could legislate in these matters under the provisions of Entry 56, is under consideration.

1.47. The Committee consider that for the proper management of the rivers and waterways as also for optimum utilisation of the utilisable water in the overall interest of the country, it is but appropriate that the Central Government should play an active role in the development and use of water resources. For this purpose, it may also be desirable that a National Water Policy is evolved in consultation with the States. The Committee would like Government to seek the cooperation of the State Governments in this regard and examine the question of enacting suitable legislation under Entry 56 of the Union List of the Constitution.

1.48. The Committee note that the question of direct involvement of the Centre in the planning of uses of waters of inter-State rivers and other related matters is under active examination. The Committee desire that this matter should be finalised early.

1.49. The Committee recommend that for the construction of all major river valley projects having inter-State aspects, Control Boards should be set up consisting of the representation of the Central Government and the State Governments concerned with a view to ensuring their participation during the construction stage.

CHAPTER II

IRRIGATION PROJECTS

A—Classification of Major and Medium Projects

2.1 Irrigation projects were classified into three categories namely major, medium and minor on cost basis. Projects costing more than Rs. 5 crores were classified as major projects, those costing between Rs. 25 lakhs (Rs. 30 lakhs in case of hilly areas) and Rs. 5 crore as medium and those costing less than Rs. 25 lakhs (Rs. 30 lakhs in hilly areas) as minor projects.

2.2. A review of the procedure, however, revealed that the categorisation of projects on the basis of costs, which differ widely from region to region, resulted in relative disadvantages to some States. There was also a possibility of under estimating the project to categorise them as medium or minor to avoid submission of detailed project reports. A more scientific classification was, therefore, considered desirable.

2.3. The magnitude of the works, both during construction and operation, mainly depend upon the extent of areas to be irrigated. The classification of projects is, therefore, being done on area basis since September, 1975. Projects having culturable command area (CCA) of more than 10,000 hectare are termed major projects and those having CCA upto 10,000 ha. are termed medium projects, except those which have already been classified as minor on cost basis in the Fifth Plan as outlays for minor irrigation in the Plan have been decided based on the old criteria. It is proposed that in the Sixth Plan, projects having CCA of less than 2000 hectares will be termed as minor schemes.

Planning of major and medium projects

2.4. Development of water resources being essentially a State subject, the responsibility for investigations, formulation, implementation and operation of irrigation projects vests mainly with the State Governments/Union Territories. This being the position, the powers of control and regulation exercised by the Central Government are mostly advisory in nature.

2.5. All major and medium irrigation schemes are required to be cleared by the Planning Commission before they are included in the State Plans. The Central Water Commission renders technical assistance to the Planning Commission in the scrutiny of these projects. Major projects are mainly examined in regard to basic planning, water planning, inter-State aspects,

basin-wise planning, utilisation of water etc. Medium irrigation projects are scrutinised on proforma basis in regard to basic planning, water availability, waterplanning and utilisation and inter-State aspects. An Advisory Committee on Irrigation, Flood Control and Multipurpose projects has been set up by the Planning Commission under the chairmanship of Secretary, Department of Irrigation. This Committee consists of representatives of the Central Water Commission, Central Electricity Authority, Ministry of Finance, Department of Agriculture, Department of Power, Ministry of Industry and the Planning Commission. The Committee scrutinises the following items and satisfied itself that :—

(i) the schemes have been prepared after detailed investigations ;

(ii) the schemes are technically sound and the estimates are complete and correct ;

(iii) the financial forecasts and estimates and benefits to be derived are based on accurate data and are reliable ;

(iv) the scheme has been examined from inter-State angle, and there is agreement between the States on such (inter-State) Scheme/s in which the interests of more than one State are involved.

On the basis of such examination, the Advisory Committee advises the Planning Commission on the merits of the individual projects. It also advises in regard to phasing of construction, improvement of financial returns, cropping pattern, water availability etc.

2.6. The responsibility for the development of irrigation and consequently for planning, investigation and formulation of such projects, their construction and maintenance rests with the State Governments. While sponsoring the inclusion of a scheme, the priority is indicated by the States in the Five Year and Annual Plans. However, while selecting new schemes, the Planning Commission gives priority for the schemes which benefit chronically drought affected, tribal and backward areas. The other criteria are benefit cost ratio, financial return and cost per hectare of individual projects. Benefits accruing from irrigation are far larger than the direct financial returns accruing to Government from irrigation rates. Benefit cost ratio is being used for assessing the feasibility of new irrigation projects instead of traditionally used criteria of direct financial return to Government. The projects having a benefit cost ratio of more than 1.5 : 1 are considered as feasible. However, in special cases *viz.* backward and drought prone areas the schemes having a benefit cost ratio of 1 : 1 could also be considered for inclusion in the plan. While selecting new schemes, priority is being given for modernisation of older irrigation system, for better control in distribution of water and augmentation of supplies.

2.7. During evidence, the Secretary, Department of Irrigation stated :—

"In the past, the economic feasibility of an irrigation project was being determined on the basis of the financial return to the exchequer. Projects which used to earn more than 4.5% were called productive projects and other unproductive. But this method did not truly reflect the benefit aspect of the project. The benefit has got a much wider content. It is not the Government which is going to be benefited, but the community at large. The matter has been gone into by the Gadgil Committee and they introduced the concept of cost benefit ratio. It means, if Rs. X are spent on a project, the annual burden to the State or to the project on this account is called the cost. Similarly, the annual benefit was considered. What was the agricultural production before the project was implemented and what is the net agricultural production after it was implemented. The ratio between the two is called the cost benefit ratio which is a true index of the viability of a project. Theoretically, if a project is going to be implemented overnight, any project which has got a ratio of 1 : 1 is desirable. But in actual practice, it takes a certain amount of time for implementation. That is why a benefit cost ratio of 1.5 : 1 is suggested. But in backward areas or drought prone areas relaxation is made and even if the ratio is 1 : 1, it is sanctioned."

2.8. In a written reply, the Department of Irrigation have stated that in many States a large number of major and medium projects were taken up which were far in excess of the resources of the State, particularly financial. Therefore, it has not been possible for the States to provide adquate funds for the completion of these projects with the result that projects have been lingering on for a number of years. The Department have further stated that in a few cases, meagre yearly outlays provided by the State for the projects which were hardly sufficient to cover the normal yearly escalation in project costs. States where this phenomenon has been particularly marked, are Gujarat, Maharashtra and Kerala. In Maharashtra as a result of adoption of concept of districtwise planning, a large number of schemes have been taken up in various parts of the State. Kerala is a very typical example where seven major schemes have been lingering on for over 15 years, as very meagre amounts were made available for their construction.

2.9. The Committee have been informed that the Department of Irrigation have been impressing upon the States the need to observe self-discipline in the matter of taking up of new projects and to give priority to the completion of on-going schemes. The problem was brought to the fore in the Conference of the State Irrigation Ministers which recommended that States should avoid spreading their resources too thin and concentrate on on-going schemes

for getting optimum returns on the investments. Simultaneously, efforts have been made to see that more funds are provided by the States for major and medium irrigation programme, so that the projects can be completed quickly. Some success has already been achieved in this regard. For instance, in Kerala, the outlay for major and medium irrigation sectors which was of the order of Rs. 7 crores per year upto 1974-75 has increased to over Rs. 18 crores in 1976-77. As a result, it has been possible to expedite the construction of selected on-going schemes in that State which have started giving partial benefits.

2.10. During evidence, the Secretary, Irrigation stated that at present tendency on the part of the State Governments was to concentrate on on-going projects, but still pressure continued for taking up more and more projects. The reason for the pressure was that irrigation facility was required almost in each nook and corner of the country while adequate funds were not available to develop irrigation potential almost immediately. The witness added that this tendency required to be discouraged.

2.11. The Committee note that before September, 1975, the irrigation projects were classified into three categories namely, major, medium and minor on cost basis. A review of the procedure revealed that the categorisation on the basis of costs which differed widely from region to region resulted in relative disadvantages to some States. Besides, there was possibility of under-estimating the projects to categorise them as medium or minor to avoid submission of detailed project reports. The basis of classification of the projects was changed in September, 1975 from cost of the project to the areas irrigated. It has been stated that the revised classification is more scientific and objective. It avoids the possibility of under-estimating of major projects as medium ones in order to do away with the submission of a detailed project report to the Planning Commission and detailed scrutiny. The system also removes the disadvantages to some States or regions where costs of the projects were higher as compared to other regions. The Committee, however, are surprised that in spite of these admitted drawbacks the old system of classification was allowed to continue till September, 1975.

2.12. The Committee note that in the past in many States like Gujarat, Maharashtra and Kerala, a large number of major and medium projects were taken up simultaneously which were beyond their financial resources with the result that projects have been lingering on for a number of years. In a few cases yearly outlay provided for the projects was very meagre and it was hardly sufficient to cover even the normal yearly escalation in the project costs. The Conference of the State Irrigation Ministers has recommended that the States should concentrate on the on-going schemes for getting optimum return on the investments. It has been stated by the Department of Irrigation that efforts have been made to see that more funds

are provided by the States for the major and medium irrigation schemes so that the projects can be completed quickly. The Committee note that some success has been achieved in this regard particularly in Kerala where progress in the completion of selected on-going projects has been expedited.

2.13. The Committee note that while the State authorities are now little more conscious about completing the on-going projects, continuous pressure is being brought on the authorities concerned to take up more and more new projects. The Committee feel that there is all the greater need for drawing up priorities for consideration of irrigation project schemes based on the need of the area, the plan projections for development, in order to utilise the scarce financial resources for achieving the best results in larger public interest. The Committee need hardly point out that special consideration in this behalf should be given to irrigation projects for areas which are prone to chronic draught conditions or which would help in the development of relatively backward areas more specially tribal areas.

B. Progress of Irrigation Development from Major and Medium Schemes

2.14. The following table indicates the progressive development of irrigation potential for major and medium projects against the ultimate potential of 57 million hectares.

	(Million Ha.) Progressive Potential created
Pre-Plan	9.7
First Plan	12.2
Second Plan	14.3
Third Plan	16.5
Annual Plans (1966-69)	18.1
Fourth Plan	20.7
Fifth Plan (1974-75)	21.5
1975-76	22.5
1976-77	23.5

2.15. Total additional irrigation potential likely to be created from the major and medium schemes during the Fifth Plan (1974-75) is placed at 5.8 million hectares.

2.16. The following table indicates State-wise the ultimate potential from major and medium schemes, potential created upto 1976-77 and its percentage to the ultimate potential :

(000 hectares)

S. No.	Name of State	Ultimate potential	Benefits to the end of 1976-77	
			Potential	Percentage of potential to ultimate
1.	Andhra Pradesh	6480	2773	42.8
2.	Assam	970	57	5.8
3.	Bihar	9229	2183	23.6
4.	Gujarat	2150	877	40.8
5.	Haryana	..	Included in Punjab	
6.	Himachal Pradesh	..	..	..
7.	Jammu & Kashmir	150	95	63.3
8.	Kernataka	2000	1001	50.0
9.	Kerala	1000	426	42.6
10.	Madhya Pradesh	5630	1212	21.5
11.	Maharashtra	2350	1070	45.5
12.	Manipur	..	..	..
13.	Meghalaya	..	..	..
14.	Nagaland	..	..	..
15.	Orissa	3600	1273	35.3
16.	Punjab	4920	3792	77.0
17.	Rajasthan	3150	1332	42.3
18.	Sikkim	..	..	..
19.	Tamil Nadu	1610	1162	72.1
20.	Tripura	..	..	..
21.	Uttar Pradesh	11200	4928	44.0
22.	West Bengal	2310	1363	59.0
	Union Territories	..	..	..
	All India	56750	23554	41.5

2.17. The following table indicates the performance in respect of major and medium irrigation programmes both physical and financial during the various plans :

(Rs. Crores 1000'hct.)

Plan	Financial		Physical Irrigation Potential	
	Outlay	Expenditure	Targets	Actual %
I Plan (1951-56)	167.61	376.24*	3468	2486
II Plan (1956-61)	386.95	380.00	4854	2143
III Plan (1961-66)	599.34	576.00	6570**	2231
			4481	
Annual Plan (1966-69)	422.51	435.19	2543	1540
IV Plan (1969-74)	953.81	1253.06	4766	2546
	2530.22	3020.49	22201	1096

*Includes Rs. 80 crores incurred on projects prior to commencement of first plan.

**Revised target as adopted at the mid term appraisal in November, 1963. The earlier target was considered optimistic.

2.18. A statement showing the Financial and Physical targets and achievements during the First to Fourth Plans State-wise is given at Appendix I.

2.19. It would be seen that whereas expenditure on the programme has invariably exceeded the outlay provided, the actual achievements during various plans have been consistently falling short of targets for the following reasons :

(i) Proliferation of projects under construction resulting in thin spread of financial, managerial and technical resources and as a result, thereof, delay in completion of projects;

(ii) Cost escalation caused by steep rise in cost of materials, equipment, and land and also delay in implementation;

(iii) Lack of proper investigation of project, unrealistic cost estimates and time-schedules of constructions; and over assessment of benefits to be derived;

(iv) Changes in the scope of projects during the course of their execution.

(v) Scarcity of construction materials like cement, stell, explosives, foreign exchange etc.

(vi) Delays caused due to difficulties in land acquisition.

(vii) Lack of adequate project management and monitoring.

2.20. In January 1972, the erstwhile Ministry of Irrigation and Power constituted a committee of experts to undertake a scientific investigation into the causes leading to the frequent increases in the cost of irrigation and multi-purpose projects and suggest modifications or revision in procedures for preparation of project reports and estimates as also improvements in the system of implementation of projects to ensure their completion within the sanctioned estimated cost and according to the schedule programme of completion. This Committee after undertaking detailed case studies for six projects spread throughout the country has given an exhaustive report, identifying the factors mentioned at (ii) to (vii) above as being responsible for increase in costs and delays in implementation of projects. The Committee emphasised the importance of proper and thorough investigation of projects, proper phasing of the construction of projects to yield benefits expeditiously, provision of adequate funds from year to year, need for adequate delegation of power, continuity of key personnel, training of officers engaged in the project works and adoption of modern management techniques.

2.21. The Ministry of Agriculture and Irrigation (Department of Irrigation) have stated that the report of the Committee was forwarded to the State Governments in May, 1973 and after examining the recommendations at the Centre, early their implementation was again commended to the State Chief Ministers in August, 1974.

2.22. The performance during the first three years of the Fifth Plan is indicated below :—

(Rs. Crores/1000 ha.)

Plan	Financial*		Physical	
	Outlay	Expenditure	Target	Actuals
1974-75	353.69	382.27	1218	192
1975-76	475.27	498.33	940 (Revised 1029)	1038
1976-77	687.83	694.12	1000 (Revised target 1200)	1073

*These exclude outlays/expenditure under Central Sector Programme.

2.23. A statement showing state-wise the Financial and Physical programme and performance during the year 1974-75 to 1976-77 is given at Appendix II.

2.24. The year-wise irrigation potential created during the Fourth Five Year Plan was as under :

Year	Potential created Million hectare
1969-70	0.41
1970-71	0.43
1971-72	0.44
1972-73	0.56
1973-74	0.70
	2.54

Thus irrigation potential created annually on an average during the Fourth Five Year Plan from major and medium irrigation schemes was about 0.5 million ha. The target laid down for the years 1975-76 to 1978-79 up the pace of development of irrigation on an average to 2½ times as compared to that achieved during the IV Plan.

2.25. The Committee have been informed that the various measures taken for implementation of the programme are :

(i) Identification of core projects whose tempo needs to be stepped up to achieve the target.

(ii) Preparation of works programme to derive optimum benefits and assessment of financial outlays for the coreproject.

(iii) Additional Central assistance to accelerate progress on certain selected projects.

(iv) Setting up of Monitoring Organisations at Central, State and projects levels to watch the progress and removal of bottlenecks in speedy execution.

(v) Efforts to obtain assistance from the World Bank for financing irrigation projects.

(vi) Steps to optimise the operation of existing projects to achieve maximum irrigation benefits.

(vii) Resolving inter-state disputes and clearance of large number of pending projects.

2.26. The Department of Irrigation have stated the major constraint in the implementation of programme relating to irrigation development has hitherto been the inadequacy of funds. The programme has, however, now been accorded the desired priority in the Fifth Plan and as against an outlay of Rs. 2,401 crores in the draft V Plan, an outlay of Rs. 3.135 crores (including Rs. 40 crores of E.G.S.) has been finally provided for major and medium schemes for creating an additional potential of 5.8 million ha. According to the Annual Report of the Department of Irrigation (1976-77), as per latest assessment, it is estimated that funds to the tune of over Rs. 3.450 crores would be required to achieve the Plan targets.

2.27. The expenditure incurred in the first year of the Fifth Plan amounted to Rs. 382 crores and a potential of about 0.8 million ha. was created. During 1975-76 against the outlay of Rs. 475 crores, the actual expenditure was Rs. 498 crores of which advance plan assistance was of the order of Rs. 55.8 crores, with which irrigation potential of 1.038 million ha. was created as against revised target of 1.029 million ha. The achievement of 1.038 million ha. during 1975-76, the first year of the 20-Point Programme, was double the average annual achievement in the Fourth Plan and it would need to go up to as much as three times during the next two or three years.

2.28. During 1976-77, an outlay of only Rs. 606 crores was initially agreed to by the State Governments in their annual Plans. As a result of review conducted recently, an additional outlay of Rs. 75.20 crores has been suggested for accelerating 29 projects in 14 States during 1976-77. Out of this, an amount of Rs. 48.10 crores has been agreed to be given as advance Plan assistance by the Centre. The balance amount of Rs. 27.10 crores was to met by the States from their own resources, including further resource mobilisation through additional levies on irrigated lands and economies in non-Plan and less essential expenditure.

2.29. The following table indicates the potential required for achieving the target of 5 million hectares under 20-Point Programme and the requirement of funds therefor during 1976-77 to 1978-79.

	1976-77	1977-78	1978-79
			(000 ha.)
Outlay required (Rs. crores)	687.73	820.45 (+20 ECS)	856.14 (+20 ECS)
Additional potential targetted	1200 (Revised)	1310	1505

2.30. For 1967—77, against the revised target of 1,200 thousand ha. the actual achievement was anticipated to be 1,220 thousand ha. on the basis of the latest review of progress conducted in December 1976—January, 1977.

2.31. In a written reply, the Department of Irrigation have stated that the additional potential that would be achieved in each State to enable the country as a whole to fulfil the target laid down under the 20-Point Programme has been intimated to the State Governments. The project wise contribution in creating the additional potential has also been intimated to them. The State Governments have been advised to take all necessary steps such as providing adequate financial outlays and other inputs for this purpose. The State Governments have also been advised that in order to actually achieve the targets laid down, they would have to plan for 10 to 15 per cent higher targets to allow for unforeseen slippages.

2.32. The Secretary, Department of Irrigation stated during evidence that their association with States had brought very good results in the last two years and there is much greater understanding and cooperation from the States. They had taken up a big programme of 5 million hectares as also various other measures in right earnest but still there were certain deficiencies such as :

(i) tendency among the States to take a large number of projects beyond their areas of financing resulting in delay in implementation.

(ii) Defective planning done by the State Governments not taking into consideration fully the needs of the other States.

(iii) Delays in sanction of special staff by State Governments for monitoring of projects.

(iv) Lack of competent staff for investigation because of absence of proper incentives.

(v) Unrealistic cost estimates of projects prepared by State Governments.

(vi) Unrealistic programme of implementation of projects prepared by State Governments.

(vii) Non-provision of adequate funds for the projects of a long term basis.

(viii) Delay in implementation of the policy decision particularly taken at the Conference of Irrigation Ministers.

2.33. During evidence, the Secretary, Department of Irrigation further stated :

"Upto the end of the second year of the Fifth Plan, the total potential created is 22.5 million hectares. In the remaining three years, 4 million hectares more will be added. Our aim is that whatever tempo has already been built up at the end of the Fifth Plan should be increased to the extent possible so that we achieve the final target in the shortest possible time.

2.34. According to the information furnished to the Committee in November, 1977 during 1976-77, the actual expenditure was Rs. 694.12 crores and the physical achievement was 1,073 thousand ha. The total outlay provided for 1977-78 is of the order of Rs. 988.83 crores and the benefits expected are stated to be 1313 thousand ha. The Annual Plan for the year 1978-79 is yet to be drawn up.

The Department of Irrigation have further stated in a note (November 1977) that the details of outlays and targets for the next five years are yet to be finalised. States have been requested to furnish their proposals keeping in view of the availability of their resources. It is broadly assessed that there would be requirement of Rs. 7,400 crores for major and medium irrigation programmes during next five years and a target of creation of additional irrigation potential of 8 million ha. would be feasible of achievement with this outlay during that period.

In reply to the Unstarred Question No. 80 answered in Lok Sabha on 14 November, 1977 the Minister of Agriculture and Irrigation stated that strategy for the next Five Year Plan starting from April, 1978 was discussed at the Third Conference of the State Irrigation Ministers held at New Delhi on 8 and 9 November, 1977. The State Ministers welcomed the high priority being given to irrigation and agreed to take necessary measures.

2.35. The Committee asked why in case of some States like Himachal Pradesh, Manipur, Meghalaya, Nagaland, Sikkim, and Tripura and information regarding ultimate irrigation potential is not available, the witness stated :

> "These States are located in hilly areas, these States are also quite conscious of the need to develop irrigation. No Master Plans have been prepared for these States because of the lack of proper organisation in the States but now the matter is being stressed to the State Governments. Recently, the Minister for Agriculture and Irrigation took up the question of agricultural strategy for current rabi with the Chief Ministers and we brought to their notice the need for developing irrigation facilities and preparing plans for development. We gave specific instructions to the Chief Ministers to strengthen or to create investigation unit and we also offered whatever help that they may require in this respect."

The Committee desired to know whether any time schedule has been fixed for achieving the ultimate irrigation potential. How much funds required for the purpose and how these were proposed to be raised.

In their written reply (November, 1977) the Department of Irrigation had stated that no such time schedule has been fixed, however, tentatively as per present thinking the ultimate potential (major and medium) will be fully developed by 2010 A.D. No assessment regarding requirement of funds for achieving this target has been made so far.

Storage of Flood Water

2.36. The Committee desired to be furnished with a note indicating the steps taken to prepare schemes for construction of a series of reservoirs for storage of flood water during the rainy season. In a written reply (November, 1977), the Department of Irrigation have stated that storage of flood waters in the reservoirs is one of the recognised methods of flood control, as it moderates flood peaks. The stored flood waters are released subsequently in such quantities which the river downstream can safely

carry within its capacity. For effective flood moderation, the reservoirs should be as near the damage centres as possible. Generally it is found that reservoirs constructed purely for flood moderation are not economically viable. Therefore, these have almost always to be combined with other purposes like irrigation, hydro-electric generation etc.

2.37. Prior to 1951, in India, storage reservoirs had been planned mainly with the object of providing irrigation. Since 1951, however, a large number of storage reservoirs have been built for multi-purpose use of water. Reservoirs with a primary object of flood moderation were constructed on Mahanadi in Orissa at Hirakud and on the Damodar in Bihar and West Bengal. In the case of Hirakud Dam, entire storage of 5822 M. Cum. (4.72 m. acre ft.) is utilised for flood moderation. The same storage space is later on utilised for irrigation and power generation by adopting suitable schedule of operations. This reservoir has helped in almost completely protecting the entire Mahanadi Delta. In the Damodar Valley, a total storage of 1862 M. Cum. (1.51 m. acre ft.) has been reserved for flood moderation out of a total storage of 3256 M. Cum. (2.64 m. acre ft.) in the four dams constructed. At present, however, a storage of 1295 M. Cum. (1.05 m. acre ft.) is utilised for flood moderation. The balance storage is utilised for irrigation and power generation. It has now been decided to acquire the land in Maithon and Panchet Dams in order to make available full designed flood storage.

2.38. Many other large irrigation and multi-purpose reservoirs such as Bhakra, Rihand, Nagarjunsagar and Tungbhadra etc., even though do not have any specific flood storage, although they do provide incidental flood moderation benefits by moderating flood peaks in most of the years.

2.39. In some reservoirs like the Ukai on the Tapi river in Gujarat, flood moderation is achieved by a pre-planned schedule of operation without providing specific flood storage.

2.40. Multi-purpose reservoir with specific flood storage has also been undertaken on the Brahmini river at Rengali in Orissa. Similar reservoirs are proposed to be taken up soon on the Baitarni river at Bhimkund in Orissa and on the Subernrekha at Chandil in Bihar. It is also now proposed to construct two reservoirs on the Sahibi river in Rajasthan and Haryana to store the flood waters and utilise them for irrigation.

2.41. Although, the flood problem in the Ganga and the Brahmaputra basins is serious requiring moderation of peak discharges in reservoirs, it has not been possible so far to construct major storage reservoirs in these regions mainly on account of lack of economically viable sites considering

high seismicity of the region and high sediment contents of the rivers which severely limit the life and utility of such reservoirs. However, investigations for two multi-purpose storage reservoirs with primary benefit of flood moderation are being investigated by the Government of Assam on the Subansiri and Dihang river, (tributaries of the Brahmaputra). Similarly, possibilities of constructing storage reservoir in Nepal on the Tributaries of the Ganga are being explored in consultation with the Government of Nepal.

2.42. The storage reservoir projects proposed by different State Governments are also examined with a view to see whether these can also benefit in moderation of floods either by providing specific flood storage or by devising a suitable operation schedule. However, wherever the reservoirs are located at great distance from the flood/drought areas, these assist in flood moderation and reduction in flood damages is minimised.

2.43. Various flood affected States as well as the Ganga Flood Control Commission appointed by the Government of India are now preparing comprehensive plans for flood control in different river basins. In these plans, the possibility of constructing storage reservoirs for flood moderation are also being examined.

2.44. The Committee note that against the ultimate irrigation potential of 57 million hectares from major and medium schemes in the country, a potential of 23.5 million hectares has been created by 1976-77. The potential available upto the end of the Fourth Plan was 20.7 million hectares. Prior to the Plan period, the major and medium schemes were providing irrigation to 9.7 million hectares only. During 23 years of planned development upto the end of Fourth Plan, another 11 million hectares were added. Thus the average increase upto the end of Fourth Plan has been about 0.50 million ha. annually. The Committee are concerned at this slow rate of development of irrigation potential upto Fourth Plan, which is one of the main inputs for increasing food production for our vast and growing population. At this rate, it would have taken more than half a century to develop the remaining irrigation potential. The country could ill afford this slow rate of development due to its mounting population. The Committee need hardly emphasize that it is essential that irrigation schemes are implemented at a much faster pace to maximise the agricultural production. The Committee have been informed that tentatively as per present thinking the ultimate potential of 57 million hectares will be fully developed by the year 2010, but no assessment regarding requirement of funds, for achieving this target has been made so far. The Committee feel that it is necessary to prepare a perspective plan to develop the ultimate irrigation potential and to inter-weave it in the national Plans for implementation according to a time bound programme.

2.45. The State-wise development of irrigation indicates wide imbalances in the percentage of the irrigation potential realised upto the end of 1976-77. While some States like Punjab and Tamil Nadu have achieved 77%, and 72.1% respectively of the ultimate irrigation potential, there are many States which are lagging far behind in their achievement. The development in a few States is about 20 per cent or even less, the examples being Assam 5.8%, Madhya Pradesh 21.5 per cent and Bihar 23.6%. In some backward and hilly States like Himachal Pradesh, Manipur, Maghalaya, Nagaland, Tripura and Sikkim even data about the ultimate irrigation potential is not available because of lack of proper organisation in the States. The Committee do not feel happy over this uneven development of irrigation potential from major and medium schemes in the various States during the past plans. The Committee need hardly emphasize that the prosperity of a State to a large measure depends on the increase in the agricultural production for which irrigation is an important input. The Committee strongly feel that imbalances in the development of irrigation facilities should receive serious attention. The Committee suggest that perspective plans aiming at optimum development of water resources should be prepared by each of the States, laying down priorities for implementation and taking into account the needs of drought prone and backward areas.

2.46. The Committee are perturbed to note that during the First to Fourth Plans although the expenditure on the irrigation projects exceeded the outlays provided, the actual achievements consistently felt short of the physical targets. In the first plan against the target of 3468 thousand hectares, the actual potential created was 2486 thousand hectares, shortfall being 28.3%. In the Second Plan, against the target of 4845 thousand hectares, the achievement was 2143 thousand hectares, shortfall being 55.8%. In the third plan against the revised target of 4481 thousand hectares, the achievement was 2231 thousand hectares, shortfall being 50%. During the Annual Plans (1966—69) against the target of 2543 thousand hectares the achievement was 1540 thousand hectares, shortfall being 39.5%. In the Fourth Plan against the target of 4766 thousand ha. achievement was 2546 thousand hectares, shortfall being 46.6%. To sum up while in financial terms, the expenditure over outlay for major and medium irrigation schemes upto the end of Fourth Plan exceed by Rs. 490 crores, that is, against an outlay of Rs. 2530 crores the actual expenditure amounted to Rs. 3020 crores, there has been a serious shortfall of the order of 11.255 million hectares (51.4%) in the achievement of physical targets that is, against a target of creation of additional irrigation potential of 22.201 million hectares, the actual achievement was 10.966 million hectares.

2.47. As pointed out earlier one of the reasons for shortfall in achievements has been proliferation of projects under construction resulting in the thin spread of financial, managerial and technical resources of the State and

delay in completion. The other reasons for slow progress as identified by a Committee of Experts were lack of proper investigations, change in scope of projects, scarcity in construction materials, delays in land acquisition, lack of project management and monitoring and cost escalation. The Expert Committee emphasised the importance of proper and thorough investigation of projects, proper phasing of the construction of projects to yield benefits expeditiously, provision of adequate funds from year to year, need for adequate delegation of power, continuity of key personnel, training of officers engaged in the project works and adoption of modern management techniques. The Committee note that the implementation of the recommendations was commended to the State Governments at the Chief Ministers Conference held in August, 1974. The Committee need hardly emphasise that the short-comings which were responsible for slow implementation of the Projects in the past, should be avoided in future. The Department of Irrigation should enlist the cooperation of the State Governments in this regard and keep watch over the implementation of the remedial measures.

2.48. The Committee note that the additional irrigation potential likely to be created from the major and medium schemes during the Fifth Plan period (1974-75—1978-79) was placed at 5.8 million hectares. During 1974-75, the first year of the Fifth Plan, against the target of 1218 thousand hectares, the actual achievement was 792 thousand hectares. The Committee note that during 1975-76 there was a marked increase in irrigation potential. Against the revised target of 1029 thousand hectares the actual achievement was 1038 thousand hectares. The achievement during 1975-76 was double the average annual achievement at 0.50 million hectares in the Fourth Plan.

During 1976-77, the achievement was 1073 thousand hectares against the revised target of 1200 thousand hectares, although on the basis of a review conducted in December, 1976—January, 1977, the achievement was anticipated to be 1220 thousand hectares. The Committee feel unhappy about the actual achievement during 1976-77 falling short of the revised target to the extent of 127 thousand hectares. The Committee desire that the reasons for this sizeable short fall in achieving the target may be carefully analysed with a view to taking necessary remedial steps.

2.49. The revised targets fixed for 1977-78 and 1978-79 were 1310 thousand hectares and 1505 thousand hectares respectively. According to the information now furnished to Committee (November, 1977), the total outlay proposed for 1977-78 is of the order of Rs. 988.87 crores and the benefits expected would be 1313 thousand hectares. The details of outlays and targets for the next five years are yet to be finalised. It is broadly assessed that there would be the requirements of Rs. 7400 crores for major and medium irrigation programme during the next five years and a target of creation of additional irrigation potential of 8 million hectares would be feasible of achievement with this outlay during the period.

2.50. The Committee note that the various measures taken during 1975-76 included identification of core projects whose tempo needed to be stepped up, preparation of works programme, additional central assistance to accelerate progress of selected projects, setting up of monitoring organisations at the central, state and project levels, efforts to obtain assistance from the World Bank, optimising the operation of the existing projects and resolving inter-State disputes and clearance of pending projects. The Committee feel that in view of persistent shortfalls in plan targets in the past, these measures should have been thought of much earlier.

2.51. The Committee note that the programme of development of irrigation had been accorded priority in the Fifth Plan, an outlay of Rs. 3135 crores had been provided for major and medium schemes for creating an additional potential of 5.8 million hectares. As per the revised assessment it was estimated that funds to the tune of over Rs. 3450.00 crores would be required to achieve the plan target. The State Governments had also been advised about the project-wise contribution to fulfil the overall target. They had also been advised to plan for 10 to 15 per cent higher targets to allow for unforeseen slippages. The Committee note that the strategy for the next five year Plan starting from April, 1978 was discussed at the Conference of the State Ministers held on 8 and 9 November, 1977 and the State Ministries heartily welcomed the high priority being given to irrigation and agreed to take necessary measures. The Committee desire that determined efforts should be made by the Ministry with the active cooperation of the State Governments to achieve the target of 8 million hectares laid down for the next plan starting from April, 1978.

2.52. The Committee desire that necessary steps in this direction should be initiated in right earnest without loss of time to finalise the Annual Plan for 1978-79 and also details of the targets and outlays for the next plan. The Committee emphasise that investigation of schemes and preparation of project reports in respect of new projects for the next plan to be taken up particularly in tribal and drought prone areas and modernisation of existing systems to improve their efficiency should be intensified. The Committee need hardly emphasise that Plans should be realistic and adequate funds should be provided for these programmes.

2.53. The Committee note with concern that although the flood problem in the Ganga and the Brahmaputra basins is serious requiring moderation of peak discharges in reservoirs, it has not been possible so far to construct major storage reservoirs in these regions mainly on account of lack of economically viable sites considering high seismicity of region and high sediment contents of the rivers which severly limit the life and utility of such reserves. Investigations of two multi-purpose storage reservoirs with

primary benefit of flood moderation are being carried out by the Government of Assam on the Subansiri and Dihang rivers (tributaries of Brahamputra). Similarly, possibilities of constructing storage reservoir in Nepal on the tributaries of the Ganga are being explored in consultation with the Government of Nepal. The storage reservoir projects proposed by different State Governments are also examined with a view to see whether these can also help in moderation of floods either by providing specific flood storage or by devising a suitable operation schedule. The various flood affected States as well as the Ganga Flood Control Commission appointed by the Government of India are now preparing comprehensive plans for the construction of reservoirs for flood control in different river basins. In these plans, the possibility of constructing storage reservoir for flood moderation also are being examined. The Committee are anxious that examination of schemes for construction of reservoirs in the Brahmputra and Ganga Basins, and their flood prone areas should be paid serious attention so that not only floods are moderated but also valuable water reservoirs are utilised for creating additional irrigation potential.

2.54. To the extent possible post-monsoon flows of water should be suitably stored in all river beds for irrigation. The Committee desire that a shelf of schemes should be prepared and these should be taken up according to priority.

C. Investigation and Project Reports

2.55. The responsibility for investigation of Irrigation Projects vests with the State Governments.

Depending upon the workload of investigation and preparation of projects, the organisation in the States comprises a separate circle for a group of projects or sometimes projects in a specified area. At times, depending on the workload, the entire activity of investigation and preparation of project reports is under the direction and supervisory control of a Chief-Engineer who either functions as a functional Chief Engineer or as a regional Chief Engineer.

2.56. The Expert Committee on Rise in Costs of Irrigation and Multipurpose Projects in their report (1973) recommended that for investigation of projects in general, States should have a broad based organisation involving all disciplines (engineering, geology, hydrology, agriculture etc.) so that work is done by persons experienced and expert in each of the specialised field. The Conference of State Irrigation Ministers held in July, 1975 recommended that State Governments should set up broad based

organisation for investigation and formulation of new projects and provide adequate funds for comprehensive investigation of new projects and their formulation.

It has been stated by the Department of Irrigation that for proper investigation of projects, states have been requested to set up a broad-based organisation involving all the disciplines. The need to take steps for improving the data base for planning water resources projects has also been stressed. States have been asked to avail assistance and guidance of Central Water Commission for investigation work.

2.57. The Committee asked about the measures taken to strengthen the technical personnel and machinery in the States. In a written reply, the Department of Irrigation stated :—

> "Statewise information regarding measures taken by the States to strengthen the technical personnel and machinery in respect of investigation and preparation of project reports is not available with the Central Water Commission. However, it can be stated that as the work-load in respect of investigation and preparation of project reports tended to increase, the State Government have increased their investigation organisations, which in the earlier stages were limited to may be a Division or two, to a special Investigation Circle or Circles with a number of Divisions thereunder. In some States even Special Chief Engineers have been placed in charge of investigation and preparation of project reports along with water resource planning of the State as a whole. The expansion of the organisation was, however, somewhat different in different States."

2.58. In a written reply, the Department of Irrigation stated as follows with regard to the staff engaged on investigation :—

> "By and large, the State Governments have competent technical personnel required for investigation of projects and preparation of project reports. At times difficulties might be experienced by the States in respect of expertise on complicated technical problems met with in the course of investigations. This expertise is then supplemented by the Central Water Commission, as required. The real problem in this respect appears to be the difficulty encountered in getting adequate and suitable staff for investigation and also attracting the adequately experienced staff for carrying out these investigations. These investigations are located in remote un-developed areas

where there is considerable lack of facilities and the work involved considerable hardship to the persons employed on investigations. This results in some States not being able to attract competent staff for investigations. Further, there are in some States no special incentives offered by way of adequate investigation allowance or survey allowance to the persons working on these projects and in such difficult areas. This also contributes to not attracting the staff for investigations. Nevertheless, the pressure on investigation and preparation of new projects cannot be reduced with the result that projects which are not adequately investigated, continue to be forwarded to the Planning Commission for getting clearance, resulting in undue delay."

2.59. The Committee desired to know whether the project reports received from the State Governments are prepared by them satisfactorily or there are some deficiencies. In a reply, the Department of Irrigation have stated :—

"By and large, the project reports received from a number of State Governments are fairly satisfactory. However, it cannot be said that they present a complete and fully investigated picture of the project. There are deficiencies in some of the project reports submitted by the States. This results in comments being taken by the Central Water Commission on these projects, which are either replied to or complied with by the States to the satisfaction of the CWC. In some cases, these replies are also given by them during discussions with the CWC officers in Delhi."

Role of the Central Water Commission

2.60. The Central Water Commission has been charged with the responsibility of carrying out technical scrutiny of major and medium irrigation projects on behalf of the Planning Commission before they are cleared by the Planning Commission. During this technical scrutiny, it had come to light that various projects were investigated by the various States according to their own standards. Further, it was also felt that it was necessary that the projects be planned very carefully to evolve the most economic means of accrual of the planned benefits and this would have been feasible only if comprehensive investigations in sufficient details were carried out. It was, therefore, felt that there was a need to formulate some guidelines for investigation of major irrigation and hydro-electric projects. With this in view, the Central Water Commission has brought

out a publication entitled "Guidelines for investigation of major irrigation and hydro-electric projects—(August 1975)". Copies of this publication have been sent to all the State authorities. In addition, the Planning Commission has issued a format and check list listing the various questions to be answered in connection with the different aspects of investigation of projects and preparation of project reports. Based on the questionnaire of the Planning Commission and the guidelines prepared by the Central Water Commission, it should be possible for the State Governments to prepare comprehensive project reports for irrigation and power projects in sufficient detail, so as to present a comprehensive and complete picture of the project. During evidence the Chairman, Central Water Commission stated that they had in July 1976 found that there were deficiencies in preparation of cost estimates and they had also prepared guidelines in this regard. Copies of these guidelines have been circulated to the various State Governments.

2.61. The Central Water Commission assists the States whenever any request is made by the States for investigation and preparation of project reports for irrigation and power projects. If during the stage of investigation and preparation of project reports, the State authorities come across complicated problems in respect of the project and ask advice of Central Water Commission, assistance is rendered to the States as may be required by them. This role of assisting the States to tide over their problems is continued further during the stage of execution of the project also.

2.62. A Committee of Experts in its report submitted in April, 1973 recommended :

> "Very big projects costing over Rs. 30 crores require a more strict treatment. In their case the first stage should invariably be the sanction of an Investigation Estimate on the basis of the preliminary project report or reconnaisance report. The outlay on such an estimate could be as much as 5 per cent of the anticipated total cost of the scheme and should be sufficient to enable a well-manned organisation to be set up at the project site for carrying out thorough investigations and preparing detailed estimates in terms of accurate data on quantities, etc. The organisation should be headed by a senior engineer who could be expected to take over the execution of the project also in due course.
>
> "The C.W. & P.C. should associate itself closely with the investigation organisations set up by the States and give them necessary guidance and assistance in their work."

2.63. The need for thorough investigations for major schemes costing over Rs. 30 crores and associating of Central Water Commission throughout the investigations and projects preparation was also impressed by the Minister of Irrigation and Power in his letter dated 2 August, 1974 to the Chief Ministers.

2.64. The Conference of State Irrigation Ministers held in 1975 recommended that the State Governments may consider the association of the Central Water Commission right from the stage of preliminary investigations and site selection for major projects costing more than Rs. 30 crores and preparation of a feasibility report in first instance. The State Governments were requested to take action accordingly.

2.65. The Secretary, Department of Irrigation conceded during evidence that the response of the State Governments has not been quite encouraging.

2.66. The witness added that with the reconstitution of the Reviewing Committees one of the task assigned to them was to review the investigation work and to associate themselves with the programmes of the States in regard to investigations. Each Member of the Central Water Commission had been assigned certain States and he would be visiting the States periodically when this aspect of investigation would also be reviewed by him and depending upon the special problems further follow up action would be taken. The Central Water Commission through the Reviewing Committees would be associated in the investigation of projects costing Rs. 30 crores or more.

2.67. The Export Committee on "Rise in Costs of Irrigation Projects (1973) suggested that the set up for technical examination of projects in the Central Water Commission needs to be streamlined and suitably strengthened and that examination of the same aspect of the project by different Departments can be dispensed with to avoid delay. In a written reply the Department of Irrigation have stated :

> "In the technical examination of projects in the past, comments being received from different Departments for certain items sometimes related to the same aspects. For example, the crop pattern was being examined both by W.I.N. Directorate, Central Water Commission and Water Management Division, Department of Agriculture. The Finance Officer, Ministry of Finance was offering comments on the estimates of projects which were being looked into by Rates and Costs Directorate of the Central Water Commission. It has now been decided that there will be no overlapping in respect of comments of

the projects by various agencies as indicated above, and that each agency confines its comments to specific aspects looked after by it. Thus, the W.I.N. Directorate will continue its comments to the cropping pattern with respect to the water availability whereas the Water Management Division, Department of Agriculture would restrict its comments to the crop pattern taking into consideration the soil surveys carried out in the command area and the number of waterings etc. required for the crop. Similarly, the Finance Officer now in the Department of Irrigation would confine his remarks to the benefit-cost ratio and the financial return only whereas the Rates & Costs Directorate would furnish comprehensive comments on the estimates and the adequacy of provision under various sub-heads of the estimates.

The above streamlining would not only save considerable time in the examination of projects by different agencies but also enable the T.E. Wing of Central Water Commission to carry out the work of co-ordination of comments quicker. Detailed examination of the comments sent by the various agencies is being carried out from this angle by the T.E. Wing and improvements are being and would be effected in consultation with the various agencies carrying out the examination. In view of large number of projects received from the States, the T.E. Wing of the Central Water Commission has also been strengthened by creation of an additional Directorate and the post of Chief Engineer (T.E.)".

2.68. The Committee asked about the time taken to clear a project, the Chairman, CWDC stated :

"If a project is well investigated, all the structures are designed properly and the estimates are prepared more realistically with proper cost analysis of major items, it takes about a year to clear it. As soon as we get the report from the State Government, it is distributed to the various specialised directorates in the Commission to get their comments and also to the Agriculture Department, Water Management Division. Then we compile all the comments received from them. If there are any adverse comments, they are communicated to the State, but by and large there will be some deficiency or other in planning or estimating or design features. So, we used to go on sending the comments and getting their replies. This used

to take a long time, and there are cases where it has taken. One to 1½ years for the State to reply. With the increased staff that we have got now, we have streamlined the procedure. Instead of sending the comments and getting replies, the Member in charge of Planning and projects in our commission calls the particular Chief Engineer of the State for discussions and whatever deficiencies are noticed have to be answered right there and then. Thus, we have been able to bring down the period of technical examination and by and large it will be cleared in one year."

2.69. Asked to justify the period of one year required for clearance of a project report, the Chairman CWC stated that at present there were about 300 projects on hand. Depending on the priorities fixed by the States, the Commission kept on clearing the projects technically. The witness added that in the case of medium projects, the Commission did not go very much into the details and only gave proforma clearance in three to six months, but long time was taken in case of major projects. For medium projects, the procedure had been streamlined and only availability of water and benefit cost ratio were examined. Most of the major projects cost more than Rs. 30 crores and these required longer discussion. The States might not be ready to answer all the comments. The witness added that one of the main causes of increase in cost was lack of proper investigation.

2.70 The witness added that the guidelines issued by the Commission were not properly followed. While the Commission appreciated the anxiety of the States or project authorities to get the projects cleared, they had to satisfy themselves that the cost of the project should not increase abnormally after the projects had been cleared.

2.71. Asked whether any effort was made to reduce the time taken in clearance, the Secretary, Department of Irrigation stated that the projects included in the Plan were given a high priority by the Central Water Commission in their scrutiny. But such of the plan projects as had not been included in the Fifth Plan would be left behind and priority projects recommended by other States subsequently would be taken up first. Too many projects had been taken up by the States at present and there would be a very large spill over at the end of the Fifth Plan. While agreeing that the Central Water Commission should cut down delays in examining the projects, the witness stated if the approved projects remained unimplemented for several years, the whole sanctity of the approval was lost and the cost of the projects got escalated. The witness added that the Central Water Commission had been strengthened to cope with the scrutiny

of the projects. The Central Water Commission had to proceed with the clearance of projects according to the priority given by the State Governments. The projects recommended by the State Governments were wanting either in proper investigation or cost estimates. Sometimes, the project reports were sent without carrying out adequate surveys. The canals were put up without any survey being carried out. The dams were designed without proper investigations. The construction material surveys were not carried. Explaining the reasons for this state of affairs, the witness stated that sometimes there were pressures in the States for putting up certain projects and these were referred to the Centre without carrying out proper surveys.

2.72. Asked if it was correct that the projects were referred back to the States with minor querries as the Commission had no time to examine this, the witness replied :—

> "That will not be correct position. That is why we want to have personal discussion with them. We want to cut down the delays in processing the projects. Now, the procedure is modified. We are going to have discussion with the concerned Chief Engineers and try to eliminate delays."

2.73. The Department of Irrigation have furnished the following Statement showing the position regarding the number of projects for clearance received by the Central Water Commission during the period 1-4-1971 to 31-12-1976 and the present position :—

	New		Total (new projects)	Cumulative total (new projects)
	Major	Medium		
1	2	3	4	5
Pending as on 31-3-1971 . .	42	122	164	164
Received 1971-72	9	31	40	204
Received 1972-73	15	60	75	279
Received 1973-74 .	31	85	116	395
Received 1974-75	21	86	107	502
Received 1975-76	24	34	58	560
1-4-76 to 31-12-76 . . .	23	66	89	649
Project cleared 1971-72 . .	8	21	29	29

1	2	3	4	5
Project cleared 1972-73 . .	3	68	71*	128
Project cleared 1974-75 . .	6	44	50	178
Project cleared 1975-76 . .	16	45	61	239
Project put up to TAC 1976-77 upto 31-12-76	10	66	76	315
Projects pending examination as on 31-12-76	117	217	334	

2.74. It has been stated that the State Governments have furnished to Central Water Commission as well as the Planning Commission a list of schemes proposed to be included by them in the Vth Five Year Plan. The reports of all such schemes are examined and priority assigned as desired by the State Government to enable suitable allocations to be made by the Planning Commission during the Annual Plan discussions each year. In addition to above, a number of unapproved schemes and schemes not included in the Plans are also sent by the State Governments which are also examined, though not on a priority basis, unless specifically requested for by the State Government concerned.

2.75. As regards the time taken for clearance, it has been stated that with the considerable delay in receiving replies from State Governments to the comments of Central Water Commission, it is found that it takes about 12 months for medium projects and 24 months for major projects between their receipt and submission to Planning Commission. It is, however, considered that if the projects are well investigated and reports properly prepared and States respond to the comments of Central Water Commission quickly, medium projects could be cleared within 6 months and major projects in about 12 months.

2.76. Considerable efforts have been put in by Central Water Commission to accelerate the examination of projects by various methods, and, an extra Directorate has been created recently for coping with the increased volume of work. In addition, frequent meetings are held with the State Government Engineers in order to sort out technical differences by personal discussions so as to eliminate or minimise delays. These meetings take away considerable time of senior officers of T.E. Wing, but have gone a long way in sorting out differences and technical issues between the Central Water Commission and State Governments thus enabling projects to be cleared at a more rapid pace.

*Many projects of Maharashtra in the Godavari Basin were pending as the dispute relating to Godavari waters was under adjudication by the Godavari Tribunal. Since a consensus amongst the concerned States for clearance of 20 projects of Maharashtra in the drought prone areas of the States was reached these could be cleared during the year. Some pending projects in the Krishna Basin could also be cleared with the receipt of the Report of the Krishna Tribunal in December, 1973.

2.77. The Secretary, Department of Irrigation stated during evidence that the crux of the problem is regarding the quality and competence of the staff. The efficiency of the investigation units was reflected in the project report which was formulated by them which contained lots of deficiencies.

2.78. Asked whether the Ministry of Central Water Commission had examined as to what should be the organisational set up of the investigation units, the Secretary, Department of Irrigation stated :—

> "We have not examined that for each State, as to what should be the organisational set up depending on the workload. What we have come to know actually is that they are not manned by competent people. Our officers whenever they go there discuss with them. In fact we also call them over here for discussion. I am very clear that they are not competent and experienced enough, they (Investigation Units) are not manned by competent staff."

2.79. The witness added that if competent pepole were to be posted at project sites they should be given some investigation allowance, transport facility, 'boarding facilities etc.' Asked if the matter had been taken up with the State Governments, the witness stated it had been taken up in a broad way that there was need to provide adequate facilities and now they would make definite recommendations in this regard.

2.80. The Committee are concerned to note lack of proper investigation and surveys of projects before preparation of project reports by the State Governments. This has resulted not only in the delay in implementation but also in escalation of costs of projects. The project reports submitted by the State Governments to the Central Water Commission suffer from many deficiencies. The Project reports have consequently to be referred back to the State Governments, resulting in avoidable correspondence and delay in clearance. In order to remove deficiencies the Central Water Commission have issued guidelines for investigation of major projects and realistic preparation of cost estimates. Besides the Planning Commission have issued a format and check list indicating the various points to be covered in connection with the different aspects of investigation of projects and preparation of project reports.

2.81. The Committee are concerned to note that these guidelines are not properly followed by the State Governments and projects submitted by the State Governments continue to be wanting in proper investigation or cost estimates. It is unfortunate that sometimes on account of local pressures,

the projects are referred to the Central Water Commission without carrying out adequate surveys and investigations. The Committee feel unhappy over this state of affairs.

2.82. The Committee were informed during evidence that the main reason for deficiencies in investigation was the non-availability of competent and experienced persons for carrying out investigations on projects which are generally located in difficult and remote undeveloped areas, lacking facilities. No special incentives by way of adequate investigation allowance or survey allowance etc. are given. The Committee feel that there is need for providing adequate incentives and facilities to the staff engaged on investigation/survey, in view of the hardships involved in undertaking this work in difficult and remote areas. The Committee were informed that this matter has been taken up with the State Governments only in a broad way. The Committee hope that necessary and conclusive action would be taken in this regard. The Committee need hardly emphasise the importance to posting competent and qualified staff in the requisite disciplines for investigation and survey work as proper investigation of the project in the very beginning will make expeditious clearance and implementation of projects and obviate costly delays.

2.83. The Expert Committee on Rise in Costs of Irrigation and Multi Purpose Projects (1973) had recommended that for investigation of projects the States should have a broad based organisation involving all disciplines (engineering, geology, hydrology, agriculture etc.). The Conference of State Irrigation Ministers held in July, 1975 also made this recommendation. The Committee note that the States have been requested to set up a broad based organisation and also take steps for improving the data base for planning water resources projects. The Committee are surprised that the State-wise information regarding the measures taken by the States to strengthen the technical personnel and machinery in respect of investigation and preparation of project reports is not available with the Commission. The Committee would like the Ministry to ascertain what follow up action has been taken by the State in setting up a broad based organisation for investigation and formulation of new projects and improving the data base for planning water resources.

2.84. The Committee note that the set up for technical examination of the projects in Central Water Commission has recently been strengthened and the procedure streamlined. Under the new procedure the Member in charge of Planning and Projects holds discussion with the State Chief Engineer about the deficiencies in the project reports instead of entering into long correspondence with the State Governments. By adopting the new procedure, it is claimed the Commission has been able to bring down the

period required for clearance of a well investigated and realistically estimated major project to one year. In case of a medium project in which the CWC do not go into the details and give only proforma clearance, a period of six months would be taken. Priority is given to the projects included in the current plan. Out of 649 projects referred to the Central Water Commission upto 31st December, 1976, 334 projects (117 major and 217 medium) were still under examination.

2.85. The Committee stress that with the strengthening of staff and streamlining of their procedure, the Commission should make concerted efforts to minimise the time for clearance of projects referred to by the State Governments. The Committee desire that stricter norms should be laid down and enforced in that behalf.

2.86. The Committee suggest that the Ministry should include in the Annual Report factual data about the number of schemes referred to the Commission/Union Government the number received back, the time taken in the process, the broad reasons therefore and the measures taken proposed to be taken to improve the position. The Committee note that the Expert Committee recommended in 1973 that the State Governments should set up a well manned organisation at project sites for investigation of projects costing more than Rs. 30 crores and that the Central Water Commission should be associated with such organisation. This need was also impressed upon by the Minister for Irrigation and Power in his letter to the Chief Ministers in August, 1974.

2.87. The Conference of the State Irrigation Ministers (1975) had recommended that the State Governments should associate the Central Water Commission right from the stage of preliminary investigation and site selecting for major projects costing more than Rs. 30 crores. But the response of the State Governments is not stated to be encouraging. It is now proposed that the Commission would associate themselves with the projects through the Reviewing Committee of the Commission who would review the investigations during the visits to the States periodically. In view of the various lacuna in the investigation carried out by the State Governments and the project reports prepared by them the Committee feel that it is in the interest of the State Governments if the Central Water Commission is associated with the investigation of major projects costing more than Rs. 30 crores from the very beginning so that any deficiencies during the course of investigation could be remedied at the earliest. The Committee suggest that the system of association of the Commission through the Reviewing Committees may be watched for some time and improvements made in the light of experience gained in its working. The Committee need hardly point out that if the Commission and more particularly the Members of the Reviewing Committee

approach the State authorities in a spirit of rendering assistance in the speedier preparation of the projects, the State authorities are bound to reciprocate this gesture, thus making for better coordination and understanding.

D. Accelerated Execution of Projects Reviewing Committees

2.88. The Department of Irrigation have informed the Committee that two Reviewing Committees were set up in May, 1967 to examine the progress of works of certain projects which were in an advanced stage of construction and to remove, as far as possible, the difficulties and bottlenecks experienced in the execution thereof. Subsequently, the work of these Committees was reviewed and these were replaced by four Reveiwing Committees in November, 1970. These Committees were headed by Members of Central Water Commission with Chief Engineers of the States/projects concerned and Deputy Secretaries concerned in the Ministry of Irrigation and Power as Members and Director (P&T), CWC as Member Secretary. Later on officers of the State Agriculture Departments and Officers of the Departments of Agriculture, Ministry of Food & Agriculture, were also associated with the work of the Committees. The Reviewing Committees were to review the progress of 24 major projects costing over Rs. 20 crores (except for Rajpura Canal and Kakrapar project) and which fell in any of the following categories :—

(i) Where the expenditure incurred at the time of review was much less compared to the total estimated cost.

(ii) Where most of the expenditure had already been incurred but the creation of potential had been slow; and

(iii) Where the utilisation of the potential created lagged far behind.

2.89. The Department of Irrigation have stated that the Reviewing Committees were expected to meet twice in a year for each project; once in Delhi sometime in September before the commencement of the construction season and once at the project side sometime during the period February to April. However, due to heavy work-load, Members of the Commission were not able to hold the meetings at the desired frequency. These meetings were held after various intervals as found possible. During 1974 and 1975 special efforts were made to closely monitor the progress of these projects, by holding as many reviews as possible.

2.90. The Reviewing Committees in course of their reviews have been pin-pointing the problems and bottlenecks on individual projects, giving

suggestions for speedier construction and utilisation of potential created and have assisted the projects in removal of bottlenecks by initiating appropriate action at highest level in the Government. A few typical examples of reviews carried out and how these have been useful in implementation of the projects are stated below :—

(i) In many cases, lack of adequate funds was found to be the major bottleneck. The reviewing Committee after assessing the status of progress and capability of construction organisation, recommended additional allocations. As a result of these recommendations, cases for provision of additional outlays were taken up with Planning Commission and more funds got sanctioned, which helped in accelerating the tempo of construction and advancing the target for accrual of benefits in some cases.

(ii) In many cases the Committees gave valuable suggestions for phasing of various works on a project for completing some of the items of work earlier so that partial benefits could start flowing.

(iii) A major bottleneck in many of the projects was the difficulty in getting construction materials like steel, cement etc. The required quantities of steel were made available to the project authorities through the intervention of CWC on priority basis.

(iv) On some projects, the Committees suggested strengthening of the construction organisations by providing additional staff. The matter was followed up with State Governments concerned and the seriousness of the problem highlighted which resulted in speedier processing of such proposals.

(v) In cases of some projects, the problems in execution and potential bottlenecks which needed to be tackled on top-priority basis, were highlighted by the Committees as a result of which timely action was taken at highest levels in States as well as Centre, and impediments in construction removed in time.

2.91. The Department of Irrigation have further stated in their note that the work earlier entrusted to Reviewing Committees has now been taken over by the Monitoring Units and as such meetings of these Committees for review of progress on selected projects have been discontinued with effect from current year. The Reviewing Committees have recently been reconstituted and assigned the task of review of various aspects of irrigation development in States.

2.92. In another note, Department of Irrigation have stated that the functions of the reconstituted Reviewing Committees (November, 1977) are as follows :—

(i) Review of the perspective planning of Water Resources Development in the States.

(ii) Review of investigations being carried out for projects of irrigation, flood control, drainage improvement, removal of water logging, ground water exploitation and its conjunctive use, utilisation of surplus waters during monsoon months, etc., and fixing of *inter se priorities* for their investigation and execution.

(iii) Review of the progress of on-going major and medium projects of the States with particular attention to these which would contribute towards creations of 5 million ha. under 20-Point Programme.

(iv) Review of steps being taken for optimising benefits from irrigation projects by modernisation of the existing systems, creation of infrastructure in the Command areas field channels, field drains, land shaping, linding of field channels, ground water exploitation and proper land and water managements.

(v) Review of follow-up action being taken by the States on :—

(1) Resolution passed by the State Irrigation Ministers Conferences;

(2) Recommendations of the Central Monitoring Teams for selected major on-going projects;

(3) Recommendations of Central Water Utilisation Team for improvement of modernisation of existing irrigation systems; and

(4) Recommendations of Expert Committee on integrated development of surface and ground waters.

2.93. It has been further stated that whereas the Monitoring Unit is meant for watching the progress and effective implementation of selected irrigation projects in the country, the duties assigned to the Reviewing Committees, as reconstituted, are quite broad based and touch almost all the aspects of water resources development including the review of follow up action taken at different forms such as irrigation Ministers' Conferences, Central Monitoring team, Central Water Utilisation Team and Expert Committee on the Integrated Development of Surface and Ground Waters

etc. There is no duplication in the functions of the Reviewing Committees and the Central Monitoring Unit.

Monitoring Units

2.94. The Department of Irrigation have stated that lack of adequate monitoring and evaluation of the inputs were identified as one of the main factors hindering the implementation of the Plans and achieving the targets. It was thought that installation of multi-level monitoring system at the central level, state level and the project level would accelerate the creation of the targeted irrigation potential during the Fifth Plan.

2.95. The three-level monitoring system envisaged was as under :—

(a) At the project level located at project sites.

(b) At state level through the State Monitoring Units.

(c) At the central level through a Central Monitoring Unit.

2.96. The monitoring of the first two units would fall under the purview of the State Governments whereas the third level would refer to the monitoring of certain selected projects forming the core of the irrigation programme to be implemented for the country as a whole by the Government of India in the Department of Irrigation.

The broad functions and objectives of the Monitoring Units in regard to irrigation projects are stated as under :—

(i) to assist the implementing agencies in ensuring that the projects taken in hand are executed in time and within the cost estimates.

(ii) to periodically review the availability and requirement of resources in order to bring the existing capacity of the projects towards full utilisation in accordance with the targets laid down.

(iii) to give the implementing agencies advance warning about the potential bottlenecks and likely shortfalls so that remedial action could be taken in time.

(iv) to assist in maximising utilisation of the existing resources and capacities of the projects.

2.97. According to the Department of Irrigation, by the creation of the monitoring units it was thought that a new monitoring culture would be inducted into the existing administrative system by way of introducting the

modern management tools like net work based programming and scheduling and easily identifiable data reporting and retrieval systems. The monitoring units are expected to send periodically status reports and take premature action wherever considered necessary with a view to preventing the potential bottlenecks and delays likely to occur on the projects under execution. State Irrigation Ministers Conference of July, 1975 noted the proposals of setting up a Central Organisation for Irrigation projects and recommended that the State Governments should initiate urgent action to set up similar monitoring cells at project level and the State level. At the Central level, a Monitoring Organisation was created in Central Water Commission during August, 1975. This nucleus unit was further expanded in July, 1976 with two full-fledged Chief Engineers exclusively earmarked to monitoring 25 selected projects all over the country. These projects in turn with the help of the monitoring units were expected to provide additional irrigation facilities for about 5 million hectares in the last four years of the Fifth Plan under the Prime Minister's 20-Point Economic Programme. The main function of the monitoring cell as constituted presently would be to collect, collate and analyse information regarding (a) physical progress in relation to the targeted programme, (b) funding schedule, (c) requirement of key and scarce construction material, (d) requirement of construction plant and machinery and foreign exchange, (e) identification of bottlenecks and steps to be taken to remove them and (f) review of the creation of irrigation potential.

2.98. The Committee have been informed by the Department of Irrigation that the Monitoring Units in CWC have visited most of the projects selected for monitoring and have sent status Reports on these projects after thorough discussion with the State/Project authorities and after evolving workable solutions to the intricate construction and administrative problems faced by them. The Central Monitoring Units have also addressed the State/Project authorities to create the State level and Project level monitoring units in their respective areas and are pursuing the matter vigorously. The Monitoring Organisation at the Centre is itself being expanded to cope with the assigned increased functions and the proposals for staffing and the creation of infra-structure are under examination at various levels of the Government of India. These monitoring units which are essentially advisory and consultative units of the Government of India have catalyst functions to perform in a delicate and complex field. They are expected to bring in the wake of their work sophisticated tools of management to bear on the works for achieving accelerated targets.

2.99. The Central Monitoring Organisation has been provided budget allotment of Rs. 3 lakhs for 1976-77. For 1977-78 during Annual Plans

discussions, the Planning Commission and the Department of Irrigation have approved budget allocation of Rs. 6.75 lakhs to cover 3 units of Monitoring headed by 3 Chief Engineers and the necessary minimum supporting staff.

2.100. Asked about the frequency of their visits to the projects, the representatives of the Commission replied that the monitoring units actually started functioning from October, 1976, and it was expected that the units would be able to visit each of the 27 projects assigned to them once in six months. But in cases where the project required closer watch, action was taken accordingly. In the case of important projects, the units would not hesitate to pay a visit once a month if the situation required a special watch. The witness added that so far the units had visited 21 projects, and the visits to the various projects would be completed in another six months. The witness further stated that during the visits a complete review of the project was taken up in discussions with the officers of the State Governments and the projects. The difficulties were discussed with the Secretary of the Department concerned and a Review Report was prepared. If necessary, action was taken at the level of the Secretary, Irrigation or even higher. The witness added "we have started working recently and it has paid dividend."

2.101. The representatives of the Central Water Commission stated that when the monitoring system was finally established, the lacuna in the prompt submission of progress reports would not arise. The witness added at present the persons working on the monitoring system had some other duties to perform with the result that he was not able to attend to the monitoring. The system was being revitalised. The Chairman of the Commission stated that they had asked for more staff for monitoring of projects. Asked about the experience of the functioning of the monitoring units, the Chairman of the Commission stated "it is very encouraging and very effective".

2.102. In a note furnished to the Committee, the Department of Irrigation have stated that out of 27 projects selected for monitoring 22 projects have so far been visited by the Central Monitoring teams. It has been stated that the creation of Central Monitoring Units have enabled periodical review of the progress and timely removal of bottlenecks in the speedy execution of projects. It has been possible to phase out the expenditure in such a way as to bring optimum results. Status reports have been prepared for the projects highlighting the critical items of work/bottlenecks and these have been sent to Planning Commission and the project authorities for further necessary action. These are being further pursued with the State authorities by the Department of Irrigation.

2.103. According to another note furnished by the Department, out of 27 projects selected for monitoring, monitoring units have not yet been set at the State-level and Project level in respect of 12 and 10 projects respectively.

Central Coordinating Committee on Monitoring

2.104. In a written reply, the Department of Irrigation informed the Committee that a Central Coordination Committee on Monitoring of major Irrigation Projects was set up in January 1976 to :—

(i) periodically review the progress and programmes of major irrigation projects and particularly those being provided with Central assistance;

(ii) consider matters referred to it by the Central Monitoring Unit for timely implementation of the irrigation programmes;

(iii) take effective steps for removal of bottlenecks hindering the progress.

Although the Central Monitoring Organisation in Central Water Commission was set up sometime back but the posts at higher level were filled up much later. The Monitoring Organisation has started work of monitoring progress of the projects in right earnest only recently. So far, there have been no such bottlenecks which required consideration at the level of the Central Co-ordination Committee. No meeting of the Committee has, therefore, been held so far.

However, the progress/programme of the various centrally assisted schemes is being reviewed periodically at the highest level with the State Chief Engineers and at the 2nd Conference of State Ministers of Irrigation held in September, 1976 in the context of providing Central advance Plan assistance during 1976-77.

2.105. Asked why no meeting of the Central Coordination Committee had been held so far, the Chairman, of the Central Water Commission stated that the Committee was the highest tier on the monitoring system at the Central Government level. The Committee consisted of the representatives of the various Departments like Railways, Transport etc. As the availability of the scarce material like cement, steel, explosives had eased, there was no need to hold any meeting and minor difficulties that were experienced had been sorted out by monitoring Units.

Progress Reports

2.106. The Department of Irrigation have stated in a note that the State Governments make available to the Central Water Commission quarterly reports of the progress of construction of all major projects costing more than Rs. 5 crores or more, and yearly progress reports of other irrigation projects in proform are prescribed in consultation with the Planning Commission. For projects costing more than Rs. 10 crores, apart from quarterly reports, a system of obtaining monthly reports, for keeping a closer watch, was in vogue till recently.

2.107. Besides the progress of works, the reports received from projects also indicate the bottlenecks being faced by them. On receipt of these reports, action is taken by Central Water Commission to render assistance to projects in overcoming difficulties which usually pertain to procurement of scarce construction materials, procurement of equipment, delays by supplier firms in supply of crucial items like gates, etc.

2.108. During evidence, the Chairman, Central Water Commission stated that there were 57 major projects costing more than Rs. 10 crores. The Commission had requested the State Governments to submit quarterly progress reports but very few States were sending their reports regularly. They were late by one or two months sometimes. Asked about the action taken in case of non-receipt of the progress reports regularly, the witness stated that they had now resorted to closer monitoring after the setting up of monitoring units. The units visited 27 projects selected for the purpose. They collected the information directly and took appropriate action.

2.109. The Secretary, Department of Irrigation stated during evidence that now there was a full understanding between the Central Water Commission and the States with regard to each project. The progress reports were routine and did not give any idea of the stage of the project. In these projects, certain critical items had got to be completed by a particular time so that the other items could be taken thereafter. They had to watch the completion of each item and they were doing that.

2.110. In a note , furnished to the Committee, the Department of Irrigation have stated that there are 75 projects costing more than Rs. 5 crores each which have spilled over into the Fifth Plan from the earlier Plans. In addition to these 25 more projects costing more than Rs. 5 crores have so far been approved/cleared during the Fifth Plan.

The State-wise break up of these 100 projects (75 earlier and 25 new) is given below :—

State	Name of Schemes	
	Earlier	New
Andhra Pradesh	4	1
Assam	Nil	1
Bihar	7	3
Gujarat	7	..
Haryana	2	1
Jammu & Kashmir	1	1
Karnataka	6	1
Kerala	7	..
Madhya Pradesh	6	..
Maharashtra	12	7
Manipur	1	7
Orissa	3	1
Punjab	5	..
Rajasthan	3	1
Tamil Nadu	3	1
Uttar Pradesh	5	6
West Bengal	3	1
Total	75	25

2.111. All the 25 new schemes approved so far during the Fifth Plan, barring a few projects, have been sanctioned only during the last one year or so and only preliminary works have been taken up so far on most of these schemes. Some of these projects have started sending the progress reports whereas in case of others the progress reports are expected when their execution is taken up.

With regard to the 75 projects spilling from earlier Plans, progress reports in case of most of these schemes are being received, although they are not always regular while in some cases these are received after considerable delay. Reports for following projects are, however, not being received.

Haryana

1. Gurgaon Canal

Manipur

1. Loktak Lift Irrigation

Orissa

1. Mahanadi Delta

Punjab

1. Extension of non-perennial irrigation in U.B.D.C.
2. Diversion Barrage of Shahnahar Canal.

2.112. States/projects are being constantly reminded about the timely submission of progress reports by the concerned Directorate in Central Water Commission. The matter regarding timely submission of these reports is taken up at higher level occasionally. In July, 1974 Deputy Minister in the erstwhile Ministry of Irrigation & Power addressed letters to Chief Ministers of Andhra Pradesh, Bihar Maharashtra, Orissa, Rajasthan, U.P. and Governor of Gujarat regarding timely submission of reports for some specific projects in these States. Again in April, 1976 Member (P&P) C.W.C. addressed a communication to the Secretaries incharge of the Irrigation Departments in Bihar, Gujarat, Haryana, Kerala, Madhya Pradesh, Orissa, Rajasthan and U.P. about the delay in receipt of progress reports for project in these States. Again, Additional Secretary, Department of Irrigation vide his D.O. dated 14-7-1976 addressed to Chief Secretaries of State Governments stressed the need about timely submission of progress reports on projects and requested the State Governments to ensure that the quarterly reports are sent according to the prescribed schedule.

2.113. Also, in the course of discussions with the State/Project Officers at the time of Plan discussions, Review Committee Meetings etc. the need for timely submission of progress reports is being stressed.

2.114. The progress reports received in the Central Water Commission are scrutinised and action is initiated for removal of bottlenecks which are reported by the individual projects in the execution of works. Most of the bottlenecks reported relate to difficulties in procurement of scarce construction materials like steel, cement, explosives, procurement of equipment and spare parts etc. The bottlenecks in respect of such items are immediately brought to the notice of the concerned Directorates in Central Water Commission dealing with Plan and Machinery and construction materials. They immediately take up the matter with the concerned Chief Engineer and try to assist the project by taking up the case with the Iron and Steel Controller/Cement Controller on their behalf. Occasionally, projects report difficulties in procurement of special quality steel for items like gages, penstocks. Action is taken in such cases to get the required quantities on priority basis. Alternatively, action is taken to import the steel which is not available within the country. The work relating to co-ordination in respect of requirement of construction materials on irrigation and hydel projects, and scrutiny and processing of proposals for import of steel materials is specifically assigned to one of the Directorates in the Commission. This Directorate maintains inventory or surplus steel available in different projects in the country so that it can be allocated to projects whenever a request is made to the Commission for helping in the matter. In case of equipment, the difficulties generally reported are long delivery schedules, delay in procurements of spares, delay in the import of parts for imported equipments etc.

Such matters are immediately taken up by the P&M Directorate of C.W.C. with the Supplier Firms and D.G.S.&D. In many such instances help has been rendered by the Commission in getting the Rate Contracts of Supply of spares for equipment expedited.

2.115. In a number of cases where the completion of a particular project/ works was likely to be delayed due to delay in fabrication of items like gates etc. C.W. Commission Department of Irrigation took up the matter with the manufacturing firms and persuaded them to agree to time-bound delivery schedules. Also, whenever it was so needed the matter was brought to the notice of State Governments who were requested to settle claim cases which were holding up the progress of works. Sometimes, the progress of projects is held up for reasons like frequent power failings, difficulties in borrowing material for construction of projects, difficulties in land acquisition for canal system, delays due to inadequate allotment of railway wagons for transport of coal, cement etc. In all such cases Commission, Department or Irrigation is taking action to focus the attention of the concerned authorities for immediate mitigation of the problems. In case of difficulties like procurement of railway wagons for coal and cement the matter was taken up with the concerned Ministries for allocation of adequate number of wagons to the concerned project.

2.116. The major problem in the past has been inadequate finances available to the projects for execution of works. The Department of Irrigation as a result of its continuous scanning of progress of projects, is able to pin-point the hold-ups on this account and has been able to assist in getting the projects, wherever necessary, additional outlays for their accelerated execution. Also, the Commission is taking up the matter of strengthening of Construction Organisations wherever progress is hampered on this account.

2.117. The Committee note that lack of adequate monitoring and evaluation of inputs were the main factors hindering the implementation of irrigation projects and achieving the targets. As early as May, 1967 two Reviewing Committees were set up to examine the progress of work in certain projects which were in the advanced stage of construction and to remove difficulties/ bottlenecks experienced in their execution. These Committees were reorganised and replaced by four Reviewing Committees in November, 1970 and entrusted with the review of 24 projects costing over Rs. 20 crores. The Committee are concerned to note that these Review Committees which were required to meet twice a year did not actually hold the meetings at the desired frequency. The result was that the projects were not reviewed regularly. It was only in 1974 and 1975 that special efforts were made to closely monitor the progress of the projects. The Committee regret that adequate attention was not paid by the Reviewing Committees to the task of reviewing the progress of projects assigned to them.

2.118. The Committee note that the work earlier entrusted to the Reviewing Committees has now been assigned to Monitoring Units. The Reviewing Committees have recently been reconstituted and assigned the task of review of the various aspects of irrigation development in the States. The Committee would urge that the functions now assigned to the Reviewing Committees should be critically reviewed to ensure that there is no overlapping with the functions assigned to the monitoring units under the new system. It should also be ensured by periodical evaluation that these Review Committees function effectively. The Committee note that a monitoring system at the Central level, State level and Project level has been envisaged, to accelerate the creation of targeted irrigation potential during the Fifth Five Year Plan. At the Central level, the monitoring organisation was created in the Central Water Commission during August, 1975 which was further expanded in July, 1976 with two full-fledged Chief Engineers exclusively earmarked to monitor 27 selected projects all over the country. The units started functioning from October, 1976 and have so far visited 22 projects. The Committee have been informed that the functioning of the monitoring system has been very encouraging and very effective. The creation of the Central Monitoring units has enabled periodical review of the progress and timely removal of bottlenecks. They note that the Monitoring organisation at the Centre is being further expanded to cope with the assigned increased functions and the proposals for staffing and the creation of infrastructure are under examination. The Committee desire that early decision should be taken to facilitate the effective functioning of Central Monitoring Units. The Committee desire special attention to be given to projects which have been lagging behind.

2.119. The Committee have been informed that monitoring units have yet to be set up at the State level and project level in respect of 12 and 10 projects respectively. The Committee desire that the setting up of monitoring units at the State and Project level may be pursued with the State Governments concerned vigorously. The Committee would like to evaluate the working of the monitoring system periodically with a view to bring about necessary improvements in the light of experience gained and to make sure that the expenditure being incurred on it is justified by the results achieved.

2.120. The Committee note that a Central Coordination Committee of Monitoring of Major Irrigation projects has been constituted in January, 1976. This Committee is the highest tier on Monitoring system at the Central level. The Committee are surprised that since its constitution no sitting of the Central Coordination Committee has been held as no bottlenecks requiring the attention of this Committee are stated to have arisen. The Committee are not convinced. They desire that the Central Coordination Committee should meet periodically to undertake an overall review of the

progress and programmes of major irrigation projects to accelerate implementation of projects.

2.121. The Committee note that the State Government make available to the Central Water Commission quarterly progress reports of the progress of all major projects costing more than Rs. 5 crores and yearly progress report of other irrigation projects. On receipt of these reports action is taken by the Central Water Commission to render assistance to the projects in removing difficulties. The Committee regret to note that very few state Governments are sending these reports in time. While the Committee appreciate that the progress of the projects is now being reviewed by the Central Monitoring Units during discussion with the project authorities, they would like to observe that monitoring is resorted to by the Central units only for 27 projects at present. The Committee feel that it is necessary that the progress reports in case of other projects should also be received by the Central Water Commission regularly, to enable them to keep a watch over the implementation of the projects and remove any bottlenecks. The Committee desire that the question of timely submission of the progress reports may be pursued with the State Governments and successfully resolved.

CHAPTER III

FINANCING

A. Financing of Major and Medium Projects

3.1. In a statement furnished by Department of Irrigation, the following position regarding the total of Plan outlay vis-a-vis outlay on major medium irrigation projects during the various Plans is indicated :—

(Rs. in crores)

Plan	Total Plan Outlay	Outlay on major and medium irrigation	Percentage of column 3 to 2
1	2	3	4
First Plan	1960	300	15.3
Second Plan	4672	379	8.1
Third Plan	8576	580	6.79
Annual Plan (1964-69)	6625	434	6.56
Fourth Plan	15778	1161*	7.36
1974-75	4814.34	384.51	7.99
1975-76 (Revised approved outlay) . .	6351.17	473.93	7.49

*Excluding non-Plan assistance of Rs. 76.30 crores sanctioned during the Fourth Plan.

3.2. According to the Final Fifth Plan document, as against the total plan, outlay of Rs. 39303 crores, the outlay on major and medium irrigation schemes would be Rs. 3095 crores i.e. 7.8 per cent.

3.3. The Committee enquired about the justification for the decrease in percentage of outlay on major and medium irrigation. The representative of the Planning Commission stated :

> "Acutally this percentage analysis is a little misleading in the real sense of the term. The outlay on irrigation is determined on various factors—firstly the number of projects in progress are considered. At the time of discussing the Annual Plan and also in the formulation of the Fifth Plan what are the definite requirements for these projects are again gone into in great detail and they are worked out. Then, for each State, what are the new projects to be taken up, keeping in view the States' financial resources, are also discussed and worked out. And

then, at the end of the round of discussions, the total outlay for the irrigation sector is worked out. The actual outlay on irrigation projects has been steadily going up from Plan to Plan. In fact, the outlay, during the last three years, has been stepped up substantially. During the year 1975-76 the outlay was of the order of Rs. 500 crores in 1976-77 it has been stepped upto nearly Rs. 700 crores and, in 1977-78 annual plan discussions are now in progress. We are provisionally thinking of investing an outlay of the order of more than Rs. 600 crores. This outlay as compared to the outlay of Rs. 300 crores in the Third Plan and about Rs. 1200 crores in the Fourth Plan are substantially stepped up and it has actually gone up. A high priority has been given to irrigation development in the plan formulation. But percentage-wise, it has been fluctuating it is roundabout 7 per cent. That is actually going up. Outlay of the Plan has also been simultaneously rising in successive five year plans. In the initial stages the percentage shows higher rates because at that time the first plan was a combination of various developments which were in progress."

3.4. The Committee desired to know the total demand of the Department of Irrigation and the actual allotment. The Chairman Central Water Commission stated that against the total demand of Rs. 3230 crores for both the major and medium projects, the Planning Commission allotted Rs. 3095 crores. The witness added that the Ministry were in dialogue with the Planning Commission to increase the funds by Rs. 150 crores making the total allotment as Rs. 3245 crores.

3.5. According to a statement furnished by the Department of Irrigation, the outlays proposed by the States for major and medium irrigation projects and the outlays approved by the Planning Commission from Third Plan onwards were as follows :

(Rs. crores)

	Proposed by States	Approved by Planning Commission
Third Plan	719.57	599.34
Annual Plans		
1966-67	139.94	126.81
1967-68	175.87	128.40
1968-69	154.68	143.32
Fourth Plan	1117.47	951.45
Fifth Plan	2899.14	3094.93 (+ 40 EGS)

3.6. The Committee desired to be furnished with a note indicating the funds demanded by the State Governments for Irrigation projects, the amount recommended by the Department of Irrigation and outlays approved by the Planning Commission during the Third, Fourth and Fifth Plans. The information is still awaited.

3.7. The Irrigation Commission (1972) examined the problem of financing large irrigation projects and observed as under :

> "We have given the problem of financing large irrigation projects a good deal of thought and have come to the conclusion that unless special arrangements are made for financing them it will not be possible to complete them speedily. Also, it is not in the best interest of the nation that when a State undertakes a very large irrigation scheme, its other developmental activities, should be slowed down. We would, therefore, suggest that at the time of according approval to a large irrigation scheme, irrigating, say over two hundred thousand hectares, it should be examined whether the State Government is in a position to execute the scheme at the optimum pace, keeping in view its financial resources and its existing commitments to other schemes. If not the State should negotiate with the Union Government for special arrangement. The following considerations could be kept in mind : the backwardness of the area to be served, the existence of large unharnessed water resources, which, in the absence of any special arrangement would take a long time to develop, and the ability of the State to undertake large projects. Central assistance in respect of such projects should be earmarked and funds made available to suit the actual requirement. The State should agree to execute the project expeditiously and efficiently. The need for special assistance for selected large irrigation projects is already recognised in the pattern of Central assistance to the States. What we are now suggesting is the extension of the principle, so that the full requirement of such projects is met, and not just part of it.

3.8. The National Commission on Agriculture (1976) which also considered this problem has stated as below :

> "For Planning construction of large irrigation projects on a sound basis, there has to be a reasonable assurance that the funds would be forthcoming according to the stipulated construction programme. A protracted period of construction not only de-

lays accrual of benefits but also makes the project more expensive as overhead costs increase. A large project which is apt to drag its feet due to constraint of funds in the State plan should be provided with additional funds from the Centre after ascertaining the outlay which can be reasonably met from the State Plan, and the construction carried out at the optimum place. The entire outlay for the project in the State Plan including the additional Central assistance should be earmarked. For such assistance only large project that would irrigate more than 200,000 hectares need be considered. This arrangement makes it all the more important that planning of projects should be done carefully and estimates prepared correctly, price rise which cannot be forecast expected. The estimates of all irrigation projects should be reviewed and updated atleast once in five years and in any case before the formulation of a five year plan."

Central Assistance

3.9. In a note, the Department of Irrigation have stated that prior to Fourth Plan, central assistance was being given to the States for specific River Valley projects. This assistance consisted of loan component only and not grants. The States were also assisted in the implementation of irrigation projects by way of miscellaneous development loan assistance.

3.10. During the Fourth Plan, the pattern of Central assistance was reviewed. Central assistance was given to the State Governments in the form of block loans and grants and was not related to any individual sector of development or project. However, non-plan assistance of Rs. 76.38 crores was given to some States during Fourth Plan for certain specified irrigation projects. Besides this, central assistance was also given during 1973-74 to the States for advance action for Fifth Five Year Plan for major and medium irrigation schemes.

3.11. As regards the Fifth Plan, the system of block assistance is being continued. However, during the year 1975-76 special advance plan assistance of Rs. 55.8 crores was given to the States for selected irrigation projects.

3.12. In another note the Department of Irrigation stated that although Central financial assistance is given as block loans and grants, the outaly in respect of selected projects is 'earmarked' while communicating Planning Commission's approval to the State Government for the State Plan. This

would mean that in case the actual expenditure on these projects falls short of the outlay approved there would be corresponding reduction in the Central assistance to the States. This enables the Centre to keep a watch on the progress of certain important irrigation projects. It also enables the State Administration to resist pressure for diversion of funds from one project to another.

3.13. According to the Department whereas the block loan system gives more freedom to the States to utilise the assistance, in an optimal manner, the system of earmarking funds ensures adequate funding of the important schemes. A good balance is thus struck by this system and so far as major and medium schemes are concerned, no difficulties are experienced.

3.14. In a note, the Department of Irrigation stated that advance plan assistance was sanctioned during 1975-76 with a view to expediting construction of 18 projects and getting additional benefits from them during that year wherever possible. Due to constraint of resources, the execution of these projects have been going at a pace which was governed by available funds rather than optimum pace physically capable of achievement. Because of paucity of funds, these projects would take longer time for their completion, than what would have been the case if funds were no constraint. Progress of these projects is now being closely monitored by the Central Monitoring organisation. Last year, pending the setting up of the organisation, ad-hoc arrangements were made to review the progress. While giving additional assistance, enhanced target of additional benefits were set for individual projects.

3.15. To a question how far the objective of giving special advance for assistance was achieved during the year 1975-76. The department of Irrigation have stated in a written reply that given the outlays approved for these projects in State plans, the additional irrigation potential created during the year would have been 237,00 ha. As a result of provision of additional assistance, an additional potential of 283,000 ha. was developed over and above the potential envisaged with normal outlays, thus adding significantly to the benefits. As the actual performance would show, the actual achievement has been more or less as per promises made, fully justifying the additional investment.

3.16. A statement showing the achievements of the 18 major projects during 1975-76 is given below :

Name of the Project	Benefits (1975-76) ('000 ' ha)		Remark
	Target	Achieve-ment	
1	2	3	4
1. Nagarjunasagar (A.). . . .	15	25	
2. Pochampad (A.P.) . .	30	4	**
3. Gandak (Bihar)	40	63	
4. Kadana (Gujarat)	50	50	
5. Mahi Bajajsagar (Gujarat & Rajasthan)	..	..	
6. Jawaharlal Nehru Lift Canal (Haryana)	10	5	
7. Ravi Canal (J&K)	..	..	
8. Malaprabha (Karnataka) .	15	15	
9. Periyar Valley (Kerala) .	3	6	
10. Pamba (Kerala) . . .	5	2	
11. Kuttiadi (Kerala) . . .	5	8	
12. Jayakwadi Stage-I (Maharashtra)	30	30	
13. Kukadi Stage-I (Maharashtra)	..	2	
14. Bhima (Maharashtra)	..	..	
15. Mahanadi Delta (Orissa)	40	39	
16. Rajasthan Canal (Rajasthan)	55	55	
17. Sarda Sahayak (UP) . .	173	173	
18. Kangsabati (W.B.)	40	43	
Total :	511	520	

**The target could not be achieved due to non completion of deep cuts and they are likely to be completed during 1976-77. Thus the benefits envisaged during 1975-76 will accrue during 1976-77.

3.17. The Department of Irrigation have stated in their written reply that an amount of Rs. 75.20 crores has been sanctioned as additional outlay during 1976-77. This assistance has been sanctioned to 26 major and 14 medium irrigation projects in 14 States. Out of total assistance of Rs. 75.20 crores, Centre would provide Rs. 48.10 crores while States have to provide Rs. 27.10 crores from their own resources. The actual amount released by the Ministry of Finance was Rs. 39.90 crores. Taking into account the resources position of individual States, Centre is to provide all the additional money in case of Bihar, Kerala, Orissa, Rajasthan, Tamil Nadu and Uttar Pradesh whereas in case of the projects in Andhra Pradesh, Gujarat, Haryana, Karnataka, Madhya Pradesh, Maharashtra, Punjab and West Benglal half of the additional assistance is to be provided by the Centre and the other half by the States out of their own resources.

3.18. It was stated in another note that as a result of the additional outlay during 1976-77, an additional irrigation potential of 165 thousand hectares was expected to be created in respect of these projects.

3.19. Asked how these projects were selecte dfor giving advance assistance during the year 1975-76 the representative of the Planning Commission stated during evidence that the projects were selected during the middle of the financial year based on the progress already achieved and the programme indicated by the various State Governments. A special Committee was constituted which went into the details of each major project in all the States and also the medium projects in a group. In some States even medium projects were identified so that the States should actually spend the money on these medium projects benefiting the backward areas. The decision on the additional funds to be allotted was taken at an inter-departmental meeting. The witness added that the experience of providing *ad hoc* assistance had been very encouraging. In fact simultaneously with the exercise for the annual plan discussion on the outlays, an exercise about the additional benefits which could be derived by giving additional funds was worked out.

3.20. In reply to USQ No. 1051, the Minister of Agriculture and Irrigation stated in Lok Sabha on 21, November, 1977 that an outlay of Rs. 863.00 crores had been envisaged for major and medium schemes during the year 1977-78. It has been proposed to increase the outlay during the year 1977-78 by Rs. 125.75 crores comprising Rs. 100 crores as advance plan assistance by the Centre and Rs. 25.75 crores as additional outlay to be provided by certain States from the own resources to accelerate the progress on certain selected on going schemes and for new starts. A copy of the statewise break up of the additional outlays is given in Appendix III. Some of the States have suggested additions/alterations in the proposal and these are being examined by Government.

3.21. During evidence, the representative of the Ministry of Finance stated that normally when the grant was specified on specific projects or sectors, diversion of funds was not possible because each State Government was supposed to report to the administrative Ministry concerned about the actual expenditure during the year on that sector. In case when the assistance was not earmarked, block grant could be adjusted against other sectors. The witness further stated that the State Governments reported to the Planning Commission and sought their concurrence for change in the earmarking of funds. But sometimes the State Governments in their own wisdom diverted earmarked funds even for purposes other than irrigation without the approval of the Planning Commission. In reply to a question, the witness stated that a check was periodically exercised about the progress

of spending of the earmarked funds. The Committee desired to know about the adequacy of funds allotted in the past were to achieve the targets laid down from year to year and the lessons learnt in this regard.

3.22. In a written reply (November, 1977) the Department of Irrigation have stated that till the end of 1974-75 the availability of funds was generally inadequate to achieve the targets laid down. Inadequate availability of funds coupled with other factors resulted in shortfall in achievement of targets in various plans and projects lingering over long period. Some typical examples of major project whose completion have been delayed due to paucity of funds may be cited as under :—

Nagarjunasagar (Andhra Pradesh)

The project construction has been going on for over 20 years. During this period work on the dam was completed. Substantial work however still remains to be executed on the canal system. This is due to marked reduction in the availability of funds for the project during the period 1969-70 to 1973-74. The yearly outlays available to the project were reduced from Rs. 16 crores in 1966-67 to about Rs. 5.7 crores in 1973-74. It was, therefore not possible to execute works at a reasonable pace of construction Funds as per optimum requirements could not be made available. As a result available funds had to be mostly utilised for construction of dam with the result that the work on canals lagged.

Gandak (Bihar and Uttar Pradesh)

During the 4 years i.e. 1961-64 the outlays provided were at the rate of Rs. 1 to 2 crores per year which were utilised for creating the infrastructure for construction. The real start of works could be made only when sizeable outlays started flowing from 1964-65 onwards. The funds available to the project particularly during the first 10 years after the start fell far too short of the optimum requirement. In fact at one stage during this period the state was unable to pay its share of funds to Uttar Pradesh for construction of western canal. As a result of which the Government of Uttar Pradesh had to stop work on the canal for sometime.

Malaprabha (Karnataka)

The project started getting sizeable outlays only 1968 onwards when the allocations increased from Rs. 2 crores to 5 crores and more. In the initial 5-6 years the outlays were of the order of

Rs. 40-50 lakhs only which were utilised for creating the necessary infrastructure for project construction. After the availability of increased outlays from 1967-68 onwards priority was given for completion of storage dam which was eventually completed in 1973. Works on the canal in this period had to be executed at a very slow pace due to paucity of resources.

Kallada (Kerala)

During the first 4 years after start i.e. during 1962-66 the project which is now estimated to cost Rs. 73.6 crores was provided about Rs. 16 lakhs in all which means an average of Rs. 4 lakhs per year. Between 1966-69 and 1972-73 the availability of funds varied from Rs. 10 lakhs to 70 lakhs per year. It is obvious that with this pattern of investment which was not sufficient even to the normal yearly escalation in project cost, the execution of the project would have gone on indefinitely. This is one typical example where real start could not be made for over a decade due to non-availability of funds.

3.23. As a result of the experiences of the past the Government of India started giving Advance Plan Assistance since 1975-76 onwards to accelerate the execution of selected Major and Medium Irrigation Projects. The details of the outlays, the additional assistance, the targets and the achievements are given in the table below :—

(Rs. Crores)

Year	Outlay	Additional outlays	Total	Physical Targets	Achievements
1975-76 .	425.26*	55.80	477.46	940	1038
1976-77 . .	615.03*	75.20	690.23	1000	1073

*Includes outlays for central sector.

From the above it can be seen the achievements have exceeded the targets, as a result of the additional money provided during these two years.

3.24. The Committee note that in the first Plan the total plan expenditure on major and medium irrigation projects had received a relatively large share amounting to 15.3 per cent of the total plan outlay. In the subsequent plans the percentage of expenditure on major and medium irrigation projects declined considerably, being 8.1 per cent in the Second Plan,

6.79 per cent in the Third Plan, 6.56 per cent in the Annual Plans (1966-69) and 7.3 per cent in the Fourth Plan. Although the outlay on major and medium irrigation projects had increased manifold from Rs. 300 crores in the First Plan to Rs. 3095 crores in the Fifth Plan, yet its percentage to the total Plan outlay works out to 7.8 per cent only. In view of the fact that very large water resources have yet to be harnessed in the interest of increasing and stabilising agricultural production programme of development of irrigation needs high priority. The Committee feel that the percentage outlay on major and medium irrigation projects needs to be reviewed.

3.25. The Irrigation Commission (1972) had emphasised that unless special arrangements were made for financing large irrigation projects it would not be possible to complete them expeditiously. The National Commission on Agriculture (1976) has also suggested that for planning construction of large irrigation projects on a sound basis, there has to be a reasonable assurance that funds would be forthcoming according to the stipulated construction programme. It has also been suggested that a large project which is apt to drag its feet due to constraint of funds in the state plan should be provided with additional funds for the Centre and the construction carried out at the optimum pace. The entire outlay for the project in the state plan including the additional Central assistance should be earmarked. A protracted period of construction not only delays accrual of benefits from the projects but also make it more expensive. It has also been suggested that the estimates of all the irrigation projects should be reviewed and updated at least once in five years and in any case before the formulation of a Five Year Plan.

3.26. The Committee note that at present although the Central assistance is given as block loans and grants outlay in respect of selected projects is earmarked which ensures adequate funding to the important schemes. Admittedly there were few cases where funds were diverted for purpose other than irrigation. The Committee desire that there should be built in safeguards in the issue of sanctions to ensure that the funds earmarked for selected irrigation projects are not diverted by the State authorities for other purposes/projects.

3.27. According to the Department of Irrigation till the end of 1974-75, the availability of funds was generally inadequate to achieve the targets laid own. Inadequate availability of funds coupled with the other factors resulted in shortfall in achievement of targets in various plans and projects. Some typical examples are Nagarjunasagar (Andhra Pradesh), Gandak (Bihar and Uttar Pradesh) Malaprabha (Karnataka) and Kallada (Kerala).

The Committee note that good results were achieved from the special advance assistance amounting to Rs. 55.8 crores given for 18 projects during the year 1975-76. Due to constraint on resources the execution of the projects was slow not going at the optimum pace physically capable of achievements. An additional irrigation potential of 283,000 hectares was developed over and above the potential envisaged with the normal outlays, thus adding significally to the benefits. For the year 1976-77 an amount of Rs. 75.20 crores was sanctioned as advance plan assistance to be given to 26 major and 14 medium irrigation projects in 14 states. Out of the total assistance of Rs. 75.20 crores, the Centre was to provide Rs. 48.10 crores while States have to provide Rs. 27.10 crores from their own resources. The actual amount released by the Ministry of Finance was Rs. 39.90 crores. As a result of this additional outlay an additional potential of 165 thousand hectares was expected to be created in 1976-77. According to the Ministry as a result of the advance central assistance during 1975-76 and 1976-77, the achievements have exceeded the physical targets. During the year 1977-78, it has been proposed to increase the outlay by 125.75 crores comprising Rs. 100 crores as advance plan assistance by the central and Rs. 25.75 crores additional outlay to be provided by certain States from their own resources to accelerate the progress on certain ongoing schemes and for new starts to maintain tempo of irrigation development. Some States have suggested some additions/alterations to the proposal and these were being examined.

3.28. The Committee would stress that while giving special assistance to the States particular consideration should be given to the backwardness of the area to be served, existence of large unharnessed water resources and the ability of the State to undertake large projects as recommended by the Irrigation Commission (1972). Special attention should also be paid to reduced the imbalance in the various states as compared to the known potential and requirements.

3.29. The Committee desire that proposal for additional outlay for the year 1977-78 including the central assistance should be finalised in consultation with the State Governments expeditiously so that the projects selected should not suffer for want of funds and the expected additional potential is actually created. The Committee need hardly stress that Government should draw lessions from the slow progress due to the inadequacy of funds provided for important projects in the past and take suitable steps to ensure that the projects which may be of national importance are rendered special assistance in greater measure in future to accelerate their implementations. The Committee desire that a close watch should be kept over the progress of these projects.

B. Loans from World Bank

3.30. In a note, the Department of Irrigation informed the Committee that the World Bank, through its soft lending affiliate, the International Development Association, has been the principal source of credit assistance to the major and medium irrigation projects in India, although in terms of annual outlay, I.D.A. credit is rather small. Apart from the Financial assistance that the Bank has been providing, it has also been instrumental in bringing about certain improvements in the formulation of irrigation projects in the country, especially in the introduction of the concept of composite area development associated with irrigation projects. Upto the end of the Fourth Five Year Plan, the Bank's assistance as rendered or committed for the major and medium irrigation projects is as under :

Sl. Nos.	Name of Project	Amount in million dollars
1.	Sone Barrage Project, Bihar	15.0
2.	Sheturunji Project, Gujarat	3.4
3.	Purna Project, Maharashtra	13.0
4.	Kalandi Project, Orissa	7.5
5.	Pochampad Project, Andhra Pradesh	39.0
6.	Kadnna Project Gujarat	35.0
	Total	112.9

3.31. During the Fifth Five Year Plan, so far, the Bank has entered into a credit agreement with the Government of India for an assistance of 45 million dollars for the Godavari Barrage project and 145 million dollars for the Nagarjunasagar Composite Project in Andhra Pradesh.

3.32. World Bank appraisal Missions have been visiting India to identify new projects for World Bank credit assistance. The following projects are under appraisal by the World Bank at present :

1. Jayakwadi Stage I and II (Maharashtra).
2. Periyar-Vaigai Composite Project (Tamil Nadu).

3.33. The World Bank is also considering medium and minor Irrigation Projects of Orissa and Assam, and Upper Krishna Project of Karnataka and Sutlej-Yamuna Ling Canal Project of Haryana for possible credit assistance. In a subsequent note (October, 1977), the Department of Irrigation have stated that negotiations with the Bank for Periyar-vaigai Project ($ 23 million) in Tamil Nadu and Jayakwadi Project ($ 70 million) were carried out in June 1977 and that for medium irrigation projects of Orissa ($ 58 million) in July—August, 1977.

3.34. Asked about the progress of release of funds by World-Bank for Godavari Barrage and Nagarjunasagar projects the Chairman, Central Water Commission stated during evidence that the agreement in the case of Godavari Barrage was to last till 30 June, 1980. The amount to loan released so far was 7.5 million dollars. In case of Nagarjunasagar, the agreement was signed on 10 June, 1976 and would be operative till 30 June, 1981. They would reimburse a part of the expenditure already incurred but no reimbursement had been made so far.

3.35. Asked whether the World Bank had been approached for loans for other projects the witness stated that they had proposed 23 projects. Explaining the basis of selection of projects, the witness stated that the Central Water Commission identified the projects in consultation with the States and the Planning Commission. These were then examined by the experts from the World Bank who selected them for assistance.

3.36. In reply to a question, it was stated that normally the World Bank reimbursed about 50 per cent of the expenditure to the State Governments and they did not finance the entire amount of expenditure. Asked whether the World Bank would finance beyond the limit of the loan sanctioned, if the expenditure exceeded the estimates, the witness stated that negotiations could be held with the Bank to increase the limit of assistance.

3.37. Asked to state the position regarding assistance for Jayakwadi Projects (Stage I & II) (Maharashtra) and Periyar-Vaigai Composite Project (Tamil Nadu) the Chairman of Central Water Commission stated that the World Bank Mission had visited these two projects in October-November, 1976. These were in an advanced stage of processing by the World Bank and an agreement was likely to be signed during the course of the year.

3.38. Asked about assistance for the Rajasthan Canal, the witness stated that the Department of Agriculture had negotiated a loan of 83 million dollars for command area development. The representative of the Department of Agriculture stated that the Rajasthan Canal Area Development was a composite project, including on-farm development of 200 thousand hectares and implementation of bandhes/minors through lining because of a lot of losses taking place.

3.39. In a written reply, the Department of Irrigation have stated that during discussion with the World Bank in February 1977, the Bank indicated interest to consider providing assistance to twelve projects. Of them, negotiations for Jayakwadi and Periyar-Vaigai Project were taken up in April, 1977 and the pre-appraisal of Rajasthan Canal and Upper Krishna Projects is being carried out by a team of FAO during May, 1977.

3.40. The Committee asked about the position regarding assistance for medium and minor projects in Orissa and Assam, the representative of the

Ministry stated that normally the World Bank took up appraisal and financing major projects. In view of the fact that certain States might not have major projects, it was considered that a group of medium projects might be proposed for assistance. One of the State selected was Orissa in which 10 medium projects were identified for assistance. It was not possible for the World Bank to go into each and every medium project. Therefore, as advised by the World Bank, a Committee was set up in the Central Water Commission with certain members from the Department of Agriculture and the Planning Commission and certain criteria was drawn up in consultation with the local representatives of the World Bank. Thereafter, the Government of Orissa were asked to prepare a model project report for being placed before the World Bank for getting their clearance. The project report was placed before the team in November, 1976.

3.41. As regards the assistance for Upper Krishna Project (Karnataka) the representative of the Ministry stated the World Bank sent a preparatory mission from FAO in Rome to visit the project and prepare project reports in a form which would be easily scrutinized by the appraisal team of the World Bank. In November, 1976, the preparatory mission visited Upper Krishna project and advised the State Government to prepare revised project reports in order to utilise the quantity of water that was being given to them. But the State Government had not yet sent to the Commission the revised project report although they were asked to send it by the middle of December, 1976. Asked to state the action taken to avoid such delays, the Secretary, Department of Irrigation stated that a special cell consisting of engineers, agricultural experts and economists had been created for clearing World Bank Projects. The witness added that as a result of creation of the cell, the progress in the last one year had been pretty good. Asked why there was delay in this case in spite of this cell, the witness stated that the cell was not fully manned yet and that the position would improve within a period of a few months.

3.42. The Committee desired to know the conditions laid down by the World Bank in regard to the loans given for execution of irrigation projects. In a note (October, 1977), furnished by the Department of Irrigation, it has been stated :

> "Generally, in the major and medium irrigation sector, the IDA provides soft term loans for carrying out engineering, command area and extension services of the irrigation projects. The credit assistance by International Bank for Reconstruction and Development carries a higher rate of interest and the repayment period is also shorter. The period of lending is usually limited to 5 years and the credit assistance is of the order of 50 per cent of the project cost. The project cost covers the estimated

cost of the works, equipment, physical contingencies, establishment charges and price escalation. Separate agreements are entered into with the Bank on the one hand and the Government of India and the State Government on the other. If institutional finance is included for command area development, separate agreement is entered into with the Agricultural Refinance and Development Corporation. The negotiations are carried out by a team comprising representatives from the Department of Economic Affairs and the Department of Irrigation/Agriculture at the Centre, representatives from the concerned State Government and a representative from the Agricultural Refinance and Development Corporation in case of an agreement for the command area development.

The broad features of the credit agreement with the World Bank are briefly given below :—

(i) Construction of the project, as per defined scope, with due diligence and efficiency and in conformity with appropriate administrative, financial and engineering practices;

(ii) Providing promptly, as per requirements, the funds, facilities, services and other resources for the implementation of the project ;

(iii) Employing contractors satisfactory to the International Development Association on terms and conditions satisfactory to the Association;

(iv) To insure or make adequate provision for the insurance of the imported goods to be financed out of the proceeds of the credit assistance against any hazards;

(v) To use the available goods and services obtained through credit assistance exclusively for the concerned project until completion;

(vi) Furnishing to the World Bank the plans, specifications, reports, contract documents and construction and procurement schedules of the works as the World Bank may reasonably request; and

(vii) Maintain records of the progress of the works including the cost thereof so as to enable the representatives of the World Bank to examine the same during their visits.

The terms and conditions of lending of the International Development Association credit assistance are briefly as under :

(i) The amount of the credit may be withdrawn from the credit account in accordance with the provisions laid down in the agreement;

(ii) The Government of India shall pay to the World Bank a service charge at the rate of 3/4 per cent per annum on the principal amount of the credit withdrawn and outstanding from time to time;

(iii) Service charges shall be payable semi-annually on March 15 and September 15 each year; and

(iv) The Government of India shall repay the principal amount of the credit in semi-annual instalments by specified dates commencing 10 years from the signing of the agreement and repayable in the next 40 years.

The Godavari Barrage, Jayakwadi, Orissa Medium Projects etc. would be receiving credit assistance under International Development Association terms. While the other features of credit agreement remain the same, the lending terms for credit assistance by International Bank for Reconstruction and Development (as in the case of Nagarjunasagar Project) are somewhat different as indicated below :—

(i) The rate of interest on the credit amount is 4-1/2 per cent.

(ii) The repayment starts the year after the payment under the credit agreement comes to an end.

(iii) The repayment period is about 13-14 years.

The World Bank are increasingly developing greater responsibility on the Government of India in the preparation and monitoring of major and medium projects to be assisted by the Bank. Medium Irrigation Projects are to be appraised by an Appraisal Committee headed by a Member of the Central Water Commission. Projects have to be in conformity with the criteria agreed to with the Bank and only project reports estimated to cost individually more than $7 million (excluding provision for escalation) are to be sent to the World Bank headquarters. The reports for the major irrigation projects will be prepared by the Project Preparation Cell in the Department of Agriculture in consultation with the State Governments. During recent discussions, the World Bank have expressed a desire that the monitoring of the programme and progress, both physical and financial, of even the major projects being assisted and to be assisted in future, may also be undertaken by the Central Water Commission".

3.43. The Committee note that up to the end of Fourth Plan, the assistance from the World Bank as rendered or committed for major and medium irrigation projects amounted to 112.9 million dollars for six projects viz. Sone Barrage Project (Bihar), Sheturunji Project (Gujarat),

Puma Project (Maharashtra), Salandi Project (Orissa), Pochampad Project (Andhra Pradesh) and Kadana Project (Gujarat). Apart from the financial assistance that the Bank has been providing, it has also been instrumental in formulation of irrigation projects in the country, especially in the introduction of the concept of composite area development associated with irrigation projects. For the period 1973-74 to 1978-79 the World Bank has entered into credit agreement for 45 million dollars for the Govari Barrage and 145 million dollars for Nagarjuna Sagar Composite Project. Negotiations with the Bank for Periyar-Vaigai Project ($ 23 million) in Tamil Nadu and Jayakwadi Project ($ 70 million) were carried out in June 1977 and for medium irrigation projects of Orissa ($ 58 million) in July-August, 1977. In all 23 projects are stated to have been identified for credit assistance from the Bank. Of these, the Bank has evinced interest to consider providing assistance to twelve projects. The Committee urge that effective steps should be taken to collect expeditiously all the information desired by the World Bank so as to finalise agreements with the bank for loan assistance for these projects. The Committee further desire that in respect of projects for which agreement have already been entered into, concrete measures should be taken for the timely execution of the Projects and release of Waters for agricultural purposes to generate resources to pay back the loans and pave the way for funding of more such projects by the World Bank.

3.44. The Committee note that the World Bank are increasingly devolving greater responsibility on the Government of India in the preparation and monitoring of major and medium projects to be assisted by the Bank. During recent discussions the Bank has expressed a desire that the monitoring of the programme and progress, both physical and financial of even major projects being assisted and to be assisted in future, may be undertaken by the Central Water Commission. The Committee are anxious that the assistance from the Bank should be utilised fully to speed up the construction of the projects. The Committee suggest that the Department of Irrigation/Central Water Commission should find out if any difficulties are experienced by the State Governments receiving loans from the World Bank in fulfilling the conditions stipulated for the purpose which might be resulting in delay in the release of the assistance and slow progress of projects. Necessary steps should be taken in consultation with the World Bank and the State Governments to resolve such difficulties.

C. Cost Control Cell

3.45. The Ministry of Irrigation and Power in a letter dated 28th May, 1962 advised the State Governments to take necessary action on the recommendations of the Rates and Cost Committee which *inter-alia* dealt with the

establishment of costing cells in River Valley Projects costing Rs. 15 crores or above. In a subsequent letter dated 30th August, 1969 the Ministry commended to the State Government a model pattern of cost Engineering Cell and its duties and functions for adoption in the projects costing Rs. 15 crores and above.

3.46. The Expert Committee on Rise and Cost of Irrigation and Multipurpose projects in their report (1973) made the following observations regarding cost control :

> "It has been noticed that in a number of cases the revised estimates have not been drawn up by the project authorities in a proper manner and in the same lines as the original estimate. They also very much lacked the supporting details. As a result, it has not been possible to co-relate and compare and provisions made in the two estimates as also assess the reasonableness of the provisions made. While technical sanctions have been given by the concerned authorities for all the detailed estimates, these have not been compiled in time to bring up the original estimate correctly and properly."

> "From the inadequate provisions seen in the project estimates even at the revised stages, it would appear that there are no watchdogs worth the name in the projects who would keep track of the rise in costs and the missing provisions."

> "The Committee feels that there is great need for creating an awareness of the fact that efficiency and output can be improved and the cost cut down by keeping a proper record of running costs and maintaining a system of regularly analysing and reporting them."

> "The Committee wished to emphasise the importance of establishing such cost cells on major projects, which will go a long way in controlling the costs and in keeping the estimates up-to-date."

3.47. In a note, the Department of Irrigation informed the Committee that the First Conference of the State Ministers of Irrigation held in July, 1975 recommended the setting up of cost Control Cells for all projects to keep a continuous watch over construction costs. In pursuance of the resolution of the Conference, the setting up of such cells was commended to all State Governments under the Department of Irrigation letter dated 5th August, 1975. The General Managers and the Chief Engineers of the projects were also addressed on the subject on 10th October, 1975 to intimate the progress made regarding the creation of cost

cells along with the particulars of the strength of such cells and duties and functions assigned to these cells. None of the projects have replied about setting up or otherwise of such cells in spite of reminders.

3.48. The matter was again considered in the Second Conference of the State Ministers of Irrigation held in September, 1976. Recalling their Resolution at the First Conference and nothing that not much progress has been achieved in this regard so far, the Conference recommended that State Governments should take expeditious action to set up cost control cells on all projects costing Rs. 30 crores or more.

During evidence the Chairman, Central Water Commission stated that there had not been very encouraging response from the State Governments regarding setting up cost control cells. The matter was being pursued with the State Governments. Only the Kerala State Electricity Board had intimated that Cost-engineering Cell had been set up in their organisation. The other States like Assam, Union Territory of Chandigarh had stated that there was no major project undertaken by them.

3.49. In a written reply, the Department of Irrigation have stated :—

> "Chief Engineer (Civil), Investigation and Planning, Kerala State Electricity Board has intimated that a Cost Engineering Cell has been formed on the recommendation of the Govt. of India. The States which are agreeable to the proposal are Andhra Pradesh, Himachal Pradesh, West Bengal, Madhya Pradesh and Union Territory of Goa, Daman & Diu. It is under consideration of the Government of Maharashtra. Governments of Assam and Chandigarh, Delhi, Goa, Lakshadweep and Dadra & Nagar Haveli Administrations have intimated that there are no major projects requiring setting up of Cost Control Cells in their organisations. Since there is no comments|reply from other State Governments, it is not clear whether these Governments are agreeable to it or not."

3.50. The Committee are perturbed that no perceptible progress has been made in setting up of cost Control Cells in major irrigation projects although the matter is being pursued with the State Governments since 1962. In May, 1962 the State Governments were advised to take action on the recommendations of of Rates and Cost Committee which inter alia **suggested establishment of costing cells in River Valley Projects costing Rs. 15 crores or above. The Committee are surprised that the Ministry took 7 years to prepare the mode pattern of costing cells and its duties and functions, which were communicated to the State Governments only in August, 1969. The Committee desire that the reasons for this inordinate delay should be investigated.**

3.51. The Expert Committee on Rise of Cost of Irrigation and Multi-purpose Projects (1973) also emphasised the importance, of establishing costing cells in major projects. The First Conference of the State Ministers of Irrigation held in July, 1975 recommended setting up of Cost Control Cells for all projects to keep a continuous watch over construction cost. The Second Conference of the Ministry of Irrigation held in September, 1976 while noting that not much progress has been achieved in this regard recommended that the State Governments should take expeditious action to set up Cost Control Cells in all projects costing Rs. 30 crores or more.

3.52. The Committee desire that as projects costing Rs. 30 crores or more are major projects for which sanction is required to be issued by the Central Government, it may be made obligatory for the authorities submitting the estimates to include in it a provision for cost Control Cells. The Committee would like Government to scrutinise in particular the provision for this Cell before according sanction.

3.53. It is also desirable that the model pattern of functitons and duties of the Cost Control Unit which were outlined as long as 1969 are reviewed in the light of developments and updated to make them more pertinent and relevant.

3.54. The Committee need hardly point out that what is important is the exercise of continuous effective check and control on cost factors so as to see that the flow of expenditure is kept within the sanctioned estimates and that cost analysis is put to effective use to carry out on course corrections in the interest of economy and improving efficiency.

3.55. The experience gathered in the maintenance of cost control data may be put to effective use in due course of time by developing a system of management accountancy to aid well-informed cost-conscious decisions being taken in the interest of selection of best suited projects and in ensuring their economic execution.

3.56. The Committee would also like that the officers in the executive who are entrusted with the duties and responsibilities of execution of projects are also made cost-conscious by making available to them meaningful literature and by holding suitable training courses of short duration for them.

3.57. The Committee would like to clarify that Cost Control Cell has to justify itself by the results achieved and a watch should be kept at a higher level to see that it does not degenerate into a mere routine constituent of the set up.

D. Performance Budgeting

3.58. The Expert Committee on Rice in Costs of Irrigation and Multipurpose Projects in paragraphs 308 and 309 of the Report (1977) observed :—

> "For effecting proper budgetory control, the system of 'Performance Budgeting' has been evolved in the recent years. This is essentially a process whereby the activities of the execution of a project are transcribed into organisation work and financial responsibilities. It focusses attention on performance targets while giving indication about the money to be spent. It thus enables the administration or a top executive to have a correct appreciation of the physical progress of work along with its financial progress and thus represents a superior technique than merely gauging the progress in terms of expenditure incurred—a practice followed hitherto, which did not serve to give any indication of actual performance achieved in programme execution. Recognising this system as a valuable tool for intelligent financial management of projects, the Government of India, on the recommendation of the Administrative Reforms Commission have introduced 'Performance Budgeting' in most of the Ministries. A suitable reporting system has also been devised so that the performance budget could be used as an effective tool of management."

> "The Committee recommends the adoption of 'Performance Budgeting' system for execution of river valley projects for exercising effective financial control. This system requires precise formulation of programmes of various units in a project laying down performance yardsticks, measurement of works involved and a recording system for registering variations between budgeted and actual costs. An efficient performance information and reporting system necessary for the success of this technique is ensured because of the adoption of various modern management techniques."

3.59. Asked about the follow up action taken regarding preparation of Performance Budgets for major projects, the representative of the Department of Irrigation stated :—

> "So far as the Ministry proper is concerned, the performance budget is being prepared since 1969-70 and presented to Parliament. So far as States are concerned, of course, Performance Budgeting is one of the many techniques which are to be effected for the performance of an effective financial management. Again, I think, a lot of stress is being laid now by the Centre

that these techniques should be introduced in the States. If I may again refer to the discussion which was recently held, there in the Department of Personnel's meetings where Secretaries of Personnel & Administrative Reforms of the States were present. I am reading out from the recommendations of the Conference.

> 'It was recommended that performance budgeting should be introduced by the State Governments in at least one or two departments, for example in the departments of Agriculture and Irrigation by 31-3-1977.'

On this also, the State Governments are being advised to introduce techniques of performance budgeting and to have proper financial and managerial controls in respect of their projects and works."

3.60. The Committee need hardly point out that the Central Government should set a high example by preparing a meaningful performance budget for the Department of Irrigation which would held to co-relate the financial outlay with the physical contents of work, provide parameters to evaluate performance, indicate benefits expected and which have actually accrued.

3.61. The Committee need hardly remind that the performance budget is only a means to an end and, therefore, it is of the utmost importance that the State Governments are persuaded and assisted to have a meaningful performance budget which would help the legislators and the public to understand better the implications of financial outlay, evaluate performance and call to account those entrusted with the power to expend and implement projects.

3.62. The Committee note that the Expert Committee on Rise in Costs of Irrigation and Multipurpose Projects (1973) recommended adoption of performance budgeting system for execution of River Valley Projects with a view to exercising effective financial control. In a recent meeting held in the Department of Personnel it was recommended that performance budgeting should be introduced by the State Government's in one or two departments for example the Departments of Agriculture and Irrigation by 31st March, 1977. The Committee would like to know whether the State Governments have introduced the system of Performance Budget in the Department of Irrigation with effect from the current year.

3.63. The Committee desire that the question of introducing the Performance Budgeting system in the River Valley Projects may be seriously pursued with a view to ensure implementation.

E. Delegation of Powers

3.64. The Expert Committee on Rise in Costs of Irrigation and Multi-purpose Projects in paragraph 193 of the Report (1973) recommended :—

> "It is not always that a Chief Engineer has the necessary amount of authority to enable him to execute his assignment efficiently. The Committee wishes to emphasise the point that for any programme to succeed, it is essential that the person in charge of execution is granted appropriate authority, both administrative and financial, so that he may discharge his responsibilities unhesitatingly. There is thus a very cogent case of delegating more powers to the Chief Engineer/Project Manager even when there exists a Control Board for overall direction as regards Planning and execution. In this connection a scheme of delegation of powers for major irrigation and power projects formulated by the O&M Division, Government of India in 1963 need to be reviewed, taking into account the problem faced on various projects. For this purpose, the Committee recommends that a team of officials including technical officers from various projects in the country, may be set up to go into this question and draw up a model for adoption in the projects to be taken up in future."

3.65. Asked about the follow up action taken on this recommendation, the representative of the Department of Irrigation stated that there had been lot of thinking at the Centre and the States that power should be delegated. At a meeting held by the Department of Administrative Reforms and Personnel where Secretaries of State Governments were also present, stress was laid on suitable delegation of powers to officers at various levels to inculcate in them a sense of responsibility and also ensure that they would be able to function effectively. The witness added that it was recommended that, delegation of additional financial and administrative powers to Secretariat Departments and to subordinate departments should be completed by 31 March, 1977. The Chairman, Central Water Commission stated that there was a thinking to further enhance delegation of powers to projects, where Control Boards were functioning.

3.66. In a written reply the Department of Irrigation has stated that the recommendation of the Expert Committee on rise in cost of irrigation projects had been commended to the State Governments. A few State Governments have offered their views and by and large they agree with the above recommendation.

3.67. The State Governments themselves are seized of the problems and they normally issue appropriate instructions in the matter.

The Conference held by the Department of Administrative Reforms and Personnel made general recommendations regarding the need for additional delegation of powers to subordinate formations. An extract from their recommendations in this regard is given below :—

> "It was emphasised that the administrative departments should themselves assume increased financial responsibility particularly in regard to developmental programmes. To achieve this, the following aspects should receive special attention :—
>
> — optimal delegation of financial and administrative powers to subordinate formations/levels ; and
>
> — creating a climate whereby each level exercises fully the delegated powers without unnecessary references to higher authorities and the Finance Department."

3.68. The above recommendations made by the Conference have been commended to the State Governments also to make optimum delegation of financial and administrative power to subordinate formations/levels.

3.69. The Expert Committee on Rise in Costs of Irrigation and Multipurpose Projects (1973) recommended that a team of officers including technical officers from the various projects in the country should be set up to go into the question of delegation of administrative and financial powers to the project authorities and draw up a model for adoption in the projects to be taken in future. At a meeting held recently by the Department of Administrative Reforms and Personnel, stress was laid on suitable delegation of powers to officers at various levels to inculcate in them a sense of responsibility and also ensure that they would be able to function effectively. It was recommended at the meeting that delegation of additional financial and administrative powers to the Secretariat Departments and Subordinate Departments should be completed by 30th March, 1977. The Committee were also informed that there was also a thinking to further enhance delegation of powers to projects where Control Boards were functioning.

The Committee attach great importance to the delegation of adequate administrative and financial powers to Chief Engineers/Project Managers in the interest of expeditious and timely completion of projects. The Com-

mittee stress that the Central Government should set a worthy example by delegating these powers to Project Managers for projects which are directly under them or for projects which are under Control Boards functioning under the Central Government.

3.70. The Committee would also like to know the extent to which powers have actually been delegated by the State authorities to the Chief Engineers/ Project Managers particularly in respect of large and medium projects. The Committee need hardly point out that where the States have not yet enhanced the delegation of such administrative and financial powers the matter may be pursued with them at a high level so as to expedite the matter.

CHAPTER IV

MODERNISATION/REMODELLING OF OLD WORKS

A. Modernisation/Remodelling of old work

4.1. The Irrigation Commission (1972) observed in their report that many of the irrigation systems in the country date back to the 19th century or earlier and need to be remodelled in order to bring them up-to-date and to increase their effectiveness. The usefulness of these systems is limited by structural handicaps, such as outmoded head works, absences of silt excluding devices and unsatisfactory cross drainage. Faulty irrigation practices and poor drainage add to the handicaps. As a result the system cannot meet the exacting demands of water for new high yielding varieties of crops.

4.2. The National Commission on Agriculture in their Report (1976) have observed :—

> "In the plans, completion of incomplete projects has been accorded higher priority than new projects. Existing irrigation projects which are not performing satisfactorily and which are amendable to improvement are no better than in complete projects. They deserve serious attention. Investments already made on these projects should bear full fruit even if it means incurring some more expenditure to bring it about. The economic gain in the shape of larger production and greater employment opportunities will in most cases amply justify some further investment on them. Review of these projects would reveal several steps that can be taken, mostly in the fields, of agronomy, water management and operation, which would enhance the utility of these projects without any significant expenditure. All these aspects have to be examined. It is necessary that the scope for improvement of these projects and the outlay involved should be determined in a systematic manner, we, therefore, recommend that States should organise a comprehensive review of their pre-plan and earlier plan projects to be completed within five years, and formulate a programme for their improvement. The use of available water resources in a State should be examined afresh for an equitable and more productive use and the existing rights of water use need not unduly stand in the way of better redistribution."

4.3. In a note furnished to the Committee the Department of Irrigation have stated that in formulating the programme for Fifth Plan, emphasis

was given to modernisation of older irrigation projects for better control in distribution of water and augmentation of supplies. At the time of Plan formulation, very few States had schemes for modernisation of old systems ready for execution. Projects for replacing some very old structures were suggested by the States which were included as first priority. It has been the endeavour of the Department of Irrigation, Central Water Commission and Planning Commission to see that State Governments take immediate steps to organise comprehensive review of their older schemes. At the start of the Fifth Plan, States were advised by the Central Water Commission to set up special cells for undertaking a comprehensive review of their pre-plan and earlier Plan projects and formulate schemes for their improvement. Both the Irrigation Commission and the National Commission on Agriculture have drawn attention to the urgent need for improvement of existing irrigation systems in order to increase their efficiency and usefulness. It has been the endeavour at Central level to ensure that the requirement of modernisation projects suggested by the States is given first priority at the time of formulation of Annual Plans every year. Early in 1975-76, Planning Commission had requested State Governments to take immediate steps to undertake a comprehensive study of ten selected irrigation projects and to frame programme of action for their modernisation for implementation on time bound basis. The matter is still being pursued.

4.4. As regards reviewing the progress of modernisation schemes already under execution, so far only some remodelling or replacement of old structures has been taken up in a few isolated cases. Amongst the schemes taken up is construction of new barrage across Godavari which is of vital importance to protect existing irrigation in Godavari Delta. In view of the old structures having already partly collapsed and the new structures required to be completed quickly, the construction of this project is being executed on strict time-bound basis and the actual progress is being closely monitored by the Central Monitoring Unit.

4.5. In another note the Department of Irrigation have stated that the First Conference of State Ministers of Irrigation held in July, 1975 considered the question of optimum utilisation of waters and better management in irrigation projects in a judicious and economical manner with a view to maximise the benefits from the available resources and thereupon passed a resolution that operational programmes for supplies of waters in command areas of major irrigation projects should be formulated and reviewed periodically by the State authorities with the assistance of a Central team, so as to maximise the benefits from the available waters. In pursuance of this, the Department of Irrigation formed a Central Team. The Team has drawn a list of important existing projects for studies and has so far carried out such studies in respect of nine projects (*viz.*, Tungabhadra, Lower

Bhawani, Nira Canals, Mayurakshi, Malampuzha, Jamuna, Hirakud, Sone Canals, and Lower Ganga).

4.6. The Team has felt that steps for modernisation and improvement of the existing systems, including provision of additional control structures like cross regulators, escapes etc. should be taken up early, to effect economics in water losses and ensure proper water management. Among the nine projects reviewed by the Central Team, three systems, viz. Tungabhadra, Hirakud and Sone have been indentified for preparation of project reports for modernisation after carrying out requisite studies and investigation, immediately.

4.7. Guidelines evolved for preparation of projects for modernisation of existing systems also cover agronomical, administrative and legislative aspects. The State Governments are to immediately take up a review of the pre-plan works, identify systems requiring modernisation in a phased manner and prepare well investigated detailed projects during the Fifth Plan Period, for immediate implementation.

4.8. During evidence, the Committee were informed that the Central Team had so far visited 10 projects out of 20 for which programme was prepared for 1976 and 1977. In all the Department of Irrigation have selected 32 projects for review.

4.9. During evidence, the Secretary, Department of Irrigation stated :—

"This modernisation programme has not picked up in a systematic manner so far. Initially i.e. when the matter was taken up with the State Governments about 3 years ago, they did not take to these programmes well. It was thought that the Central Government would give them some assistance. Some guidelines were also given to the States. Even then their response was not encouraging. At that time there was a financial stringency and Government of India could not spare money to the States for this programme.

This matter is being stressed at every forum. There are about 7 schemes which have already been sanctioned. There are others which are new e.g. the Ramganga project which serves the existing areas : as a result the existing schemes which are covered by the new schemes are definitely being modernised. We have identified several projects in consultation with the Irrigation Ministers, during the last Conference (1976). We have asked for project reports on a priority basis. 15 projects have been identified as priority ones by the Centre and the Planning

Commission, in different States. We have received projects reports for 2 of them. We want these projects to be included in the 5th Plan itself."

4.10. In a note subsequently furnished by the Department of Irrigation it has been stated that the Central Team has so far visited 12 irrigation projects in different parts of the country. The Team has observed that there is considerable scope to save water which can be profitably used for increasing irrigation benefits. The Team has made appropriate recommendations to rectify the shortcomings in the various irrigation systems, and to prepare reports for modernisation.

4.11. The State Governments concerned with the following projects have been requested to prepare project reports for modernisation :—

(1) Tungabhadra Project (A.P. & Karnataka)
(2) Chambal (M.P. & Rajasthan)
(3) Agra Canal (U.P.)
(4) Eastern Jamuna Canal (U.P.)
(5) Mahanadi Delta Canal System (Orissa)
(6) Triveni Canal System (Bihar)
(7) Sone Canal System (Bihar)
(8) Damodar Canal (W.B.)
(9) Cauvery Delta System (Tamil Nadu)
(10) Neyyar Project (Kerala)
(11) Hirakud (Orissa)
(12) Lower Bhavani (Tamil Nadu)
(13) Old Sarda Canal (U.P.)
(14) Mayurakshi Project (West Bengal)
(15) Rushikulya Project (Orissa).

Of the above, project reports in respect of schemes at S. No. 3, 4, 6, 13 and 15 have since been received and are under scrutiny in the Central Water Commission. Irrigation system at S. No. 1, 7, 10, 11, 12 and 14 are those which were visited by the Central Team and for which recommendations for improvements have been made.

4.12. The Committee note that many irrigation systems in the country are very old and their usefulness is limited by structural handicaps like outmoded head works, absence of silt-excluding devices etc. Both the Irrigation Commission (1972) and the National Commission on Agriculture (1976) have drawn attention to the urgent need for improvement of the existing irrigation systems in order to increase their efficiency and usefulness. Informulating the programme of the Fifth Plan, emphasis was given to modernisation of older irrigation projects for better control in distribution of water and augmentation of supplies. At the start of the Fifth Plan, the States were advised by the Central Water Commission to set up special cells for undertaking a comprehensive review of their pre-plan and earlier plan projects and formulate schemes for their improvement. Early in 1975-76 the Planning Commission also requested the State Governments to undertake a comprehensive study of 10 selected irrigation projects and to frame programmes of action for their modernisation and implementation on a time bound basis. The matter is still being pursued with the State Governments. The Committee note that remodelling or replacement of old structures has been taken up only in a few isolated cases. The Committee regret to observe that the programme for modernisation of old irrigation works has not been implemented in a systematic manner and due importance does not appear to have been given by the State Governments to this matter. They would like that greater attention should be paid to remodelling of existing irrigation systems and the matter should be continuously pursued with the State Governments.

4.13. The Committee understand that during the last conference of the State Irrigation Ministers (1976), 15 projects had been identified as priority ones to be included in the Fifth Plan and the State Goverament had been asked to prepare projects reports for modernisation. But so far, project reports in respect of only 5 of these projects have been received from the State Governments and are under scrutiny in the Central Water Commission. The Committee desire that the question of preparation of project reports for the remaining 10 projects should be vigorously pursued with the State Governments concerned and the project reports already received scrutinized by the Central Water Commission expeditiously. All efforts should be made to ensure that the 15 priority projects are implemented during the Fifth Plan period and the improved benefits following from them evaluated. The Committee also desire that progress made in the implementation of the scheme should be kept under close watch with a view to initiating measures to ensure their expeditious completion. The benefits accruing from the Schemes should be evaluated and publicised. The experience gained and lessons learnt as a result of the execution of these schemes may be taken into account while sanctioning new projects.

4.14. The Committee desire that the State Governments should also be impressed upon to complete the review of the pre-plan and earlier plan projects expeditiously and prepare a systematic programme of their modernisation in a phased manner. The project reports for those projects which are to be included in the Plan may be prepared immediately.

4.15. The Committee note that the Central Team constituted by the Department of Irrigation has so far visited 12 irrigation projects. The team has made recommendations for modification of shortcomings in the projects and preparation of project reports. Guidelines have also been evolved for preparation of projects for modernisation. In all, the Department of Irrigation have selected 32 projects for review by the Team. The Committee would like the Central Team to complete the review of the remaining projects entrusted to them according to the time schedule. The Committee hope that the recommendations made by the Central Team, would be helpful to the State Governments in reviewing their other projects for modernisation.

B. Wastage of Water due to seepage

4.16. Asked whether any assessment of wastage of water in reaching the fields from the irrigation works has been made, the Secretary, Department of Irrigation stated during evidence that the wastage varied between 35 and 45 per cent. This wastage was due to seepage. Asked about the extent of wastage in USA, the witness informed that the authorities in USA who had plenty of funds had undertaken large scale programme of lining. But in India most of the channels were unlined. If all the channels were lined, the wastage would be reduced to only 15 per cent. The witness added that of the canal operation was not efficient, the water would escape at the tail. Normally through intermediate escapes, only minimum quantity of water went ; but the tail escapes should not waste too much of water. The witness further stated that the practice of night irrigation (warabandi) was not prevalent in all places. If the canal ran for 24 hours, the seepage would be less. But at some places the canals ran only for ten hours resulting in more seepage.

4.17. The National Commission on Agriculture have in their Report (1976) observed that owning to financial and other constraints, it may not always be feasible to take up at one time the lining of all the channels which may need it and work may have to be phased. The Commission recommended that in such a situation, the priority should be as under :—

(i) On new projects and projects being remodelled, channels which are designed to run constantly or most of the time shall be preferred because of the difficulty and in some cases unfeasibility of lining them later once they are opened for irrigation.

(ii) On existing projects the smaller channels including water courses should be preferred because lining these would bestow great benefit and is easier to carry out.

4.18. The Department of Irrigation have stated in a note that the recommendation of the National Commission on Agriculure has been accepted subject to the condition that the relative economics of lining would be examined in each case. The recommendation has been commended to the State Governments.

4.19. The Committee are concerned to note that there is wastage of water to the extent of 35 to 50 per cent due to seepage. According to the Department wastage could be reduced to 15 per cent if all the channels were lined. The Committee appreciate that due to financial and other constraints it may not be feasible to take up at one time the lining up of all the channels. The Committee note that Government have accepted the recommendations of the National Commission on Agriculture (1976) regarding priorities to be given to lining of busy channels in new projects and smaller channels in existing projects subject to examination of relative economics in each case. They hope that a phased programme will be prepared for lining of channels in new and existing projects giving priorities to these channels where there is too much water wastage to maximise utilisation and its benefits. The Committee feel that lining of channels should be an integral part of the project and this aspect should be borne in mind while scrutinising the project before sanction.

4.20. The Committee understand that inefficiency in canal operations also results in wastage of water through seepage. The seepage can be controlled if the canal operations are run for 24 hours. The Committee would like the authorities to so regulate the canal operations so as to minimise the seepage. The Committee suggest that the matter may be suitably pursued by the Centre with the authorities concerned.

C. Drainage

4.21. In a note furnished to the Committee, the Department of Irrigation have stated that drainage is the removal of excess water from the soil arising out of rainfall and/or irrigation losses-seepage in the distribution system, percolation losses in the field, over-flow and escapes from tail-ends of the canal system. Irrigation losses amount to more than half of the water released at the head of the canal, The crop suffers from damage when there is excess water in the root zone of the soil as it hampers aeration. Response to input are decreased under water-lodged conditions and

cropping pattern becomes restricted. Maximum damage is caused when the capillary from the rising ground water brings harmful salts to the surface and the soil becomes saline. Providing drainage leads to increased crop yield, better cropping systems and utilisation of the soil and water resources. Salinity problem is also controlled and benefits of irrigation increased.

4.22. In order to be effective, the drainage system should have a net work of field drains, collector drains, intermediate and main drains just like the distribution system from the field irrigation channel extending to water courses of miners and main canals. Field drainage is practically non-existent in the comand of irrigation projects. In majority of projects the intermediate and main drains are not properly maintained. In arid and semi-arid areas, the natural drainage of the land is often illdefined and the natural waterways are occasionally blocked by public encroachment. For efficient functioning of the drainage system, these nallas and waterways have to be kept clear of all obstructions. Provision of drainage is thus insparable from irrigation, but such provisions have not been made adequately although there has been increasing awareness of this problem in new irrigation schemes. Drainage is not planned comprehensively and several project estimates contain only a token or lumpsum provision which later on has been found to be completely inadequate.

4.23. The Department of Irrigation have further stated that in recent years, considerable emphasis has been laid on surface drainage as well as vertical drainage by exploitation of ground water. In order to evolve national guidelines for this objective an Expert Committee was set up by the Ministry of Agriculture and Irrigation in 1974 for recommending on the integrated development of surface and ground waters. In its report (June, 1976) this Committee had indicated that surface irrigation without proper drainage and/or adequate ground water development has resulted in an alarming rise of the ground water table in some parts of the country, creating problems of water logging thereby affecting crop growth adversely and rendering large areas less productive. The Committee has considered possible the integrated and conjunctive use of ground and surface waters in the commands of irrigation projects and have recommended preparation of such pilot projects in the command areas of 11 irrigation projects in the country. The Committee's report has been commended to the States concerned for implementation. In the guidelines issued by the Central Water Commission for investigation of irrigation projects, emphasis has been laid on the drainage and anti-water logging aspects.

4.24. Asked about the names of the projects where there was considerable loss/wastage of water and inadequate system of drainage, the

Department of Irrigation have stated in a written reply that no survey has been made on the extent of loss/wastage of water in different irrigation projects and the areas suffering from water-logging in their commands. However, in a review of five schemes made by the National Commission on Agriculture and given in its Interim Report of 1973, the projects where considerable loss/wastage of water has been found are those of lower Bhawani project (Tamil Nadu), Shatranji Project (Gujarat), Ghod Project (Maharashtra), and Harsi Project (Madhya Pradesh). Some of the other irrigation projects in whose command drainage problem has been acute are Tungabhadra, Nira Canals, Hirakud, Lower Ganga Canal, Kosi Gandak, Mahikandana, Chamban and Mahanadi, Krishna and Godavari delta projects. World Bank has anticipated acute drainage problem in Sharda Sahayak if remedial measures are not urgently taken.

4.25. During evidence, the Secretary, Department of Irrigation stated that the irrigation intensity of the Sharda Sahayak project would be raised from 19 to 20 per cent to about 90 per cent. This would cause problems of drainage. The drainage problem had not yet been studied in depth but action had to be initiated right now so that proper, measures were taken in time..... The Ministry of Agriculture and Irrigation had written to the Chief Minister, U.P. in this connection.

4.26. Asked about the steps taken for providing drainage system in on-going and new projects, the Department of Irrigation stated in a note that in recent years there has been increasing awareness of the drainage system and it has been laid down that in all new irrigation schemes, there must be adequate provision for drainage. When irrigation projects are submitted for clearance they are scrutinised from the point of view of the provision of drainage also. Drainage forms an important component of the command area development programme in the 60 irrigation projects identified during the Fifth Plan. Field drainage is provided as a part of the on-farm development programme. Intermediate and main drains are the responsibility of the Irrigation Department. Improvement of drainage forms an integral part of the modernisation schemes of the existing irrigation projects.

4.27. During evidence, the Chairman, Central Water Commission stated that till the Fourth Plan the question of drainage was not attended to while framing the project. But now in consultation with the Planning Commission, a directive had been issued to all States to include drainage as a part of the scheme and they had responded very well. For the old projects where revised estimates were received, these were not cleared until a provision was made for drainage. As regards the schemes already completed, the witness stated that it was one of the functions of the Review

Committee to advise the States to include drainage in the modernisation schemes. The representative of the Planning Commission stated that there had been drainage problem in Cauvery delta, Mahanadi delta and parts of Subarnarekha delta. The State Governments are formulating drainage schemes. Schemes were received from Punjab, Haryana, and U.P. also which were examined and sufficient outlays provided in the Annual Plans of the States.

4.28. It is well-known that water-logging is harmful to the crops as it decreases-response to the inputs and restricts cropping pattern, besides causing salinity, Provision of drainage is therefore, very important and is inseparable from irrigation. Proper drainage not only increases crop yield but also provides better cropping system and results in better utilisation of soil and water resources.

4.29. The Committee are distressed to learn that up to the Fourth Plan, the provision of drainage was not attended to while framing the project estimates. Field drains are practically non-existent in the command or irrigation projects and intermediate and main drains are not properly maintained in majority of the projects. The Expert Committee set up by the Ministry of Agriculture and Irrigation in 1974 have in their Report (1976) indicated that surface irrigation without proper and/or adequate ground water development has resulted in an alarming rise in ground water table in some parts of the country, creating problems of water logging thereby affecting crop growth adversely and rendering large areas less productive. The Committee have been informed that in the recent years there has been increasing awareness of the importance of drainage in new irrigation schemes. It has been laid down that in all new irrigation schemes there must be adequate provision for drainage. Necessary guidelines have been issued by the Central Water Commission laying emphasis on drainage and anti-water logging aspects for the investigation of irrigation projects. Improvement of drainage would also form integrated part of the modernisation schemes. The Committee are constrained to observe that the awareness about the need for an adequate system of drainage has come rather too late. The Committee feel that the problem of drainage and water logging should have been foreseen at the time of preparation of project reports in respect of the earlier plan schemes and adequate provision made therein. The Committee trust that in the new schemes approved for inclusion in the Plans, drainage system has been adequately planned for.

4.30. In view of the fact that the importance of drainage has been admittedly over-looked till the formulation of the irrigation project schemes in the Fifth Plan. The Committee desire that institutional arrangements should be made to see that this lapse does not occur again.

4.31. The Committee have been informed that no survey has been made about the extent of loss/wastage of water in different irrigation projects and the areas suffering from water logging in their commands. However, according to the review made by the National Commission on Agriculture, the projects where considerable loss/wastage of water have been found are those of lower Bhawani Project (Tamil Nadu), Shatranji Project (Gujarat) Ghod Project (Maharashtra) and Harsi Project (Madhya Pradesh). Some of the other irrigation projects where drainage problems have been acute are Tungabhadra Nira Canals, Hirakud, Lower Ganga Kanal, Kosi Gandak, Mahakadana, Chambal and Godawari deltas. The World Bank has anticipated acute drainage problem in Sharda Sahayak Project if remedial measures are not urgently taken.

4.32. The Committee are alarmed at the problem of drainage existing in a number of important projects. The situation would not have arisen if adequate attention had been paid to the problem of drainage in earlier plans. The Committee desire that the State Governments should formulate schemes for improvement of drainage system and priority should be given to those projects where the drainage problem is very acute. In regard to Sharda Sahayak Project, it is imperative that timely action is taken to remedy the acute drainage problem anticipated by the World Bank. The Committee emphasise that the Irrigation potential created at heavy investments should not result in good cultivated land in command areas being rendered unfit for cultivation because of bad drainage and water logging conditions. They would like that an indepth survey of the irrigation water logging in their command areas be made and remedial measures taken according to a time bound programme.

D. Maintenance of Irrigation Projects

4.33. In a written reply, the Department of Irrigation have stated that the Central Board of Irrigation and Power, have a scheme under which studies of siltation in reservoirs have been carried out in case of 13 reservoirs in the country and reports on the same are published every year. Furthermore, the National Commission on Agriculture have also published data on reservoir sedimentation in their report.

4.34. A general result of all the studies has been that in the case of most of the reservoirs studies, the actual rate of siltation has exceeded the original estimates for the same and in some cases, by more than twice.

4.35. In so far as siltation of the canals is concerned, these are the problems of the project authorities belonging to State Governments. While no systematic study on national basis has been carried out in this direction,

it is a common experience that practically all the canals do get silted up and have to be desilted annually. In some individual cases serious siltations have occurred.

4.36. The counter measures are in the domain of the State Governments. While hardly any thing can be done about the silt already deposited in the reservoirs, the future siltation can be reduced by adopting soil conservation measures in their catchments. The State Governments are adopting some soil conservation measures and the Central Government is also sponsoring several such schemes.

4.37. During evidence, the Secretary, Department of Irrigation stated that it was very difficult to estimate the amount of silt at the time of preparing the project because long term data regarding silt were not available in several cases. A proposal for constitution of special committee to review the norms of siltation in the country was under consideration of the Ministry. The witness added that at present the norms were inadequate. The pockets for silt would be increased and storage provided accordingly. The witness added the Nizam Sagar Dam which was a big dam, had silted up to the extent of 45 per cent. These difficulties were faced in regard to construction of big dams. There were various aspects of the problem which had to be taken care of by proper engineering designs. The witness added the storage could be made good by building another reservoir. This step was being considered in the case of Nizam Sagar. In case of small irrigation tanks or medium works, it might be possible to raise reservoir. The witness added that catchment protection works should be undertaken wherever necessary and deforestation should be banned. The witness urged that for these measures special financial provisions should be made, otherwise it would be really difficult to undertake the work under the normal programmes. The witness added that the forest area which was about 28 per cent should be increased to one-third.

4.38. Explaining the difficulty the witness stated that the catchment protection was a little bit complicated because catchment had not been divided into parts. The dam sites might be located between different States and a major portion of the catchment area might be located in the other States.

4.39. In a note furnished subsequently, the Department of Irrigation stated :—

> "The Irrigation Commission, in their Report of 1972 have recommended that the problems of soil conservation in all major projects should be completed in the next 20 years. The magnitude of the problem of sedimentation of reservoirs has been receiving the attention of the Ministry of Agriculture and Irri-

gation since the advent of the Second Plan. During the Third Plan, 13 river valley projects were included for treatment under the centrally sponsored scheme of soil conservation in the catchments of river valley projects. In the Fourth and Fifth Plans, 9 and 8 river valley projects respectively were included for treatment under this scheme, thus, bringing the total to 30. With the funds made available, priority watersheds in these catchments are being treated with soil conservation measures with a view to complete their treatment within the Plan period. It may, however, be mentioned that due to inadequate provision and further curtailment of allocations under this scheme, complete treatment in the selected priority watersheds within a plan period is not possible. The total area requiring treatment in these catchments is about 79 million hectares. Of this, about 10 million hecatres of areas is estimated to be critically eroding and producing high rate of sediment yield. This area needs treatment on a higher priority basis.

Beginning from the Third Plan period and till the end of 1975-76, an area of 1.14 million hectares has been covered at a total expenditure of Rs. 55.74 crores.

Judging the progress in relation to availability of funds, the remaining area of 8.96 million hectares can be covered in a period of 110 years. Considering the increase in wage levels and prices of equipment and materials, a total amount of about Rs. 1330 crores will be required to complete the treatment of this area. The Fifth Plan provision is Rs. 32.46 crores."

4.40. Asked whether a review has been undertaken about the soil consservation measures taken up the State Governments, the Department of Irrigation have stated in their note that in so far as the soil conservation works undertaken under State Sector Schemes are concerned, these schemes are reviewed annually at the time of Annual Plan discussions. The area covered with soil conservation practices upto end of 4th Plan was 16.87 million ha. and latest up to 1975-76 it was 18.71 millions ha.

Guidelines for Maintenance of Irrigation Projects

4.41. Asked whether any guidelines have been issued to the State Governments and other River Valley Projects etc. regarding proper maintenance of the existing irrigation projects the Department of Irrigation have stated in a written reply that irrigation is 'State subject' and the responsibility of

proper maintenance of irrigation projects rests with the State Governments. No specific guidelines have been issued by the Centres in this respect though any assistance asked for by the States is always attended to.

4.42. During evidence, the Secretary, Department of Irrigation admitted that at the Centre they had hardly any experience because they were not really in-charge of maintenance of any canal system. An exercise in this regard had not been undertaken.

4.43. In a note furnished to the Committee, the Department of Irrigation have subsequently stated that the Central Water Commission is an advisory body which assists the State Governments in the field of planning, investigations, designs and research of river valley projects. The responsibility for running and maintenance of irrigation projects rests with the State Governments and it is not for the Central Water Commission to issue any guidelines for the same. The Irrigation Departments of various States look after the work of maintenance of the irrigation systems as per standards and guidelines laid down by State Governments themselves.

4.44. The Committee note that studies made of some reservoirs have revealed that the actual rate of siltation in most of them has exceeded the original estimates and in some cases even by more than twice. For instance, the Committee understand that Nizamsagar Dam has silted to the extent of 45 per cent. The magnitude of the problem is so much that there is a thinking of building another reservoir to make up the shortage. According to the Department of Irrigation, hardly anything can be done about the silt deposited in the existing reservoirs. The future siltation can be reduced by adopting soil conservation measures in the catchment areas of the reservoirs. The State Governments are adopting some soil conservation measures in this regard and the Central Government has also sponsored some schemes for this purpose. The Irrigation Commission (1972) had recommended that soil conservation measures in all major projects should be completed in the next 20 years. The Committee note that attention to soil conservation measures is being paid from Third Plan onward. During the Third, Fourth and Fifth Plans, 30 River Valley Projects in all, have been selected for treatment under the centrally sponsored scheme of soil conservation in their catchment areas. The Committee are, however, distressed over the tardy progress made in implementation of the Central Sector Scheme. The total area requiring treatment in these catchments is about 79 million ha. of which 10 million ha. of the area is estimated to be critically eroding and needing treatment on a higher priority basis. Beginning from the Third Plan period till the end of 1975-76, only an area of 1.14 million ha. has been actually treated at a total expenditure of Rs. 50.75 crores under the Central Sector Scheme, According to the Department at this rate the remaining area of 8.96 million ha. could be covered in a period of 110 years

at an estimates cost of Rs. 1,330 crores, while the Fifth Plan provision for this purpose is Rs. 32.46 crores. The Committee note that under the State Sector Schemes an area of 18.71 million ha. has also been treated up to 1975-76. In view of the enormity of the problem and the slow progress made in this regard so far, the committee suggest that an integrated and realistic programme for treatment of catchment of the various river valley projects to be implemented under the Central Sector and State Sector Schemes should be prepared on a long term basis. Priority may be given to the treatment of catchments of these reservoirs where the rate of siltation is very high.

4.45. The Committee have been informed that the present norms of siltation are inadequate and a proposal for constitution of a special Committee to review the norms of siltation in the country is under consideration of the Department of Irrigation. The Committee are greatly concerned at the enormity of siltation problem faced by major and medium dams/reservoirs. They need hardly point out that the rate of siltation and the measures to keep it within safe level should have been an integral part of preparing the detailed project schemes and should have received most ciritical scrutiny before the sanction was accorded. Had these pre-requisites been complied with in letter and spirit, the Committee feel that the present predicament about silting up of a number of reservoirs thus reducing their useful capacity and life would not have arisen in the present acute form. The Committee would like that the study team proposed to review the norms for siltation of dams and reservoirs may be constituted without further delay and they should be asked to review in depth the adequacy or otherwise of decision followed in the light of field experience as also the practice obtaining in other advanced countries so as to ensure that proper norms are laid down at least now in this behalf and strictly observed.

4.46. The Committee find that in so far as the siltation of canals is concerned, no systematic study on a national basis has been made. But the common experience is that practically all the canals do get silted up and have to be desilted. These problems are tackled by the project authorities which are under the control of State Governments. The Committee note that the Central Water Commission who are expected to render expert technical assistance to the State Government, have not laid down any guidelines regarding the proper maintenance of irrigation works. The Commission has stated that it has no experience about the maintenance of canal systems. The Committee suggest that the Commission may review the problem in consultation with the States and for this purpose either an expert Committee may be constituted or a seminar etc. held with a view to evolve guidelines to reduce the incidence of siltage in the canals and evolve efficient measures for maintenance of the canal system in the interst of putting the water resources to best use.

CHAPTER V

UTILISATION OF IRRIGATION POTENTIAL

A. Utilisation of Irrigation Potential

5.1. According to statement furnished by the Department of Irrigation the position regarding utilisation of irrigation potential created at the end of Plan periods has been as follows :—

	Potential	Utilisation ('000 ha Utilisation)	%age
First Plan	12191	10985	90.1
Second Plan	14334	13072	91.1
Third Plan	15565	15175	91.6
Annual Plans	18105	16761	92.5
Fourth Plan	20651	18729	90.7
1974-75	21472	19382	90.2
1975-76	22481	20025	89.0
1976-77	23564	20856	88.6

5.2. According to the standard definition for utilisation given in the Report of the Committee of Ministers on the under-utilisation of created potential (June 1973), "Utilisation of Irrigation potential means the maximum gross annual irrigation achieved by the Project in any one year prior to the year under consideration." In the view of that Committee, it will be appropriate if the utilisation in a particular year is compared with the potential created by the end of the preceding year. As per the standard definition of the utilisation, the Department of Irrigation have calculated the percentage of utilisation at the end of 1975-76 to the potential created at the end of 1974-75 as 93.5 per cent.

5.3. On the question of under-utilisation of the irrigation potential created, the Department of Irrigation stated in a written reply that there is bound to be some lag between irrigation potential and its utilisation. Although potential is created by completing all the engineering works, diversion structures, main canal and distribution system upto 40 ha. blocks, yet full utilisation of water for irrigation would not immediately follow because it invariably takes time to complete on-farm works and for taking other steps for introduction of appropriate agricultural practices and to provide other inputs and infra-structure facilities. For getting maximum benefits, it has been a constant endeavour to reduce this lag between irrigation potential created an its utilisation as far as possible.

5.4 The Department stated that the problem of development of potential and its utilisation was discussed at the Sixth Conference of State Ministers' of Irrigation & Power held at Srinagar in June/July 1972, when it recommended that a Committee of Ministers may be set up to look into reasons for under utilisation of created irrigation potential and to suggest remedial measures. Accordingly a Committee of Ministers was set up in 1972. The Committee analysed the problem in depth and found the following reasons for lag in utilisation of created potential :

(1) Construction of field channels not keeping pace with the water availability facilities.

(2) Inadequate drainage facilities.

(3) Inadequate preparation of land for irrigated agriculture.

(4) Lack of consolidation of land holdings in command area.

(5) Anticipated crop pattern and water allowances under the project not being realised.

(6) Lack of adequate agricultural, experimental and demonstration farms, training and extension facilities.

(7) Maldistribution of available supplies and problems of tail end cultivators.

(8) Lack of inputs and infrastructure facilities.

(9) Negligence in operation and maintenance of irrigation and drainage system; and

(10) Long development period.

5.5. The various measures suggested by the Committee tentamount to adoption of the concept of integrated development of command area with a view to create necessary infrastructure for obtaining optimum benefits from irrigated agriculture. Recognising the importance of command area development in exploiting full benefits from irrigation facilities created at considerable cost, the Planning Commission has requested the States to include command area development works, as a part of the overall project and to furnish reports for new schemes on the basis of a revised format which ensures that there is proper tie-up with the command area development, right at the stage of formulation of a new scheme. The projects hence-forth are required to be conceived taking into account the requirements of surface drainage, salinity control, field drainage, land shaping and land levelling operations, etc. Simultaneous execution of command area development works together with engineering works envisaged under the project, would enable immediate utilisation of potential, almost as soon as it is created.

5.6. During evidence, the Secretary, Department of Irrigation, stated that the instructions by the Planning Commission had been issued on 14 March, 1974 that project reports submitted after 1 March, 1975 should include components of Command Area Development Programmes.

5.7. The Committee desired to be furnished with a note indicating the measures taken or proposed to be taken by Government to improve utilisation of potential. In a note, the Department of Irrigation have stated that an appraisal during the 3rd Plan period indicated that without reasonable planned investment on Ayacut development, the pace of utilisation of irrigation water would remain slow. Beginning with the period covered by Annual Plans and continued through the Fourth and Fifth Five Year Plans, a series of centrally financed pilot projects on soil and water management have been established in different command areas of irrigation projects. For the Fifth Five Year Plan, 51 irrigation commands in 16 States, having ultimate potential of about 13 million ha. were indentified for integrated command area development. In the Fifth Five Year Plan, a provision of Rs. 120 crores had been made in the Central Sector, Rs. 96.63 crores in the States Sector and an investment of Rs. 210 crores was envisaged from the institutional sources for giving loans to the farmers for the on-farm development works.

5.8. The most important aspects being tackled by the Command Area Authorities are the following:

(i) Modernisation and improvement of the efficiency of the irrigation system down to the farmers' fields.

(ii) On-farm development.

(iii) Scientific cropping pattern.

(iv) Conjunctive use of surface and groundwater.

(v) Agriculture Extension.

5.9. The subject of Command Area Development programme being new, several training projects have been undertaken to train officers and technicians at all levels, both in India and abroad. Another important measure taken for stepping up the utilisation of the irrigation potential created is the detailed examination of the irrigation projects with a view to suggesting measures for improved cropping pattern and adequate distribution of water requirement and drainage etc. to improve the utilisation of water. The Water Management Division of the Department of Agriculture and the recently set up Central Team in the Central Water Commission on the utilisation of irrigation potential have examined several projects and follow up action is being taken. The Water Management Division of the Department of Agriculture has issued several technical

Bulletins and guide-lines on different aspects of the C.A.D. Programme, particularly on estimating water requirement of crops, drainage, soil surveys, land development, etc. A Manual on on-farm development is at present under preparation.

5.10. To a question regarding improvements effected in reducing lag in utilisation of the irrigation potential created, the Department of Irrigation have stated in their written reply that as the various measures stated above are now being taken by the Central and State Governments, it is at present too early to indicate the improvement effected in maximising the utilisation of irrigation potential created.

5.11. The Committtee note that the utilisation of created irrigation potential which was 91.6 per cent at the end of the Third Plan and 92.5 per cent at the end of the annual plans (1966—69), came down to 90.7 per cent at the end of the 4th Plan to 88.6 per cent at the end of the 1976-77. The Committee note that the problem of under-utilisation of created irrigation potential was discussed at the Conference of State Ministers of Irrigation and Power in 1972 and as a result of the recommendations of that Conference, a Committee of Ministers was appointed in that year to look into this matter. The Committee identified various reasons for this under-utilisation which included delay in construction of field channels, inadequate drainage facilities, inadequate preparation of land, lack of consolidation of land holdings etc. and suggested, inter alia, the adoption of the concept of integrated development of command area. The Committee further note that the Planning Commission in March, 1974 issued instructions to the State Governments, to include command area development works as a part of the overall project and furnish project reports for new schemes submitted after March, 1975 on the basis of the revised format so as to ensure utilisation of irrigation potential almost as soon as it is created.

5.12. The Committee note that several training projects have been undertaken to train officials and technicians at all levels in the programme of command area development. Guidelines on the different aspects of the command area development programme, particularly on estimating water requirements of crops, drainage, soil surveys, land development etc., have also been issued. With a view to ensuring full utilisation of the Irrigation potential created, Government should keep a close watch over the implementation of the guidelines by the State Governments and monitor the progress made in utilisation.

5.13. It is well known that utilisation of irrigation facilities results in increased production of foodgrains and other crops. The Committee cannot but stress too strongly the importance of optimum utilisation of the created irrigation potential on which heavy investments have been made. The Committee are distressed to note that at the end of 1976-77 there was a vast

gap of 2.7 million hectares in the utilisation compared to the created irrigation potential. The Committee would like Government to take determined measures to ensure simultaneous execution of command area development works so that the irrigation potential created is utilised immediately. The Committee would like that a close watch should be kept on the utilisation of irrigation potential in respect of all irrigation projects and remedial measures taken expeditiously to avoid any bottlenecks in the utilisation of irrigation facilities.

B. Construction of Fields Channels

5.14. The Committee of State Ministers of Irrigation which went into the problem of under-utilisation of irrigated potential examined the problem in great detail and stated in their report (June 1973):—

> "It is a common experience shared by all States that the requisite response from the farmers for the construction of field channels is not forthcoming and the non-provision of field channels constitutes the main cause for the lack in utilisation as also wastage of water. The reasons attributed for this are the lack of a spirit of cooperation among the cultivators, lack of funds, particularly with small farmers, the lack of expertise to construct culverts and other structures and an expectation that the Government might come to their assistance by a subsidy if they hold out long enough".

5.15. The Committee of the State Ministers recommended :—

(i) Adequate provisions should be made in the existing State laws to empower Irrigation Department to take up the field channels works on behalf of the cultivators.

(ii) To meet expenditures on construction of field channels, fund should normally be made available to the Irrigation Department by way of loans from Land Development banks. Agricultural Refinance Corporation/other organised credit Institutions. In the event of institutional loans being not available, the State Government should consider the feasibility of providing adequate funds from its own or other resources.

5.16. In a note, the Department of Irrigation has indicated the following projects/States where the construction of water-courses and field channels is lagging behind:—

Andhra Pradesh

1. Tungbhadra Low Level Canal,
2. Tungbhadra High Level Canal,

3. Bhairavanitipa,
4. Pampa, and
5. Ramadugu.

Assam

1. Jamuna

Bihar

1. Gandak,
2. Kosi,
3. Sone (High Level Canal).

Gujarat

1. Mahi (Stage I),
2. Shetrunji (Palitana-Major),
3. Ukai,
4. Kakrapar.

Madhya Pradesh

1. Barna,
2. Chambal,
3. Hasdeo,
4. Tawa.

Maharashtra

1. Bagh,
2. Itiadoh,
3. Purna,
4. Jaikwadi.

Uttar Pradesh

1. Gandak,
2. Ramganga,
3. Sharda Sahayak.

As regards the remedial measures taken, the Department of Irrigation have stated that construction of water courses form an integral part of the Irrigation Project and these are being executed along with Main Canals, Branch canals, distributories and Minors in all Irrigation Projects. On-farm development taken up under the Command Area Development includes construction of field channels. Long term loans are being provided to the farmers by the financial institutions. For implementation of

these works, Government of India are also providing loans to the State Governments since 1975-76, to accelerate construction of field channels with the help of command area development authorities. Subsidies are also provided to small and marginal farmers towards on-farm development works. Till 30th September, 1976 about 50,000 km. of field channels have been constructed.

5.17. During evidence, the Secretary, Department of Irrigation stated that the difficulty in construction of field channels had been land acquisition. If a farmer at the farthest and wanted to take water through the fields of others, there were objections. Land acquisition took a lot of time. The witness added that in many States like Maharashtra and Gujarat there was a separate provision under the Land Improvement Scheme under which the land was not acquired but right of passage was given for construction of field channels. The witness added that in the Model Bill for irrigation, this was one of the provisions commended to the State Governments for adoption.

5.18. In a written reply furnished subsequently the Department of Irrigation have stated that to expedite the construction of field channels and to provide for the procedure in this regard, most State Governments have made enactments. The Amended Northern India Canal and Drainage Act as applicable to Punjab and Uttar Pradesh; Bombay Irrigation Act and Land Improvement Act, as applicable to Maharashtra and Gujarat; the Mysore Irrigation Act, the Rajasthan Land Development Corporation Act;' U.P. Soil Conservation and Area Development Acts, the Bihar Agricultural and Rural Area Development Agency Ordinance, 1975; can be cited as examples of such Acts. The Draft Model Irrigation Bill which has been commended to the State Governments by the Department of Irrigation also makes suitable provision in this regard. Under the Command Area Development Programme, the work of construction of field channels is done at the cost of the farmers with the help of loans from the institutional sources. The work of construction of field channels on behalf of the farmers is in the initial stages and is likely to catch up as the flow of institutional funds gets streamlined. In the meantime with a view to accelerating the construction of field channels, Government of India has been giving loan assistance to the States for construction of field channels, the cost being recoverable from the farmers.

5.19. The Committee desired to be furnished with a note indicating the system followed in various States regarding construction of field channels and action taken to speed up their construction. In a note, the Ministry of Agriculture and Irrigation have stated that the present position in the various States is as follows :

"In the States of Punjab, Haryana and Rajasthan there are still outlets upto a size 2 to 3 cusecs where the water courses and the field channels

are being constructed by the farmers themselves. However, the lining of these water courses is being undertaken by the Minor Irrigation Tubewell Corporation or the Irrigation department with the funds borrowed from the Banks and later recovered from the beneficiaries. These outlets command a much lager area because of low intensities of irrigation. In Uttar Pradesh only recently the command area development authorities have been set up where under the new projects the field channels are being constructed as earthen channels by the Irrigation Department, the Command Area Development Anthority and also by voluntary labour by the farmers themselves under the guidance of these two Departments. However, the lining of the water courses with the complete package of on-farm development is being done by the command area development authorities at the cost of the farmers, which would be recovered in instalments.

In Bihar and West Bengal, the irrigation outlets were of much larger size which were of about 5 cusecs and cover much larger area than 40 ha. However, in the past 10 years action has been taken by the Irrigation Department to convert some of these bigger outlets into sub-minors and bring the irrigations distribution system upto a 40 ha. block. However, there is still a lot of work which has to be done in this direction even in the older canal system besides the new one's. The Command Area Development Authorities in these States are now taking up the work of getting the field channels constructed within the 40 ha. block.

In the case of Assam, although the irrigation system is being constructed upto the 40 ha. block, the field channels within the 40 ha. block are yet to be constructed. This task has now been taken up by the Irrigatiton Department in one of the projects.

In Maharashtra and Gujarat, the field channel construction was earlier taken up by the soil conservation organisation with cost to be recovered from the beneficiaries. However, now the Command Area Development Authorities have been organised in these States and the construction of field channels is being taken up through institutional finance to be recovered from the beneficiaries. In Maharashtra since the flow of the funds from the institutional finance is still to take place fully, the funds under the employment guarantee schemes were being utilised for this purpose.

In Karnataka, the State Government took a decision in the late sixties to construct the field channels upto each survey number as part of the irrigation project, and the work has been going on.

In Andhra Pradesh, till recently the field channels were constructed at Government cost upto 10 ha. block. However, now the State Government has decided to construct the field channels at Govt. cost upto the each survey number. In both these States (Karnataka and Andhra), the command area development authorities have been set up.

In Orissa and Kerala where mainly rice growing areas are irrigated, the practice of field to field irrigation is still practised and the irrigation distribution system upto the 40 ha. block or so generally exists. For the present, no effort is being made to construct the field channels within these blocks. In the case of Orissa, the Command Area Development Authorities has now been set up and efforts are being made to construct field channels upto 6 ha. block.

In Tamil Nadu where also the same practice was prevalent, however, recently the construction of field channels has been taken up by the Irrigation Department.

In Madhya Pradesh, the Irrigation system have been generally constructed upto 40 ha. blocks and within the block, field channels are now being constructed in a few projects by the command area development authorities. While in some other irrigation projects" that action has still to be taken.

5.20. The Committee note that the non-provision of field channels constitutes the main cause for the lag in the utilisation of irrigation potential. This is inter-alia, attributed to lack of spirit of cooperation among the cultivators and lack of funds particularly with small farmers. The Committee of State Ministers of Irrigation recommended that adequate provisions should be made in the existing state laws to empower irrigation departments to take up field channel works on behalf of the cultivators. The Committee were informed that to expedite the construction of field channels, most of State Govts. have enacted suitable laws. The draft model Irrigation Bill which has been commended to the State Govts., by the Department of Irrigation also makes suitable provision in this regard. The Committee desire that this matter should be pursued vigorously with the State Govts. concerned to ensure that adequate provision in this regard is made by all of them.

5.21. The Committee learn that under the command area development programme, the work of construction of field channel is done at the cost of farmers, by arranging loans from institutional sources. This work is however in the initial stages and is likely to catch up as the flow of institutional funds gets streamlined. The Govt. of India has also been giving loans to the States for accelerating the construction of field channels. The Committee need hardly emphasise the importance of field channels in ensuring accelerated utilisation of irrigation potential. The Committee urge that concerted efforts should be made to streamline and remove bottlenecks in the flow of institutional credit for the construction of field channels so that there is no lag in the utilisation of created irrigation potential.

5.22. The Committee find that a number of important projects in the State of Andhra Pradesh, Assam, Bihar, Gujarat, Maharashtra and Uttar Pradesh are lagging behind in the construction of field channels. The Committee desire that necessary steps should be taken to expedite the construction of field channels in these projects and the Committee informed of the development effected as a result thereof.

C. Lag in utilisation of potential in some major projects

5.23. In paragraph 2.80 of the Report (1972), the Committee of Ministers pointed out that 8 major projects accounted for three-fourths of lags in the utilisation of irrigation potential created by major projects. The Department of Irrigation furnished the following information regarding utilisation in respect of seven of these projects in which lag in utilisation continues :

(000 ha.)

No.	Name of the Project	Ultimate potential	Potential created by 75-76	Utilisation by 1976-77	Lag in Utilisation	% lag in utilisation
1	2	3	4	5	6	7
1.	Kosi including Rajpur Canal (Bihar)	559	416	198	218	52.4
2.	Chambal Stage I & II (M.P. & Rajasthan)	503	449	350	99	22.0
3.	Gandak (Bihar & U.P.)	1459	731	400	331	45.3
4.	Kakrapar (Gujarat)	228	214	145	69	32.2
5.	Tungabhadra (High and Low Level Canal) (A.P. & Karnataka)	507	449	378	71	15.8
6.	Rajasthan Canal Stage I. (Rajasthan)	590	393	288	105	26.7
7.	Mahi Stage I (Gujarat)	186	139	84	55	39.6

5.24. The Department of Irrigation have further stated that there is some lag in utilisation in respect of following other important projects which are at present under execution :

(000 ha.)

Project	Ultimate potential	Potential created by the end of March 1975	Utilisation by the end of March 1976	Lag in utilisation	% of lag
1	2	3	4	5	6
1. Sone High Level Canal (Bihar)	161	110	95	15	15.6
2. Ukai Project (Gujarat)	153	91	17	74	81.3
3. Ramganga Project (U.P.)	575	390	330	60	15.4

The reasons for under-utilisation of the irrigation potential in the above projects have been discussed in the subsequent paragraphs.

Kosi Project

5.25. During evidence the Secretary, Department of Irrigation stated that in the case of Kosi Project the potential created up to March, 1975 was 395 thousand ha. and the utilisation up to March, 1976 was 235 thousand ha. (Eastern Kosi 200 thousand ha. and Rajpur 35 thousand ha.). The Committee desired to know the reasons for under-utilisation of irrigation potential created by Kosi Project. The Secretary, Department of Irrigation stated during evidence that the main reason for the lag in utilisation of the irrigation potential was that the original project report did not envisage realistic crop pattern. The Project report envisaged sizeable percentage of the area to be irrigated in the monsoon period but this area had so much rainfall that in the monsoon period nobody would take water even if the field channel was available. The witness added that effort was now being made to promote more and more hot weather crops and this job had to be done by the command area authority. Asked about the position regarding construction of field channels, the representative of the Department stated that the work was started in the last working season but there were quite a few other associated problems which had to be tackled. One of the problems was that the farmers should meet the cost of construction of field channels. For this purpose institutional finance would be provided to them on long term credit. The witness added that in view of the fact that institutional financing is a time consuming process, it has been decided that the government should provide loans to the State Governments for construction of field channels. These loans would be recovered from the farmers over a period of time.

5.26. The Secretary, Department of Irrigation however stated that another reason for the lag in utilisation of irrigation potential was heavy siltation. The Chairman, Central Water Commission stated that when the Kosi Project was conceived and planned, this was a Flood Control Project and incidentally the Commission wanted to use water for irrigation at that time. The Commission was aware of very heavy silt charge in the river. They constructed one Silt Excluder Downstream but it was found that nearly 25 to 30 per cent of the silt was going out through this. As one silt excluder was not found adequate, construction of another was under consideration. The witness added that the maximum amount of silt was brought by the tributary named Thamur. The catchment area lay in Nepal. The soil conservation measure had to be taken on a very large scale. However studies were being made to see how best the silt could be removed after it enters the canal. The representative of the Commission stated that the canal had been lined and pitching had been done up to 43 Kms. With this pitching completed in 1973-74, the Canal had considerably improved. The main difficulty was that the canal was not able to carry the quantity of discharge for which it was designed.

5.27. In a note furnished to the Committee subsequently, the Department of Irrigation have stated the following reasons for under-utilisation of potential in Kosi Project :—

(i) Occurrence of high patches and water-logged areas in the project Command. As a result, area actually available is less than what was assumed in the original project.

(ii) The Canal was not able to take full discharge due to heavy siltation in head reaches and due to frequent shut-downs of power house after its completion.

(iii) Inadequate response from cultivators about constructions of field channels.

(iv) Crop pattern envisaged has not developed.

(v) Inadequate extension facilities in the Command area.

5.28. The following steps have been taken to remedy the situation :

(i) Kosi Command area authority has been set up in October, 1973 for integrated development of command.

(ii) The problem of siltation in the canal has continuously engaged the attention of a number of Committees of experts. As a result of a number of measures taken, position has improved now. As regards disruptions caused due to outage of Hydel Power House, a permanent by-pass has now been constructed for ensuring continuous supplies in the canal in event of a power house shut-down. As a result, the utilisation has improved.

(iii) A Committee was set up by Government of Bihar in September, 1973 to make an assessment of areas that can be actually irrigated from the project, and suggest measures to ensure full utilisation of potential. The Committee has since then submitted its report, suggesting reduction in the potential of the project and measures to improve the utilisation. This is under the consideration of the State Government.

5.29. The Department have stated that the utilisation figures based on recorded irrigation do not convey the correct impression of the success of this project because of its peculiar terrain. There are large low-lying fields in the command area, for which cultivators do not ask for irrigation as there is enough percolation from higher plots around. While, these areas get the benefit from project, it does not get reflected in the figures of area irrigated. The actual benefits from the project are more than what is reflected from utilisation figures.

5.30. The project as conceived, envisages in irrigation intensity of 115 per cent of which area in kharif is 65 per cent. Being a high rain-fall

area, irrigation supplies during kharif are by way of insurance against drought or prolonged dry spells in the monsoon season. It would be, as such, rare that actual utilisation in a year is to the extent of potential created.

5.31. According to the Department, for assessment of irrigation benefit in kharif, a more appropriate way to assess the utilisation should be to reckon it as area equal to area sown. This would give a clearer picture of success of the project.

Silt Problem in Eastern Kosi Canal System

5.32. On the problem of silt in the Eastern Kosi Canal System, the Department of Irrigation have stated in their written reply that the canal is designed for a head discharge of 15,000 cusecs for kharif irrigation. When the canal was partially commissioned in 1964, a discharge of 2,000 cusecs was run by constructing a temporary by-pass channel near the Hydel Power Station which was being constructed on main canal. In 1966, as the power house was still incomplete, another temporary by-pass channel of 4,000 cusecs was constructed and canal was run at 6,000 cusecs. After completion of power house, the canal was run at 9,000 cusecs in 1969 and 10,500 cusecs in 1972. Due to Kosi water containing heavy amount of silt there was excessive silting in canal. The quantity of sand cleared in 1967 was 9 million cft. whereas in 1969 it was 45 million cft.

5.33. The problem of tackling the silting problem at Kosi has been examined by a number of Technical Committees set up by the State Government as well as by the Government of India. In 1969, Mitra and Jain Committees gave a number of recommendations for improving regulation. As a result, silting was reduced from 45 million cft. in 1969 to 35 million cft. in 1970. In pursuance of their recommendations, construction of a silt ejector, for ejecting silt entering the canal was taken up in 1970 and completed. As a result of these measures, the annual quantity of silt entering the canal, estimated at 40 million cft. was reduced to 25 million cft.

5.34. In 1973, another Technical Committee of Experts went into the problem and suggested further measures both short-term and long-term, which included detailed recommendations about canal operation during monsoon season, construction of a second silt ejector, deployment of dredgers, pitching of canal banks in vulnerable reaches and measures for controlling sediment yield and its transport and deposition below Chatra gorge. As a long term solution, investigations have been suggested for exploring feasibility of a high dam for silt storage and check dams across Tamur and Arun—two tributaries of the river Kosi. Extensive soil conservation measures in the catchment area in Nepal have been suggested.

5.35. By operating the canal as per suggestions made, during 1973 and 1974, canal has been run upto full authorised discharge without silting. However, a permanent solution of the problem would be possible only if long-term measures can be implemented.

According to the information furnished by the Department of Irrigation in November 1977, out of Irrigation potential of 416 thousand hectares created up to March, 1976, the utilisation up to March, 1977 was 198 thousand hectares, the lag in utilisation being 218 thousand hectares (52.4 per cent).

5.36. The Committee feel concerned over the large gap between the irrigation potential created by the Kosi Project and its utilisation. As against the potential of 416,000 ha. created by the end of March, 1976, the utilisation upto the March, 1977 was 198,000 ha., the lag in utilisation being 218,000 ha. (52 per cent).

5.37. One of the major reasons for under-utilisation of the potential is the inability of the canal to take full discharge due to heavy siltation in head reaches and frequent shout-down of power house after its completion. The Committee learn that the problem of siltation in the Canal has engaged the attention of a number of Committees of Experts. As a result of the measures taken in pursuance of the recommendations made by Expert Committees in 1969, silting was reduced. A silt ejector for ejecting silt entering the canal was installed in 1970, but this was found to be inadequate. In 1973 another technical Committee went into the problem and suggested further measures both short-term and long-term which included detailed recommendations about the canal operation during monsoon season, construction of a second silt ejector, deployment of dredgers, pitching of canal banks in vulnerable reaches and measures for controlling sediment yield. As a long term solution, investigations have been suggested for exploring feasibility of high dam for silt storage and check dams across two tributories of the river Kosi. Extensive Soil Conservation measures in the Catchment area in Nepal have also been suggested. The Committee have been informed that the construction of the second silt ejector is under consideration. The canal has been lined and pitched up to 43 kms. By operating the canal as per suggestions made by the Expert Committee, the canal has been run into full authorised discharge without silting during 1973-74. As regards disruptions caused due to outage of power house, a permanent by-pass has been constructed for ensuing continuous supplies in the Canal in the even of shut-down of the power house. The Committee consider that it is necessary to have a permanent solution of the problem of siltation. They are not happy over the delay in

taking a decision on the recommendations made by the Expert Committee set up in 1973 in this regard. The Committee desire that a decision on these recommendations should be taken without further delay.

5.38. As other reason for under-utilisation of the irrigation potential is the unrealistic cropping pattern envisaged in the project. The project report envisaged sizeable percentage of area to be irrigated in the monsoon period but due to heavy rainfall during the monsoon period the cultivators were not prepared to take water from the canal. The Committee would like Govt. to take concerted measures to promote hot weather and other crops which would result not only in utilisation of the irrigation facilities but higher yields and income to the farmers.

5.39. The Committee note that there is inadequate response from cultivators about construction of field channels and that there are inadequate extension facilities in the Command area. They note that Kosi Command Area Authority was set up in October, 1973. The Committee desire that under the Command Area Development Programme, concerted efforts should be made to speed up construction of field channels, develop proper cropping pattern and provide adequate extension facilities. The Committee need hardly stress that all efforts should be made to fully utilise the irrigation potential created at a considerable cost.

5.40. The Committee understand that because of occurrane of high patches and water logged areas in the project command, the area actually available for irrigation is less than what was assumed in the original project. A Committee set up by the Government of Bihar in September, 1973 has suggested reduction in the potential of the project and that the matter is under consideration of the Government of Bihar. It is thus evident that the project report was not prepared after careful survey and investigation. The Committee emphasise that the irrigation potential should be realistically estimated at the time of preparation of project reports.

5.41. The Committee would like to point out that the main reasons which have been adduced for under utilisation of irrigation potential in this project are :—

(i) Unrealistic Crop pattern envisaged in the original project.

(ii) Heavy siltation

(iii) Inadequate extension facilities in the Command area.

The Committee consider that these difficulties are largely the result of defective planning and surveying and want of advance action. The Committee desire that a careful study be made of the difficulties/deficiencies experienced in these projects so as to draw meaningful lessons to avoid the

same in future projects. The Central Water Commission should take necessary remedial measures to ensure better planning of irrigation projects by State Governments and their critical scrutiny by the Commission. The guidelines regarding the preparation of irrigation project reports may be modified suitably where considered necessary.

Gandak Project (Bihar)

5.42 During evidence, the Secretary, Department of Irrigation stated that upto March, 1975 the irrigation potential of the Gandak project in Bihar was 392,000 hactares, in U.P. 266,000 ha., total being 658,000 ha. The utilisation figure upto March, 1976 was 18,000 ha. in Bihar and 200,000 in U.P. making a total of 380,000 ha.

The witness added :—

"The position is much worse in Bihar. In U. P. it is somewhat better. So if we go into the command area also the U. P. command area is better from the point of view of drainage and inudation of the land. This is one of the major problems. Sometimes what happens is this. When some outlet or canal system is there, it is assumed that the whole area is a command area. Actually trials have to be done to ensure that water would reach the field and we should be definite about it. I have myself visited the Gandak project and we are in the process of issuing a Circular letter that water should reach the field and these trials should be undertaken. Some large areas get inudated during monsoon and rabi. This is the real difficulty. There are Committees in the State which are working on this. In irrigation projects, some projects have shown better potential than what was estimated at the time of their preparation. It was the reverse in some other cases. What is to be done is that we should have a reappraisal of the project on the basis of actual performance. We feel that if this reappraisal is done, we will be in a better position to understand these things. What is important is, we should have to be realistic about the whole matter. Let us do this reappraisal of the potential. I would suggest for the consideration of the Committee that on a countrywide basis we should do this reappraisal. We should know what is the actual potential. We should compare utilisation with respect to that."

The witness further stated :—

"When I visited the project from 13th to 15th May, I have given detailed instructions. Lot of work remains to be done. The

State Government has given the Drainage Report. If the Canal water is in excess in the lower reaches, they get flooded. I said you have to improve and modernise your system. I want into the depth of the whole thing and issued instructions. We hope that the State Government will take adequate steps in this regard."

5.43. In a written reply furnished subsequently the Department of Irrigation have stated the following reasons for non-utilisation of the irrigation potential :—

Bihar

(i) Problem of drainage congestion in command area.

(ii) Lack of field channels and field drainage.

(iii) Inadequate command area development.

Uttar Pradesh

(i) Lack of adequate drainage.

(ii) Lack of field channels and field drainage.

The following measures have been taken to improve the utilisation :

(i) Command Area Development Authorities have been set up both in Bihar and Uttar Pradesh for integrated development of Command Area.

(ii) Additional allocations are being provided for construction of field channels.

(iii) Work on drainage schemes in the Command Area is being expedited.

According to the information furnished by the Department of Irrigation in November, 1977, out of irrigation of potential of 731 thousand hectares created up to March, 1976 utilisation up to March, 1977 was 400 thousand hectares, the lag in utilisation being 331 thousand hectares (45.3 per cent).

5.44. The Committee are distressed to note that in the case of the Gandak Project, out of total potential of 731 thousand hectares created up to March, 1976, the actual utilisation at the end of March, 1977 was 400 thousand hectares. The lag in utilisation was 331 thousand hectares (45.3 per cent) even after a lapse of one year. Out of the two beneficiary States of Bihar and U.P., the position of utilisation was much worse in Bihar. In both the States, the lag in utilisation has been attributed to lack of adequate drainage and field channels. The Committee note that

Command Area Development Authorities have been set up in both the States for integrated development of Command Area. Additional allocations are being provided for construction of field channels and drainage schemes are being expedited. The Committee would like to stress that a concerted drive should be undertaken for the construction of field channels, execution of drainage schemes and development of Command Area, particularly in the State of Bihar where the lag in utilisation of potential is very large.

Rajasthan Canal

5.45. During evidence the representative of the Department of Irrigation stated that the Rajasthan Canal was originally designed with an intensity of 75 per cent. Later a decision was taken to increase the intensity to 110 per cent. The potential reported was based on 110 per cent intensity even for those canals which were not lined. A Committee had gone into the matter and came to the conclusion that the canals actually could not carry 110 per cent intensity. The canals had also to be closed down for some period as lining was being carried out under a phased programme. According to the witness, the real lag in utilisation taking into account the intensity of the canal was only 50,000 ha., which was considered to be reasonable, in view of the fact that certain areas were lacking in infrastructure like roads, markets etc. The witness added that a loan of 83 million dollars had been secured from the World Bank for the Command Area Development, that total cost for the development being estimated at 174 million dollars.

5.46. In a note furnished to the Committee subsequently, the Department of Irrigation have stated that the potential created on the Rajasthan project Stage-I by 3/75 and 3/76 and its utilisation was as under :—

	Upto March '75	Upto March '76
Potential (Revised figures)	328	393
Utilisation	240	288

5.47. The Department have further stated that there has been some misunderstanding in the reporting of the potential created on the project by the project authorities. The distribution system of the Rajasthan canal according to the original project was to be constructed as unlined. Subsequently, a decision was taken to line the distribution system and thereby increase the scope of the project by having an irrigation intensity of 110 per cent as against 75 per cent in the sanctioned project. By that time, distribution system upto Mile 48 of the canal had already been constructed. For

achievement of irrigation intensity of 110 per cent envisaged in the revised project, the system earlier constructed as unlined is required to be lined. This work is already taken up. The project authorities have been reporting the potential created on this part of the system assuming the irrigation intensity as envisaged in the revised project. In view of the fact that the lining is yet to be completed on the entire system, the actual carrying capacity of the channels in the present stage is less. The potential actually created is therefore less than what was hitherto being reported by the project authorities. This matter was discussed in the Rajasthan Canal Board and subsequently in the Department of Irrigation recently. As a result the figures for potential created have been revised on the basis of actual carrying capacity of the channels. The revised figures indicated now are mentioned above. This would show that the lag in utilisation is only of the order of 40,000 ha. comparing the utilisation upto March, 1976 with the potential created upto March, 1975.

5.48. The Department of Irrigatiton have further stated that there is also likely to be delay in utilisation of full potential created on the project due to extension of canal system to desert areas which have relatively very small population and where component of colonisation by on-farm development is not substantial.

5.49. Already actual occupation of land allotted to Pong Dam oustees is very poor on the Anoopgarh Sakha of the Canal, with the result that irrigation has not developed on this branch, although on the distributaries like Nowrang Desar and Rawatsar in the upper reaches, the actual utilisation is more than the designed intensity. For speeding up the development of the command area, a Colonisation Department has been set up which is entrusted with the job of land allotment. While every effort is being made to speed up the pace of utilisation of potential, yet keeping in view the peculiar desert conditions in the area, some minimum time lag between the potential created and utilisation has to be allowed.

According to the information furnished by the Department of Irrigation in November, 1977 out of irrigation potential of 393 thousand ha. created up to March, 1976 the utilisation up to the end of March, 1977 was 288 thousand ha. the lag in utilisation being 331 thousand ha. (45.3 per cent).

5.50. The Committee note that according to the original project the distribution system of the Rajasthan Canal was to be constructed unlined. Subsequently, it was decided to line the distribution system and thereby increase the scope of the project by having an irrigation intensity of 110 per cent as against 75 per cent in the original project. The distribution system up to

Mile 48 of the Canal which has actually been constructed unlined, has been taken up for lining. Although the lining has not been completed, the project authorities have been reporting the potential created on the basis of the intensity as envisaged in the revised project. On the basis of the actual carrying capacity of the canals the real lag between the potential created upto the end of March, 1975 (328000 ha.) and utilisation upto March, 1976 (288000 ha.) was stated to be 40 thousand hectares (12.2 per cent). It has been stated that there is likely to be delay in utilisation of full potential created in this project due to extension of canal system to desert areas which have relatively very small population. For speeding up the development of the Command Area, a colonisation Department has been set up which is entrusted with the job of land allotment. The Committee, are, however concerned to find that while the created irrigation potential increased to 393,000 ha. upto the end of the March 1976, the utilisation continued to be 288,000 ha. upto March, 1977, the lag having increased to 105,000 ha. (26.7 per cent). The Committee desire that serious attention should be paid to improve the utilisation of the potential created.

5.51. The Committee are constrained to observe that originally the distribution system of this project was to be constructed unlined with a lower capacity. With lining the capacity has been increasd from 75 per cent to 110 per cent that is an increase of 35 per cent. The Committee are unable to appreciate why this aspect was not taken care of at the planning stage of the project which is in the desert area. They would like that the lining of the distribution system which has already been constructed unlined should be expedited, particularly in vulnerable reaches.

5.52. The Committee note that a loan of 83 million dollars has been sanctioned from the World Bank for the development of the Command Area. The Committee desire that greater attention should be given to the colonisation scheme and the development of the Command area so that the potential created is fully utilised within a minimum time lag.

Tungabhadra H & L Level Canals (A.P. And Karnataka)

5.53. In a note furnished to the Committee, the Department of Irrigation have stated that the total potential created was 448 hectares upto March, 1975. The lag in utilisation at the end of March, 1976 was 91 thousand hectares. Out of potential of 449 thousand ha. created upto March, 1976, the utilisation upto March, 1977 was 378 thousand ha. ; the

lag in utilisation being 71 thousand ha. (15.8 per cent). The following reasons have been given for non-utilisation of potential :

(i) Inadequate supplies in the canal due to frequent breaches caused because of inadequate consolidation of banks and also damage to canal lining.

(ii) Inadequate provision of field channels ;

(iii) Lack of progress on land levelling and land shaping.

(iv) Lack of credit facilities.

(v) Inadequate extension service.

(vi) Drainage congestion.

5.54. The measures taken to improve utilisation have been stated as under :

A scheme for strengthening and raising the canal embankments has been taken for execution and an estimate for Rs. 8.08 crores sanctioned for this purpose in 1975.

A Central Team visited the project in September, 1975 and examined in detail the operation of the project and made a number of recommendations with a view to maximise the benefits from the available water. These relate to changes in cropping pattern, strategy for land development, lining of channels in red soils in the command area etc. which are under consideration with the State Government.

State Government is preparing a project for lining of the distribution system in the vulnerable reaches as well as for drainage of areas in the aycaut.

5.55. The Committee note that considerable under-utilisation of the irrigation potential continues in Tungabhadra H & L Level Canals. The lag between potential created by March, 1976 and utilisation achieved by March, 1977 was 71 thousand hactares (15.8 per cent). With a view to improving utilisation of irrigation potential, a scheme for strengthening and raising the canal embankments has been taken up for execution. The Committee have been informed that the recommendations of the Central Team which reviewed the project in September, 1975 are also under consideration of the State Government. The Committee hope that necessary follow up action will be taken on the recommendations of the Central Team

with a view to effect improvements in the project and maximise the utilisation of the potential.

5.56. In paragraph 4.11 of this report it has been mentioned that this project is one of 15 projects selected for modernisation during Fifth Plan, and the State Government has been asked to prepare the project report on a priority basis. The Committee have been informed that a project for lining of distribution system in the vulnerable reaches as well as for drainage is under preparation. The Committee urge that the preparation of project report for improvement and modernisation would be expedited and implementation undertaken at the earliest.

Kakrapar Project (Gujarat)

5.57. Out of potential created of 214 thousand hectares upto March, 1976, the utilisation upto March 1977 was 145 thousand hectares, the lag in utilisation being 69 thousand ha. (32.2 per cent). In a written reply, the Department of Irrigation has given the following reasons for non-utilisation of the irrigation potential :

(i) Due to adequate rainfall in the Command area, demand for water during monsoon is low. Change over to new cropping pattern is taking more time.

(ii) Lack of field channels.

(iii) Inadequate extension service.

(iv) Inadequate progress on land levelling etc.

(v) Poor utilisation in Khar land and grass land area. An area about 12000 ha. is Khar land, which is prone to flooding by sea water while grass land, covers 16000 ha. where owners are reluctant to get the land converted to irrigated category because of lower land ceilings for irrigated land.

5.58. The following measures have been taken to improve the utilisation:

(i) Command area Development Authority was set up for integrated development of command area.

(ii) Cultivators are being induced to take to improved varieties of Jowar and Cotton.

(iii) For expediting construction of Field channel, a separate field channel construction circle has been created, since January, 1973. It is proposed to complete all the channels in the project command within next two years.

(iv) Work on drainage scheme is being expedited.

(v) Demonstration farms have been set up.

Ukai Project (Gujarat)

5.59. Out of irrigation potential of 91 thousand ha. created upto March, 1976, the utilisation upto March, 1977 was 17 thousand hectares; the lag in utilisation being 74 (81.3 per cent). In a note to the Committee, the Department of Irrigation has furnished the following reasons for lag in utilisation of potential created :

(i) Inadequate response from cultivators for adopting cropping pattern envisaged in the project. Existing varieties of Cotton and Jowar grown in the area do not need much irrigation in monsoon due to adequate rainfall.

(ii) Inadequate provision of field channels.

(iii) Command area particularly in LBG system requires large land shaping and land levelling.

(iv) Inadequate extension service.

5.60. The Department of Irrigation have stated for remedial measures that a Command Area Development Authority has been set up for integrated development of the command area, and work on the construction of field channels has been given top priority.

Mahi Stage I (Gujarat)

5.61. Out of irrigation potential of 139 thousand hectares created upto March, 1976, the utilisation upto March, 1977 was 84 thousand hectares the lag in utilisation being 55 thousand hectares (39.6 per cent). In a note the Department of Irrigation have given the following reasons for lag in utilisation of the potential :

(i) Assumption of unrealistic command, cropping pattern and water requirements in the project without the backing of storage reservoir at Kadana.

(ii) Inadequate field channels.

(iii) Losses due to seepage from canals.

(iv) Unwillingness of cultivators to take to irrigation during Rabi in Cambay and Mathur areas.

(v) Lack of demand during kharif.

5.62. The measures taken to improve utilisation have been stated as under :

1. Lining has been provided in three-fourth of the length of the Main canal to reduce seepage losses.

2. Construction of field channels is being expedited.

3. A reappraisal of cropping pattern and irrigation is proposed to be done by the State on the basis of detailed study of river hydrology and realistic water requirement for crops.

4. Due to perennial supplies of water from Kadana Dam which has started impounding water from 1976, the development of irrigation will be faster.

Chambal Project (M.P. and Rajasthan)

5.63. Out of irrigation potential of 440 thousand hectares created upto March, 1976, the utilisation upto March 1977 was 350 thousand hectares, the lag in utilisation being 99 thousand ha. (22 per cent). In a written reply, the Department of Irrigation have stated the following reasons for the lag in utilisation of the potential created :

(i) Inadequate capacity of Right Bank Main Canal to carry designed discharge due to weeds, slips in canal etc.

(ii) Inadequate provision of Field Channels.

(iii) Lack of progress on land shaping and land levelling.

(iv) Water logging in command area and absence of adequate drainage facilities.

(v) Inadequate extension service.

5.64. The following measures have been taken to improve utilisation :

(i) The problem of non-utilisation is more pronounced in Madhya Pradesh. The slow development of potential on the project has been intensively studied during last decade and a modernisation project has been started with World Bank Assistance in June, 1975 for improvement of drainage and irrigation in the Chambal Command. Under this project, a number of engineering improvements are being effected which would enable full utilisation of potential created.

(ii) Command Area Development Authorities have been set up separately in Madhya Pradesh and Rajasthan. The works taken up under this programme are irrigation and drainage works 'on-farm' development, roads, supply of fertilisers etc.

Sone Project (Bihar)

5.65. Out of irrigation potential of 110 thousand hectares created upto March, 1976, the utilisation upto March 1977 was 95 thousand hectares, the lag in utilisation being 15 thousand ha. (13.6 per cent). In a note, the Department of Irrigation have stated that the Sone High Level Canal

Project is nearing completion and is expected to be completed by 1978-79. Some lag between potential created and utilisation is inevitable in the construction stage. Even after the completion of a project, it generally takes 3 to 5 years for the ayacut to develop and achieve full utilisation. As such the present lag during the construction stage is not considered abnormally high. A Command Area Development Authority has been set up for integrated development of project command which covers the existing Sone Canal System. The utilisation is expected to improve with the execution of field channels and ayacut development works.

Ramganga Project (Uttar Pradesh)

5.66. In a note, the Department or Irrigation stated that the figures for irrigation utilisation on the Ramganga Project as reported by the State in December, 1976 reveal that lag between potential created upto March, 1975 and its utilisation upto March, 1976 is 20,000 ha. only. The potential created and its utilisation by 3/75 and 5/76 were as under :

	Upto March '75	Upto March '76
Potential created	270	380
Utilisation	181	250

5.67. The lag in utilisation 20,000 ha. is very small. In fact, the utilisation achieved 250,000 ha. within two years of the completion of Ramganga dam in June, 1974—is considered very satisfactory.

5.68. Efforts are, however, being made to achieve full utilisation as quickly as possible. A Command Area Development Authority has been set up by the State for integrated development of project command and for executing 'on farm' development works. So major problems are foreseen in full utilisation of potential created in the next 2-3 years.

5.69. 2,000 km. of 'Guls' (i.e. field channels) were constructed in the project command in 1974 for effecting quick utilisation of potential created.

According to the information furnished to the Committee subsequently out of potential of 390 thousand ha. created upto March 1976, the utilisation upto March, 1977 was 330 thousand ha.; the lag in utilisation being 60 thousand ha. (15.4 per cent).

5.70. The Committee note that the lack of field channels is the main reason in under utilisation of irrigation potential in Kakrapar, Ukai, Mahi State-I, Chambal, Sone and Ramganga projects. Command Area Development Authorities have been set up in these projects. The Committee desire that the work relating to the construction of field channels should be given priority. It should be ensured that necessary funds are to be made available for the purpose of construction of field channels and other on-farm development works.

5.71. The Committee find that in some projects like Kakrapar, Ukai and Mahi-Stage-I the under-utilisation of irrigation potential created is also due to the fact that under the existing cropping pattern, the demand of water by cultivators is low particularly during the monsoon. The Committee consider that these aspects should be taken care of at the time of preparation of the projects and advance preparations should be made to educate the framers to take a new cropping pattern which would increase the yield and the income. The Committee desire that the cropping pattern in the areas of these and other such projects should be carefully evolved and necessary steps taken to encourage the cultivators to adopt improved variety of crops in order to ensure fuller utilisation of irrigation potential and greater benefit to the farmers through increase in yields. The Committee suggest that cropping pattern and the irrigation water requirements in the Command Areas of the various projects should be kept under constant review in view of rapid development in the new varieties of crops.

D. Command Area Development Programme

5.72. In a written reply, the Department of Irrigation have stated that the Command Area Development Programme was initiated during the Fourth Plan period. It aimed at various development activities on an integrated basis for stepping up the agricultural production in the irrigation commands. These activities include modernization, maintenance and efficient operation of irrigation system down to the outlet of 1 cusec capacity; development and maintenance of main and intermediate drainage system; development of field channels and field drains within the command of each outlet; land levelling; consolidation of holdings and redrawing of field boundaries; enforcement of a proper system of "Warabandi" and fair distribution of water; development of groundwater to supplement surface irrigation; selection and introduction of suitable cropping patterns; supply of inputs and services including credit; development of marketing and processing facilities and communications; preparing the programmes for small and marginal farmers and agricultural labour; diversification of agriculture and development of activities like animal husbandry farm, forestry, poultry etc., soil conservation and aforestation wherever necessary and town planning. During the Fourth Plan, efforts were concentrated only on the development of marketing and processing facilities and communications. Development activities, in an integrated manner started from 1974-75 (start of 5th Plan period).

5.73. In another note the Department of Irrigation stated that Central assistance was provided to the States in the form of infrastructure items like construction of Ayacut roads and market complexes in the command areas of 19 irrigation projects in the country. The estimates cost of works sanctioned was Rs. 29.29 crores against which till the end of the 4th Five Year Plan a sum of Rs. 14.78 crores were released to the States. The total length

of the roads sanctioned was 3372 Kms. and the total number of markets sanctioned was 149. It was contemplated that the States will provide necessary services and inputs and the cooperative sector could be brought in to get credit facilities for the farmers for land development programme. The participation of the States however did not come up to the expectations.

5.74. During evidence, the representative of the Department of Irrigation stated :—

> "In the Fourth Plan the Government of India provided assistance to the States for developing roads and markets in selected command areas of the country. But one of the conditions was, while these would be financed by the Government of India, the States should take up the construction of field channels on their own and they should provide the necessary administrative staff etc. While the roads and markets programme had been going on according to the sanction, the other aspects were not taken care of by the State Governments. The whole question was reviewed in 1973 by the Ministries of Agriculture, Irrigation and Planning Commission and it was felt that the roads and markets programme should not be proceeded with. The higher priority should be given to the construction of field channels. It was with that point of view that the pattern of financing was modified to ensure that adequate organisation is built up in each project area which can handle all these works which have a direct impact on production and utilisation of irrigation potential So, in the Fifth Plan it was decided that no new markets or road project would be considered. Only limited assistance to the spill over works, which were already taken in hand out of the sanctions issued in the Fourth Plan, was agreed to be provided. It was also stipulated that those works which would otherwise get frittered away, which would lead to infructuous expenditure, which are at an advanced stage of construction should be completed and the assistance should be limited to those works."

5.75. Asked about the reaction of the State Government, the witness stated :—

> "Some State Governments felt that these should be continued. But the point of view of the Government of India is that higher priority should be given only to those works which were already under construction and during the first two years of the Fifth Plan these should be completed. So, the total amount allotted for this is Rs. 26.79 crores. Most of the amount has been released to the State Governments. Some State Governments

came with a request for some further releases. We felt that the States should do it from their own funds.

5.76. Asked about reasons for shortfall in expenditure on roads and markets during Fourth Plan, the Department informed that the scheme was started in 1969-70 and most of the project work was initiated in the last 2 years of the Fourth Plan and so the States would not complete these works in Fourth Plan period. Also due to constraints in financial resources and curtailment of the budget provision during 1973-74, the Ministry was able to release Rs. 14.78 crores to the States during the Fourth Plan period. So shortfall was mainly on account of lack of resources.

5.77. The Department of Irrigation stated that the programme of work for the Fifth Plan covers surveys including soil survey, design and preparation of plans for on-farm development which includes construction of field channels, field drains, land levelling and shaping; strengthening of existing extension services, provision of main drainage, improvement of irrigation systems, strengthening of communications, scientific crop planning etc.

5.78. For the Fifth Five Year Plan, 51 irrigation commands in 16 States having the ultimate irrigation potential of about 13 million ha. were identified for integrated command area development. A provision of Rs. 120 crores had been made in the Central sector for this programme and Rs. 96.63 crores in the State sector. An investment of Rs. 210 crores is envisaged from the institutional sources for giving loans to the farmers for on-farm development works.

5.79. During the first year of the 5th Plan, an amount of Rs. 10 crores was released by the Centre to the States which included Rs. 8 crores for spill over expenditure of the 4th Plan. An amount of Rs. 16 crores was released during the year 1975-76 which also included an amount of Rs. 3.6 crores for spill over of the 4th Five Year Plan. For the year 1976-77 a provision of Rs. 19 crores has been made for the Command Area Development programme in the Central sector. Administrative approval for an expenditure of Rs. 20 crores has already been given to the States which would include Rs. 13.50 crores as Central assistance.

5.80. Under the Command Area Development works. Government of India gives matching assistance to the States for establishing CAD Authorities; surveys, planning and designing and supervision of execution of on-farm development works; equity capital support to Land Development Corporations. The Central Government will also provide loans for ineligible farmers. There is also provisions for subsidies to small, marginal farmers for on-farm development works including ground-water development and to disadvantaged farmers. Government of India also provides loans to the State Governments for construction of field channels to step up the

utilization of irrigation potential and also financial assistance for Land Development Banks, State Corporations for on-farm and ground water development.

5.81. In another note, the Department of Irrigation have stated that 36 Command Area Development Authorities have so far been set up covering 46 Projects Commands in 12 States. While it was intended to establish CAD authorities to cover all the selected irrigation projects, the progress in this regard in some of States like Tamil Nadu, Assam and West Bengal etc., has not been satisfactory. The identification of 51 Irrigation Commands covering 60 irrigation projects has been mainly on the basis of the utilisation of the created irrigation potential in these projects. The fact that these projects have been taken up for CAD work did not mean that the other irrigation projects had no need for such work. Planning and implementation of an integrated programme of Command Area Development being a new concept, it was proposed to evolve and develop the technical organisational and financial aspects of the programme. It is contemplated that after some progress is achieved on the schemes taken up and the organisation is built up, the programme could be extended to other irrigated areas. Some State Governments have been carrying out, on their own, Command Area Development works like construction of field channels and land levelling, etc. on individual land holding basis, in the irrigated areas. Central financial assistance is, however, given for integrated CAD work in the selected projects only which may, in course of time, be extended to other areas also.

5.82. Asked when the remaining Command Area Development Authorities were expected to be set up the representative of the Ministry stated during evidence :—

> "The States of Tamil Nadu and Kerala have not set up the Command Area Development Authority. A letter was issued by the Union Ministry of Agriculture and Irrigation to the Governor of Tamil Nadu and the Chief Minister of Kerala to set up these authorities quickly. These are under very active consideration of the State Governments. Assam has now decided to set up Command Area Development Authorities for five of the projects some of which are relatively small, not covering large areas. They will take up the construction of field channels under this programme. In Manipur, there is only one irrigation cum hydro-electric project, Loktak project, where it is under implementation. The infrastructure work is still going on. The question of development of irrigation potential is still not there. They want to take up the construction of field channels along with the canal system."

5.83. The following statement shows the statewise targets and physical achievements in the Command Area Development Projects during the First two years of the Fifth Plan

Statewise Targets and Physical Achievements in Command Area Development Projects during First two Years of the Fifth Five Year Plan

S. No.	Name of State	Planning and Design 000 Ha.		Const. of field channels 000 Km.		Const. of field drains 000 Km.		Land Levelling and Shaping 000 Ha.		Remarks
		Target	Achievement	Target	Achievement	Target	Achievement	Target	Achievement	
1	2	3	4	5	6	7	8	9	10	11
1.	Andhra Pradesh	1.8	5.45	0.3	2.16	0.3	0.52	28.2	31.8	
2.	Bihar	17.1	11.91	0.1	0.02	0.1	0.10	10.2	0.8	
3.	Gujarat	39.0	173.09	14.1	8.49	1.60	0.03	37.4	12.1	
4.	Haryana	0.5		3.8	..		..	0.8	..	
5.	Jammu & Kashmir	2.0	..	0.8	..			1.9	1.0	
6.	Karnataka	68.6	37.24	3.9	0.53	..	..	107.1	57.2	
7.	Madhya Pradesh	16.7	14.47	1.0	0.63	0.6	0.27	9.9	4.5	
8.	Maharashtra	113.7	52.20	3.5	12.22	4.0	3.61	91.5	100.8	
9.	Rajasthan	55.5	53.56	0.3		0.3	..	7.3	2.0	
10.	Uttar Pradesh	25.5	15.95	11.9	..	1.5	0.05	4.9	3.2	In addition U.P. 10,481 Km. of field channels have been constructed by Shramdan.
	TOTAL	340.4	363.87	39.7	24.05	8.40	4.58	300.2	213.4	

Note : In addition the authorities are looking after agricultural extension in the command areas. In some projects like Chambal Rajasthan, Chambal Madhya Pradesh, Rajasthan Canal, improvement of drainage, lining of canals distributaries and Minors have been taken up under the Irrigation Sector.

5.84 Asked whether a review has been made of the development activities, the Department of Irrigation have stated in a note that review of the progress made in regard to development activities is a continuous process. The State Governments, where the Command Area Development programme is under way, are required to submit quarterly progress reports. These progress reports are being received regularly. The officers associated with the programme visit the project areas and carry out on-the-spot review of the progress being made and discuss the problems with the authorities at project and State level. There is a Central Coordination Committee, which meets periodically to review the progress of developmental activities. As a result of review of the programme and experience gained in implementing the Command Area Development Programme, it is now felt that for the present this programme should include primarily On-Farm Development Work which includes land levelling and shaping, construction of field irrigation and drainage channels, realignment of field boundaries wherever necessary, enforcement of "Warabandi", supply of inputs, extension services, selection and introduction of suitable cropping pattern, development of ground water, development and maintenance of the main and intermediate drainage system; and modernisation; maintenance and efficient operation of irrigation systems. Accordingly, the State Governments have been informed to modify the previous concept of Command Area Development activities.

5.85 In a note, the Department of Irrigation have stated that a Central Committee on Acceleration of Irrigation Projects and Command Area Development was set up with Member(s) Planning Commission as Chairman. The Committee gives guidelines for development of command areas. Action is taken by the Department of Agriculture to see that the guidelines are followed.

5.86 There are Coordination Committees set up by the State Governments at the State level to review the progress of implementation of the CAD Projects. These Committees also review the implementation of these projects at the State level.

Financing of On-Farm Development Works

5.87 The Committee desired to be furnished with a note indicating the different sources of finance available for helping farmers for on-farm development taken up under the command area development. In a note, the Department of Irrigation have stated :—

> "Under the Command Area Development Schemes of the Fifth Plan, on-far-development works are to be carried out at the cost of the beneficiaries for whom Institutional finance is

arranged by the Land Development Corporations, Farmer's Service Societies, Land Development Banks, etc. for this purpose. The Centre and the States provide equity capital support on 50 : 50 basis to these organisations.

The Command Area Development Authorities set up for planning and implementation of CAD Schemes have taken necessary steps in respect of formulation of schemes and their implementation. Quite a number of difficulties have been experienced by them in implementation of on-farm-development with institutional finances. The type of work is virtually a new concept. The procedure of arranging bank loans for on-farm-development for individual farmers involving millions of farmers is quite lengthy and involves a good deal of complexity.

Survey and planning of each individual outlet command (on an average of about 40 ha. each) is taken up by the command Area Authorities and on-farm-development plans and estimates prepared. These schemes are scrutinised by the banks for sanction of loan but they want these schemes for individual outlets to be approved by the Agricultural Refinance and Development Corporation who will refinance the banks to the extent of 75-70 percent of the loan given to the individual farmers. The CAD Authorities have to collect loan applications from each of the individual farmer. These loan applications are examined by the banks with regard to ownership of the land and the farmer's entitlement of the loan. Thereafter, loans are sanctioned by the banks in respect of these farmers whose record of rights are cleared and the amount is made available to the executing agencies for doing the work after the land mortgage deed is executed by the farmer. Loans are not sanctioned in respect of the farmers who do not have clear title over the land against which development loans are applied for. Quite a number of States have reported that the percentage of such ineligible farmers is quite high. Unless the loan is sanctioned for all the farmers within the command of an outlet, the work cannot be undertaken since the items of work like construction of field channels and field drains are of community type. Thus the procedure involved in the flow of institutional finances is lengthy and complex and has stood in the way of quick progress in implementation of the CAD programme.

To reduce the time involved in getting individual schemes cleared by ARDC it has now been decided that schemes for a larger area

may be prepared in one lot with detailed estimates for 5 to 10 per cent of area which is representative of the whole area. This reduces considerable time involved in getting clearance of the schemes from ARDC. In order to simplify the procedure for obtaining bank loan, the loan application itself has been simplified which will involve only the farmer's signature to be obtained on the application form and will not require photographs of the farmers to be prepared or the farmer to be contacted several times. The necessity for the farmer to go to the banks has also been removed. Further, the need for signing land mortgage deed by individual farmer has also been removed recently in some States like U.P., and Maharashtra which is being attempted to be applied in other States also. Here the loan is being treated as charge on the land, which can be recovered as arrears of land revenue if not paid in time.

To solve the problem of ineligible farmers, special loan account has been opened with ARDC to which the Government of India, the State Government and the ARDC will contribute in the ratio of 2:1:1 for giving special loans to the farmers who are not eligible for ordinary bank loans. Besides, the States and the Command Area Authorities have taken up a special drive to make the land titles up-to-date thereby reducing the number of ineligibles. In some cases the ineligibility is due to farmers having already taken some loans for agricultural purposes. This is proposed to be adjusted in the new loans or recovered thereby making them eligible for fresh loans. The projects are also strengthening the extension agencies to prepare the farmers and convince them about the importance of the programme so that their willing participation is obtained. Where adequate laws to make the on-farm-development compulsory is lacking, action was being taken to enact suitable laws. Thus, various measures are being taken up for quick implementation of this programme for which smooth flow of institutional finances is required.

5.88 The Committee note that a modest beginning was made during the Fourth Five Year Plan in respect of Command Area Development Programme, Central assistance was provided to the States in the form of infrastructure items like construction of Ayacut roads and market complex in the command area of 19 irrigation projects in the country. The cost of works sanctioned was Rs. 29.29 crores but due to constraints of resources and curtailment of budget provision a sum of Rs. 14.78 crores only was released to the States till the end of the Plan. With regard to the Land

Development Programme it was contemplated that the State would provide necessary services and inputs and the Cooperative Sector could be brought in to get credit facilities for farmers but the participation of the States did not come up to expectations. The Committee are concerned to note that while some progress was made in the construction programme of roads and markets with Central assistance, the State Governments did not make the expected headway in their implementation of the land development programme as a whole. As a result of review, it was decided that the roads and market programmes should not be proceeded with and higher priority should be given to construction of field channels and on-farm development works. The Committee regret to observe that the Command Area Development programme for the Fourth Plan was neither well conceived nor properly implemented in the field.

5.89. The programme of work for the Fifth Plan covers survey, design and preparation of plans for on-farm development which include construction of field channels, field drainage, land levelling and land shaping, strengthening of existing extension services, improvement of irrigation systems, strengthening of communications, scientific crop planning etc. Fifty one irrigation commands in 16 States having ultimate irrigation potential of about 13 million hectares have been identified for integrated Command Area Development. A provision of Rs. 120 crores has been made in the Central sector, and Rs. 96.63 crores in the State sector. An investment of Rs. 210 crores is envisaged from institutional sources for giving loans to the farmers for on-farm development works. The Committee however find that progress of implementation of the programme continues to be tardy. Out of 51 only 36 Command Area Development authorities have been set up. The question of setting up Command Area Development authorities is still under correspondence with some States like Tamil Nadu and Kerala. Whatever be the decision about the Constitution of the authority, the Committee stress that integrated development of Command Areas should not be allowed to suffer. The work should be progressed to achieve the physical targets in the Fifth Plan. During the First two years of the Fifth Plan an amount of Rs. 26 crores was released by the Centre to the States which include Rs. 11.6 crores for spill over works of the Fourth Plan. There were serious shortfalls in achievement of targets in construction of field channels (shortfall 16 thousand hectare) field drainage (shortfall 4 thousand hectare) and land levelling and shaping shortfall 87 thousand hectare). The Committee are not satisfied with the progress of establishment of Command Area Development Authorities, flow of funds and the achievements during first two years of the Fifth Plan. The Committee would like that the activities of the Command Area Organisations should be closely watched and monitored and any

bottlenecks experienced in the smooth progress of work should be removed without delay. It is also important that the Central Committee on Acceleration of Irrigation Projects, Command Area Development and Coordination Committee set up by the State Governments are made effective in the speedy implementation of the programme. The Committee need hardly emphasise that integrated development of command area is necessary to achieve optimum utilisation of irrigation potential created and increased agricultural production. The Committee suggest that physical target in hectares and increased agricultural production should be fixed for each Command Area and achievements reviewed periodically.

5.90 The Department should ensure that the State authorities submit progress reports regularly and these are scrutinised carefully with a view to resolving difficulties and extending technical assistance for speedier implementation. Periodical visits should be paid to the main projects so that the problems affecting implementation of the programme are discussed and resolved with the Command Area Development Authorities in field.

5.91 During the Fifth Plan an investment of Rs. 210 crores is envisaged from the institutional source for giving loans to the farmers for on-farm development works. The procedure for arranging bank loans for on-farm development involving millions of farmers was stated to be lengthy and complex and had stood in the way of quick progress in the implementation of the command area development programme. One of the difficulties has been that loans are not sanctioned to the farmers who do not have clear titles over the land against which development loans are applied for. The percentage of such ineligible farmers is stated to be quite high. The Committee are informed that a number of measures have since been taken to remove the difficulties of farmers in this respect. For giving loans to the farmers who are not eligible for ordinary bank loans, special loan account has been opened with the Agricultural Refinance Development Corporation (ARDC) to which the Government of India, State Governments and Agricultural Refinance Development Corporation would contribute in the ratio of 2 : 1 : 1. Besides the States and Command Area Authorities have taken up a special drive to make the land titles up-to-date thereby reducing the number of ineligibilities. Other measures taken include simplification of the procedure for obtaining bank loans, whereby only the farmer's signature is to be obtained on the loan application and requirement of attaching a photograph and his going to the banks has been obviated. In some States like U.P., Maharashtra the need for signing Land Mortgage deed by individual farmers has also been dispensed with and the loan is treated as charge on the land revenue, if not paid in time. Steps have also been taken to reduce the time involved in clearance of individual credit schemes by ARDC. The Committee would like a close watch to

be kept over the difficulties coming in the way of implementation of the Command Area Development Programme with particular reference to meeting the needs of the farmers and remedial measures taken without delay. They would like to judge the adequacy and efficacy of the measures already taken and that may henceforth be taken by the results achieved in the implementation of on-farm development works.

5.92. The Committee note that in order to obtain willing participation of the farmers in the programme, extension services are being strengthened to prepare the farmers and convince them about the importance of programme. Action has also been taken to enact suitable laws where adequate laws to make on-farm development programme compulsory are lacking. The Committee desire that intensive efforts should be made to ensure effective participation by the farmers in the various activities of the command area development programme. In areas which are at present not covered by the programme, the farmers may be motivated to take up such works themselves.

E. Conjunctive use of Surface and Ground Water Resources

5.93 In a note the Department of Irrigation have stated that Surface and Ground Waters belong to the same hydrological cycle and interdependent. According to latest assessment, only 107 m. ha. of area can be ultimately brought under irrigation—72 million ha. with surface waters and 35 million ha. with ground waters. So far, a potential of about 48 m. ha.—31 million ha. from surface water resources and 17 million ha. from ground water resources, has been created. This shows that development from both the resources, is fairly even. However, as the demand for water increases, it is likely that in many regions water will become a scarce commodity. Therefore, there is need for more judicious use of the total water resources and the concept of treating surface and ground waters independently should give place to integrated and conjunctive use of the two sources of water. The main objective of integrated and conjunctive use of surface and ground waters is to achieve optimal utilisation of the total water resources and maximise the agricultural production per unit of water. Evolving a suitable cropping pattern for the area keeping in view the various aspects like soil, climate, availability of water from all possible sources etc. is also an important matter. All this calls for a close examination of various technical, economic and administrative issues involved with a view to laying down policies and programmes to ensure a balanced and harmonised development of the two sources.

5.94 The Irrigation Commission in their report (1972) recommended that systematic study should be made by each State as soon as possible to

identify the areas where conjunctive use of surface and ground waters resources is feasible particularly in the commands of existing canal systems. The Commission also recommended that before any large scale programme in conjunctive use of surface and ground waters resources is undertaken, careful investigation should be made to quantify region-wise surface and ground water resources and the inter-action of one source on the other in an integrated development and combined utilisation.

5.95. The erstwhile Ministry of Irrigation and Power in consultation with the Ministry of Agriculture (Department of Agriculture) set up in 1974 an Expert Committee on the Integrated Development of Surface and Ground Waters to make a careful study of the various issues involved and suggest suitable procedures that could be followed for an integrated planning. The Committee submitted its Report to the Ministry of Agriculture and Irrigation (Department of Irrigation) in June, 1976.

5.96. The Committee in its Report observed that integrated development and conjunctive use of surface and ground waters is in vogue, in some form or the other in the States of Uttar Pradesh, Punjab, Haryana, Bihar, Tamil Nadu, Gujarat, Karnataka, Rajasthan and Maharashtra. But in most cases there is no scientific planning behind this. In order to put the present use on scientific lines and further develop it in a systematic manner based on available technology and methodology suited to different local conditions, the Committee has recommended taking up of pilot schemes for integrated and conjunctive use in the commands of some of the existing projects in the country, as under :—

S. No.	Name of the State	Name of project command
1	2	3
1.	Andhra Pradesh	(i) Krishna-Godavari Delta System (ii) Nagarjunasagar
2.	Bihar	(i) Sone (ii) Gandak
3.	Gujarat	(i) Mahi-Kadana (ii) Ukai-Kakrapar
4.	Karnataka .	(i) Ghataprabha
5.	Maharashtra .	(i) Ghod (ii) Hira
6.	Madhya Pradesh	(i) Chambal (ii) Tawa
7.	Orissa	(i) Mahanadi Delta
8.	Rajasthan	(i) Chambal Command

1	2	3
9.	Tamil Nadu	(i) Cauvery Delta (ii) Lower Bhavani
10.	Uttar Pradesh .	(i) Gandak (ii) Sarda Sahayak
11.	West Bengal	(i) Mayurakshi (ii) Kangsabati

5.97. Minister for Agriculture and Irrigation has already written to the Irrigation Ministers of States concerned and has also sent them copies of the Committee's report. The States have been requested to take up at least one pilot project in the first instance. The question was also discussed in the Second Conference of State Irrigation Ministers held in September, 1976 when the following Resolution was passed :

> "Taking note of the various recommendations made by the Expert Committee on Integrated Development of Surface and Ground Waters, the Conference recommends that the State Governments should prepare and undertake the pilot projects suggested by the Committee and collect all relevant techno-economic data for judging the performance thereof."

5.98. The Resolution has been commended to the State Governments for necessary action.

5.99. In a non-official memorandum submitted to the Committee it was stated that :

> "In the development of water resources, it is important to plan comprehensively for the overall utilisation of total water resources comprising surface water and groundwater. The development of groundwater should, therefore, be dovetailed with that of surface water. Conjunctive use of the two should be made to the extent feasible."

5.100. Asked about the progress made by the State Governments in taking up pilot projects recommended by the Expert Committee on Integrated Development of Surface and Ground Waters, the representatives of the Department stated during evidence that they had not been able to get the information. A reminder had been sent to the State Governments. The witness added that this was one of the items given to the Review Committee for discussion of follow up action taken by the State Governments.

5.101. The Committee note that according to the Expert Committee on the Integrated Development of Surface and Ground Water (June 1976) although integrated development and conjunctive use of surface and ground water is in vogue in some form or the other in some Sates, there is no scientific planning behind this. The Expert Committee has recommended establishment of Pilot schemes for integrated and conjunctive use in the commands of 19 projects in 11 States. The Conference of the State Irrigation Ministers held in September, 1976 also recommended that the State Governments concerned should undertake Pilot projects and collect all the relevant techno economic data. The Committee desire that the matter should be vigorously pursued with the State Governments concerned and a close watch kept over the progress made by the Pilot projects in the collection of the requisite data. The Committee need hardly emphasis the importance of integrated area planning with harmonised development of surface and ground water resources with a view to achieving optimal utilisation of total water resources and maximising agricultural production. The Committee desire that as a result of the experience of the working of pilot projects, suitable schemes may be taken up involving scientific planning of integrated use of surface and ground water resources in the country.

F. Pilot Projects on Soil and Water Management

5.102. In a note the Department of Irrigation has stated that 23 Pilot Projects on Soil and Water Management had been sanctioned up to the end of the Fourth Five Year Plan. By November, 1975, another 15 pilot projects had been sanctioned making the total 38. Out of these 13 projects have already been completed and the remaining 25 projects are in different stages of implementation. By the end of Fifth Plan, it is proposed to establish 50 Soil and Water Management Pilot Projects. By the end of February, 1977, 46 projects have already been sanctioned. The remaining projects are likely to be sanctioned soon.

5.103. The objective of the Pilot projects is to initiate integrated development with a package approach to ensure efficient water use and soil management in irrigation commands. The main aspects of the work in the pilot projects are :—

(i) to identify the problem as well as to develop a Plan of action for soil management.

(ii) to test, evaluate and demonstrate the benefits of soil and water management techniques. The work plan includes :—

(a) land shaping and land levelling;

(b) Remodelling, field layout;

(e) On farm water conveyance and distribution (field channels, lining of water course with different material; installation of water control structures);

(d) Provision of adequate field drainage facilities.

5.104. The experience gathered in setting up of some of these projects has been in respect of land shaping, integrated with alignment of plot boundaries and consolidation of holdings, lining of channels, land development, irrigation water distribution system, drainage and cropping pattern. This experience is sought to be utilised in planning water management programme in the command area on a large scale.

5.105. The Committee note that with a view to ensure efficient water use and soil management in irrigation commands, 50 Pilot Projects on Soil and Water Management are proposed to be established by the end of the Fifth Plan. 46 Pilot projects have so far been sanctioned including 23 such projects sanctioned upto the end of Fourth Plan. The Committee however find that out of these, only 13 projects have so far been completed. The Committeee are unhappy over the slow progress made in completing the Pilot projects which have been assigned the important task of evolving and demonstrating soil and water management practices in an integrated manner. The Committee desire that vigorous steps should be taken to speed up the completion of the remaining projects. The Committee need hardly emphasis that the experience gained from these projects should be utilised in planning soil and water management programmes in the irrigation commands on a large scale.

CHAPTER VI

DROUGHT PRONE AREAS

6.1. The Committee asked if a survey had been made to identify drought prone areas for starting irrigation schemes. The Secretary Department of Irrigation during evidence stated that in the Fifth Plan a scheme costing over Rs. 2.5 crores had been taken up for carrying out studies with the help of the State Governments regarding the identification of the Drought Prone Areas, the availablity of water at present, the potential for harnessing water, the possibility of transferring water from the adjoining areas where water might be surplus. Considerable spade work had been done for collection of data but more information had yet to come.

6.2. The Committee desired to be furnished with a note indicating the progress, made in the execution of the studies and when the studies was expected to be completed. In their note the Department of Irrigation have stated :—

"An estimate amounting to Rs. 2.45 crores was sanctioned by the erstwhile Ministry of Irrigation & Power in September, 1975 for data collection and studies for schemes to utilise surplus water resources of the river basins in the drought prone areas during the Fifth Five Year Plan.

A separate organisation known as "Drought Area Study Organisation" has been started recently in the Central Water Commission under a Chief Engineer, Two Superintending Engineers, one for the Northern Zone and the other for the Southern belt have been posted with two Divisions under each. During 1977-78, it is proposed to create a third Division under each of the two circles.

The erstwhile Food and Agriculture Ministry and the Irrigation Commission (1972) had examined the problem of drought in the country and identified 88 districts (or part districts) in the States of Andhra Pradesh, Bihar, Gujarat, Haryana, Madhya Pradesh, Maharashtra, Karnataka, Orissa, Rajasthan, Tamil Nadu, Uttar Pradesh and West Bengal, as drought

prone. The Irrigation Commission (1972) had also suggested to carry out detailed studies with tehsil/taluk as the basic unit to identify the actual areas of drought. Nearly 700 teshils/taluks are involved in the studies for the 88 districts.

The Drought Area Study Organisation will carry out comprehensive studies for all the 88 districts in the 12 States, regarding identification of drought prone areas, availability of water, potential for harnessing further water and possibility of transferring water to drought prone areas, from adjoining areas having surplus water. This involves collection of large amount of relevant data by personal contacts at tehsil/taluk level. Detailed studies will then be carried out to identify drought prone areas, to assess the water requirements of these areas and identify the available surpluses, both in respect of time and location. Studies like systems analysis and mathematical models are also proposed to be conducted to evolve optimum design criteria for lay out of the conveyance systems. It is proposed to take up topographical and hydrological surveys with due regard to possibilities of inter-basin transfer of water for optimum and efficient use of water in water-short areas.

It is proposed to spend Rs. 10 lakhs in 1976-77 for works, procurement of T&P, establishment etc., and setting up field formations (i.e. sub-divisions). For efficient functioning of these programme and carrying out studies expeditiously, Liaison has been established at the state level with the Chief Engineers of the affected states and the collectors of the Districts and with Planning Commission, Ministry of Agriculture and Irrigation (DPAP Cell), Survey of India, Geological Survey of India, Space Application Centre, Ahmedabad, Indian Agricultural Research Institute, Delhi and Central Arid Zone Research Institute Jodhpur and National Remote Sensing Agency, Hyderabad. In this year, data collection for Panchmahal district of Gujarat and Allahabad district in U.P. is expected to be completed. It is programmed to take up the above mentioned works in 35 districts during 1977-78.

The study is expected to take time since active support by cooperation of the States is essential for purposeful study of making suitable schemes for the benefit of drought prone areas. The problem will have to be tackled by a multidisciplinary approach and thus initial results will come slowly. Moreover,

the problem of scarcity in these areas will need special assistance and resources that can be found locally or these are to be transferred from outside.

6.3. Pointing out that large amounts had been spent on drought relief in certain States, the Committee asked whether the Department had prepared any shelf of schemes where such relief money could be usefully spent in order to create durable capital assets which would help to reduce the proneness to drought. The Secretary, Department of Irrigation replied :—

"This is a very valid question. In the State plans and also in the Centre, priority is given to such irrigation projects which will benefit these areas."

6.4. In a written reply, the Department of Irrigation subsequently stated :—

"Stress is laid on the State Governments for giving priority to taking up of irrigation schemes in the drought prone areas. Lack of water, however, is the major problem in such areas and the State Governments take up schemes whenever drought conditions prevail, envisaging conservation of available waters. The amounts given for relief works are generally absorbed in the schemes under execution so that the benefits from such expenditure accrue quickly. During 1974—77 an amount of Rs. 114 crores was spent for relief works in drought prone areas of which nearly Rs. 88 crores was allocated for augmentation of water for irrigation and drinking water purposes.

The concerned State Governments have been investigating schemes which could be implemented as relief measures and may keep in readiness to take up such schemes as and when need arises. However, in order to focus greater attention to the drought prone districts/tehsils in the various States, a Drought Area Study Organisation has been set up in the Central Water Commission. The Organisation is carrying out studies of the water availability, the existing uses and the future requirements in these areas so as to suggest schemes for transfer of water from areas having surplus to the deficit areas."

6.5. In an other note, the Department of Irrigation stated that Plans have been prepared for the Drought Prone Areas Programme districts in the Department of Agriculture projecting the targets under different sectors (which also include minor irrigation) in such a way that each

sector is linked to the other to provide a meaningful programme of action. With the financial constraint, emphasis is laid on minor irrigation schemes as these are sensitive to employment in rural areas and bring early benefits.

6.6. The Schemes include construction of wells, tube-wells, tanks, lining of channels, lift irrigation etc. The nature of the schemes varies according to the potential of the area. Minor irrigation schemes with an outlay of Rs. 111 crores have been included in the programme. During the period 1 April, 1974 to 30 September, 1976, a number of minor irrigation schemes were completed creating an irrigation potential of about 76,000 hectares with an expenditure of about Rs. 41 crores.

The following statement indicates the number of minor irrigation schemes sanctioned/proposed under the Fifth Plan State-wise.

(No. of schemes)

State	Surface Irrigation Water	Ground Water Development	Others (including Ground Water Scheme
Andhra Pradesh	895	897	12
Bihar	61	4130	
Tamil Nadu	778	30	
Gujarat	369	242	
Madhya Pradesh	342	..	..
Haryana	34	7565	4476
Jammu & Kashmir	48		
Karnataka	677	..	
Orissa	60	3275	
Maharashtra	63	3147	
Rajasthan	180	9238	
Uttar Pradesh	42	1670	
West Bengal	87	1275	..

24 medium irrigation schemes with an irrigation potential of about 59,000 hectares at an estimated cost of about Rs. 34 crores have also been sanctioned in the States of Bihar, West Bengal, Jammu and Kashmir, Tamil Nadu, Andhra Pradesh, Gujarat, Haryana, Rajasthan, Madhya Pradesh, Maharashtra, Karnataka, Uttar Pradesh and Orissa. Only such schemes have been selected which can be started immediately and completed within two or three working seasons so that substantial benefits can accrue by the end of the Fifth Plan.

The schemes are located in the drought prone areas of these States.

6.7. The Committee note that a sum of Rs. 2.45 crores was sanctioned in September, 1975 by the Ministry of Irrigation and Power for data collection and studies for preparation of schemes to utilise surplus water resources of the river basins in the drought prone areas during the Fifth Five Year Plan. For this purpose a Drought Area Study Organisation has been set up in the Central Water Commission. The Organisation will carry out comprehensive studies for all the 88 districts in 12 States which have been identified as drought prone areas by the erstwhile Ministry of Food and Agriculture and the Irrigation Commission (1972). These studies would involve identification of Drought Prone Areas, availability of water at present, potential for harnessing further water and possibility of transferring water from adjoining areas having surplus water. According to the Department of Irrigation, the study is expected to take time since active support of the State Governments is essential for purposeful study of making suitable schemes for the benefit of drought prone areas. The Committee, however, find that data collection for only 2 districts in U.P. and Gujarat was expected to be completed during 1976-77 and this work is to be taken up in 35 districts during 1977-78. The Committee are not satisfied with the programme envisaged for the years 1976-77 and 1977-78. They desire that the data collection and detailed studies should be speeded up and a time bound programme prepared for completing the whole work with active cooperation of the State Governments.

6.8. The Committee note that under the Drought Prone Areas Programme 24 medium irrigation schemes having irrigation potential of 59,000 hectares, have been sanctioned the States of Bihar, West Bengal, J & K, Tamil Nadu, Andhra Pradesh, Gujarat, Haryana, Rajasthan, Madhya Pradesh, Maharashtra, Karnataka, Uttar Pradesh and Orissa at an estimated cost of Rs. 34 crores. Only such schemes have been selected as can be started immediately and completed within 2 or 3 working seasons so that substantial benefit can accrue by the end of the Fifth Plan. Besides, minor irrigation schemes with an outlay of Rs. 111 crores have also been included in the programme for the Fifth Plan. During the period April 1974 to 30th September, 1976, a number of minor irrigation schemes have been completed creating an irrigation potential of about 76,000 hectares at an expenditure of Rs. 41 crores. The Committee are anxious that these medium and minor irrigation schemes included in the Drought Prone Area Programme should be given priority and all out efforts be made to complete them during the Fifth Plan, so that the needs of the areas are met to the extent possible.

6.9. The Committee note that during the period 1974-77 an amount of Rs. 114 crores was spent for relief works in drought prone areas and of that, nearly Rs. 88 crores was allocated for augmentation of water for irrigation and drinking. The Committee recommend that a shelf of schemes should be kept handy for implementation in drought prone areas where such funds could be usefully spent in order to create durable capital assets which would help to reduce the proneness to drought.

6.10. The Committee desire that it should be ensured that bottlenecks like inadequacy of funds should not stand in the way of providing irrigation facilities in the drought prone areas. The Committee emphasise that creation of irrigation facilities in these areas would go a long way in reducing large scale expenditure incurred on relief measures in these areas.

CHAPTER VII

INTER-STATE WATER DISPUTES

7.1. In a note, the Department of Irrigation has stated that most of the rivers in India are inter-State in character and differences arise amongst the States concerned in planning and/or operation of projects on such inter-State rivers. The major difference concerns the utilisation of waters for various purposes, their effects on existing or projected uses of water in other States of the concerned basin.

7.2. Article 262 of the Constitution states as under :—

"(1) Parliament may by law provide for the adjudication of any disputes or complaint with respect to the use, distribution or control of the waters of, or in, any inter-State river or river valley.

(2) Notwithstanding anything in this Constitution, Parliament may be law provide that neither the Supreme nor any other Court shall exercise jurisdiction in respect of any such dispute or complaint as is referred to in clause (1)".

Under this Article, the Inter-State Water Disputes Act, 1956 has been enacted by Parliament, providing for reference of any water disputes to a tribunal for adjudication on receipt of a formal request in this behalf from any of the concerned States provided the Central Government is of the opinion that dispute cannot be settled by negotiations. Three such Tribunals have been set up on water disputes pertaining to the Godawari, Krishna and Narmada rivers. According to the Department of Irrigation, working of these tribunals has shown that recourse to adjudication by tribunals for inter-State water disputes is very dilatory, time consuming and expensive and has in no way acted as deterrent to the multiplicity of disputes.

7.3. The Department of Irrigation stated that the clearance of large number of projects had been held up due to inter-State differences. Attempts have therefore been stepped up during the last two years to resolve disputes by negotiations.

7.4. In view, of the fact that recourse to adjudication by the Tribunals was time-consuming and expensive, the Committee asked whether the

Government have considered of an alternative. The Secretary, Department of Irrigation stated during evidence :—

> "We are evolving a national water policy so that certain principles are accepted for the country as a whole, so that no disputes are raised. Today there is no principle. So one state may feel that it requires water for a particular use which is more important than the use for which the other States are wanting. So, if we have some national policy, then many of the disputes would have been nipped in the bud. Really speaking, nobody would ever think of raising the dispute at all. I would therefore think that if we have a national policy for water, many of the disputes would never arise at all."

7.5. The Committee desired to be furnished with a note indicating the particulars of the Inter-State disputes settled as a result of the efforts made by the Ministry and the position regarding outstanding disputes. In a note the Department of Irrigation has stated that the following inter-State disputes were resolved during the last five years.

Madhya Pradesh & Uttar Pradesh	
(i) Construction of Rajghat Dam	1-8-72
(ii) Construction of Rangawan High Level Canal in Madhya Pradesh .	1-8-72
(iii) Sharing of water of the Urmil River	
Bihar, M.P. and U. P.	
(iv) Construction of Bansagar Project on the Sone River	16-9-73
Haryana and U. P.	
(v) Construction of New barrages at Tajewala and Okhla on Yamuna .	21-7-74
Horyana and Punjab	
(vi) Decision of Government of India on the determination of shares of the States of Haryana and Punjab in the waters which would become available as a result of the Beas project	25-3-76
A.P., Karnataka & Maharashtra	
(vii) Allocation of waters of the Krishna River amongst Andhra Pradesh, Karnataka and Maharashtra. (The dispute was referred to the Krishna Water Disputes Tribunal in April, 1969. The Tribunal gave its final order on 27-5-1976)	27-5-76
Karnataka, Kerala & Tamil Nadu	
(viii) Use and development of Cauvery waters .	25-8-76

7.6 The other major disputes related to the use and development of the waters of :

(i) Godavari.

(ii) Narmada.

(iii) Yamuna.

(iv) Rivers in Bihar and West Bengal.

Position of these disputes is given below :—

Godavari

7.7. This dispute is before the Godavari Water Disputes Tribunal for adjudication since 1969. As a result of the efforts made by the Union Minister of Agriculture and Irrigation an agreement was reached on 19-12-1975 amongst the concerned States for taking up irrigation projects in the Godavari basin pending the decisions of the Tribunal and without prejudice to the States' claims before the Tribunal. According to this agreement a major portion of the Godavari Waters has been shared by the concerned States of Andhra Pradesh, Karnataka, Madhya Pradesh, Maharashtra and Orissa. Allocation of the balance waters is to be decided by the Tribunal. New Projects will be cleared in the Godavari basin on the basis of this agreement, this will enable creation of additional irrigation potential to the extent of 5 million ha.

7.8. It is understood that the party States are endeavouring to arrive at a further agreement by negotiations.

Narmada

7.9. The dispute relating to the Narmada waters could not be settled by negotiations amongst the concerned States of Gujarat, Madhya Pradesh, Maharashtra and Rajasthan. Consequently, the Government of India referred the dispute to the Narmada Water Disputes Tribunal in October, 1969. The Tribunal gave its decisions on certain preliminary issues of law in February 1972. After a series of discussions the representatives of the four States reached an agreement on the 12th July, 1974. They agreed that the quantity of water available in Narmada with 75 per cent dependability was 28 million Acre Feet (MAF) out of which 0.5 MAF and 0.25 MAF should be allocated to Rajasthan and Maharashtra respectively. They also agreed that the question of allocation of balance quantity of waters between Gujarat and Madhya Pradesh and the height of Navagam Dam should be decided by the Tribunal. Hearing of the case by the Tribunal is in progress.

With a view that development of Narmada water should no longer be delayed in the best national interest, the party States reached an agreement in March, 1975 under the aegis of the Central Government. This agreement is without prejudice to the decision of the N.W.D.T. and also

without prejudice to the claims of the four party States. According to this agreement Gujarat may go ahead with the construction of Kar jan, Haran, Rami and Sukhi Projects and Madhya Pradesh may go ahead with Kolar, Bichia, Sukta and Bichhia-Latia Complex projects after scrutiny and clearance by the Planning Commission. Of these, Rami and Sukhi Projects of Gujarat and Sukta and Bichhia project of Madhya Pradesh have been approved by the Planning Commission for implementation. The Bichhia-Latia Complex project of Madhya Pradesh has been found acceptable and the question of financing it by the Department of Rehabilitation is under examination.

Yamuna

7.10. Large part of the runoff of Yamuna at Tajewala is almost fully utilised and storages that can be created in future are limited. Haryana has proposed several lift irrigation schemes to utilise the flood waters of Yamuna. U.P. has also plans to utilise Yamuna waters. Himachal Pradesh, Rajasthan and Delhi Administration also need Yamuna waters.

7.11. A study of the water availability and existing utilisation of the Yamuna waters was carried out and copies of the studies were sent to the concerned States namely, Haryana, Himachal Pradesh, Rajasthan and Uttar Pradesh and Delhi Administration. This was discussed at an inter-State meeting held in June 1976. It was decided therein that all the concerned States would supply information regarding their uses of Yamuna waters under existing, under construction and future planned projects. The question of sharing the waters would then be considered thereafter. The data supplied by the States has been exchanged and is being examined by the Central Water Commission in consultation with the States.

7.12. Pending the allocation of the waters of Yamuna amongst the concerned States it has been agreed that the following two schemes can be taken for implementation without prejudice to the claims of the States on Yamuna waters :—

(i) Pandit Jawahar Lal Nehru Lift Irrigation Scheme of Haryana; and

(ii) Lakhwar-Vyasi multipurpose project of Uttar Pradesh.

Bihar-West Bengal differences

7.13. The outstanding issues between Bihar and West Bengal relating to inter-State rivers consist of the following :—

(1) Utilisation of water from Tilaiya and Konar reservoirs of Damodar Valley Corporation for irrigation in Bihar.

(2) Acquisition of reservoir land upto the top of gates at Panchat and Maithon reservoirs of Damodar Valley Corporation for providing additional flood absorption capacity.

(3) Development of Ajoy river for irrigation and flood control;

(4) Irrigation in Bihar from Mayurakshi Reservoir;

(5) Utilisation of water of Tenughat Dam for Santaldih Power Station;

(6) Development of Teesta-Mahananda Basin; and

(7) Development of Subarnarekha river.

7.14. At an inter-State meeting held by the Minister for Irrigation and Power in August, 1972, the Chief Ministers of Bihar and West Bengal had decided that the above-mentioned outstanding issues between the two States would be first studied by a Study Team comprising 3 officers each from Bihar and West Bengal and that the findings of the team would be submitted in the form of a report before the Chief Ministers of Bihar and West Bengal who would meet and take appropriate decision on the findings. The Study Team submitted its report to the two Chief Ministers in July, 1973. The report did not give unanimous recommendations but there was wide divergence of views amongst the representatives of the two States. The officers of the States made a fresh effort and reached certain understanding on all pending issues.

7.15. While the States of Bihar and West Bengal have agreed to finalise a package agreement relating to operation of schemes in the Damodar Valley, the proposed agreement will have a bearing on the statutory and functional responsibility of the Damodar Valley Corporation and would effect power generation as well as regulation of waters for industrial development within the D.V.C. area. Therefore, the clauses of the draft agreement have been examined in the Department of Power and it is proposed that a meeting of Chief Ministers of Bihar and West Bengal will be convened by the Minister of Energy to consider the various aspects of the draft agreement for giving it a final shape after making necessary modifications.

7.16. The Committee note that under the provisions of Inter-State Water Disputes Act, 1956, 3 tribunals were appointed in 1969 to adjudicate on water disputes pertaining to Krishna, Godavari, Narmada rivers. Working of these tribunals has shown that recourse to adjudication by tribunals for Inter-State Water Disputes is very dilatory, time consuming and expensive and has in no way acted as deterrent to the multiplicity of disputes. Only one tribunal (Krishna Water Dispute Tribunal) has given its final report in

May, 1976. The other two disputes on Godavari and Narmada Waters which are before the tribunals are still outstanding. The Committee feel concerned that these disputes have not been settled even after a lapse of seven years. They would urge that effective measures may be taken by all concerned so that these disputes are settled expeditiously.

7.17. The Committee are glad to note that during the last few years good results have been achieved in the settlement of seven Inter-State Water Disputes as a result of negotiations. Out of remaining four major disputes, in case of Godavari and Narmada Waters, as a result of negotiations the States concerned have reached some agreements, pending decisions of the tribunals, without prejudice to their claims before the tribunals. Under these agreements some projects can be cleared for being taken up by the States concerned. In the case of 2 other major disputes relating to the use of waters of Yamuna and certain rivers in Bihar and West Bengal also some progress has been made. The Committee desire that all out efforts should be continued to bring about settlement of the outstanding issues.

7.18. The Committee need hardly emphasise that the Union Government should assume an effective and beneficial role in the speedy settlement of Inter-State Water Disputes so that the interest of the country as a whole for the development of irrigation facilities does not suffer because of such disputes.

CHAPTER VIII

IRRIGATION ACTS AND CODES

A. Irrigation Acts and Codes

8.1. In a written reply, the Department of Irrigation has stated that the Second Irrigation Commission, set up by the Government of India in April, 1969, studied the laws relating to irrigation prevalent in the various States and concluded that there was a multiplicity of State statutes covering various aspects of irrigation management and administration. The Commission in their Report (1972) recommended that the laws relating to irrigation should be unified and simplified.

8.2. In pursuance of the above recommendations of the Irrigation Commission, the erstwhile Ministry of Irrigation and Power requested the Indian Law Institute to carry out a study of existing Irrigation Acts and suggest a model legislation on the broad lines stated by the Irrigation Commission for the guidance of the States. Accordingly, the Indian Law Institute prepared a draft "Model Canal Irrigation and Drainage Bill", after studying the existing laws.

8.3. A Committee of Experts was set up by the Government of India in July, 1974, to examine the above draft Bill in all its aspects and suggest suitable modifications for commending to State Governments for implementation. The Committee considered the various provisions of the Bill and finalised the Draft Bill in February, 1976. After some further discussions with representatives of concerned Departments the draft Model Bill was commended by the Department of Irrigation to the States for adopting it with modifications, if any, in the light of their experience and prevailing practices.

8.4. In another note, the Department have stated that the Model Irrigation Bill contains several provisions aimed at fuller utilisation of created irrigation potential leading to a greater crop production targets than is possible under existing States' Acts. Some of the more important provisions are as under :—

(i) *Expeditious construction of water courses and field channels*

To ensure expeditious construction of water courses and field channels the Bill provides for speedier procedure for acquisition of land than the one provided in the Land Acquisition Act. The Bill also makes it the

responsibility of the State Governments to construct the water courses. Similarly for speedier construction of field channels, the Bill provides that failure to construct field channels by the beneficiaries would entail exclusion of land from culturable commanded area. Further the Canal Officers may *suo-muto* construct and maintain field channels and recover the cost on *pro rata* basis from the beneficiaries.

(ii) *On Farm Development*

The Bill contains provisions for "on-farm development" which is not found in any of the existing Acts. "On-farm development" emphasises the notion that land and water management problems are indivisible. Land has to be prepared to receive water efficiently so that optimum benefits of water are obtained. Accordingly State Government is empowered to formulate a scheme for "on-farm development" either on its own motion or on the application of not less than 50 per cent of the owners or occupiers of land in the culturable commanded area of the irrigation work.

(iii) *Drainage*

The Bill provides for construction of major drainage works and field drains for prevention of water logging. Provisions for expeditious construction of field drains are similar to those for field channels.

(iv) *Cropping Pattern*

For a systematic use of the water, the Bill provides for cropping pattern. Because of varying and differing physical and climatic conditions of the States, alternatives have been given in the Bill. One is that cropping pattern for all the crops may be decided by the State Government keeping in view the soil characteristics, climate, rainfall and availability of water. The other is that the area for crops other than staple cereal crop may be delimited by Irrigation Officers into blocks, each block having a period of rotation prescribed by the State Government according to the cropping pattern to be mutually agreed upon by farmers having land in the block.

(v) *Public participation in the Administration of Irrigation Systems*

The development of irrigation plays a major part in rural development. Any welfare measure requires people's participation and their involvement and this particularly applies to the successful implementation of a complex scheme like irrigation, where this aspect is extremely important. The Bill seeks to fulfil those objectives by making provision for water user's association Panchayats and farmers' co-operatives.

(vi) *Unauthorised use of water*

Stringent punishment has been provided in the Bill for unauthorised use of water. In addition to a fine of not exceeding Rs. 1,000 and/or imprisonment not exceeding one year, the offender will also be liable to pay water rate between ten and thirty times the usual rate and removal and confiscation of pumpsets and electrical/mechanical appliances used for extracting water unauthorisedly.

(vii) *Betterment levy*

Even though many States have enacted legislations for betterment levy by adopting different criteria for the levy the Acts have not been implemented effectively and the levy is not being realised properly due to vague and inarticulated formulae for determining the unearned increment in the value of land as a result of irrigation. The Bill seeks to remove this impediment by providing a basis of levy which can be easily understood and worked out. The Bill would enable levy of different rates for different types of projects.

8.5. In another note the Department of Irrigation has stated the Model Irrigation Bill *inter alia* provides that no betterment contribution shall be leviable in respect of a land, (i) earlier than 5 years from the date on which the water is made available, (ii) which is unarable, and (iii) benefited by the construction, expansion, improvement or alternation of an irrigation work which is not capable of irrigation more than 40 hectares of land. It also provides that the owner of any land in respect of which any contribution is payable, shall pay in cash in such annaul instalments not exceeding twenty or as may be prescribed. A rebate may, however, be given as may be prescribed if the owner pays the entire contribution, on the balance of the contribution as the case may be, within a period of two years from the date on which the first instalment becomes payable.

Settlement of disputes

8.6. The Bill has provided for speedy disposal of disputes among cultivators regarding use and/or distribution of water from water courses and field channels, by doing away with the dual control by the Irrigation Department and the Revenue Department and by empowering Canal Officers to bring about a compromise between the parties etc.

8.7. The draft model Irrigation Bill was finalised and circulated to the State Governments. It was considered at the Second State Irrigation Ministers Conference held in September, 1976. The Conference recommended that the model Bill be considered by the State Governments for adoption with such modifications as may be found necessary in the light of local conditions.

8.8. The Secretary, Department of Irrigation stated during evidence that the Model Irrigation was finalised only recently and it was hoped that the State Governments would give careful consideration and adopt it with suitable modifications relevant to their local conditions.

8.9. The Committee note that there is multiplicity of State Laws covering various aspects of Irrigation Management and Administration. As early as 1972 the Irrigation Commission had recommended that the laws relating to study existing irrigation Acts and suggest a model legislation for guidance mendations of the Commission the Indian Law Institute which was asked to study existing irrigation Acts and suggest a model legislation for guidance of States, prepared a draft of "Model Canal Irrigation and Drainage Bill". A Committee of Experts which was appointed in July, 1974 to examine the Draft Bill finalised it in February, 1976 which was commended to the State Governments for adoption. The second State Irrigation Minister's Conference held in September, 1976 also considered the model bill and recommended that this may be considered by the State Governments for adoption with such modifications as may be necessary. The Committee are concerned that a period of more than four years has been taken in drafting and finalising the Model Bill. The Committee feel that in view of the importance of a uniform legislation, the process of drafting and finalisation of the model bill should have been expedited and a time limit fixed therefor. The Committee note that the Bill contains important provisions aimed at fuller utilisation of created irrigation potential and greater crop production. It provide for expeditious construction of field channels, on-farm development, drainage, scientific cropping pattern, public participation in administrative irrigation system, checking unauthorised use of water, and settlement of disputes. The Model Bill also seeks to remove impediments in realisation of betterment levy and provides a busis for determining the unearned increment in the value of land as a result of irrigation. The Committee desire that the Department of Irrigation should actively pursue with the State Governments the speedy adoption of the model Bill, with necessary modifications relevant to their local conditions, so that the important objective of fuller utilisation of irrigation potential is realised at the earliest.

B. Water Rates

8.10. In a note furnished to the Committee, the Department of Irrigation has stated that Water Rates in India vary widely from State to State. In some States, the water rates vary from project to project also. There is a great diversity in the system of levying water rates. The cost of irrigation per hectare varies widely from State to State. Due to the general terrain and topography and the nature of schemes, irrigation projects in peninsular India cost more than those in the Indo-Gangetic plains. The cost per ha. for major and medium schemes taken up during the plans in

the various States has been worked out. The cost of continuing schemes is the highest in Tamilnadu (Rs. 7,518 per hactare), followed by Maharashtra (Rs. 7,368 per hactare). The lowest cost for continuing schemes (Rs. 1,156 per hactare) is in West Bengal, followed by Assam. The average for completed schemes is generally lower than for the continuing schemes. The cost of new projects is likely to be still higher. In the States of Kerala, Tamil Nadu, Karnataka, Andhara Pradesh, and Maharashtra, the average cost per ha. for both continuing and completed schemes is about Rs. 3,215. In the other States, the average cost per ha. of completed and continuing schemes is about Rs. 3,656.

8.11. Asked if the water rates are related to the cost of irrigation, the Department of Irrigation has stated in their written reply that water rates are not related to the cost of irrigation. The fixation of water rates depends on many factors like type of schemes, *i.e.* storage, diversion or pumped canals, type of irrigation *i.e.* lift or gravity flow, nature of agreement *i.e.* long lease or short lease, type of crops and seasons, etc.

8.12. The revenue realised through irrigation rates on the projects functioning at the time of Independence in 1947 was, by and large, able to meet the operation and maintenance expenditure of the projects and also the interest on the capital expenditure. Subsequently the picture has been altered considerably on account of the general escalation of costs and the necessity of taking up bigger projects involving huge storage structures. The interest liability at the current rate of 5½% would annually amounted to Rs. 176 per hectare in the case of Kerala, Tamil Nadu, Karnataka, Andhra Pradesh and Maharashtra and for other States, Rs. 201 per hactare. The cost of maintenance and operation, which is estimated at Rs. 25 per ha. has also been added to this. For covering these costs, the average water rates work out as under :—

(1) Region I Rs. 201 per ha.

(2) Region II Rs. 226 per ha.

8.13. In the following statement the present weighted average water rates based on gross irrigated area under various crops of the different States have been tabulated. A comparison of these figures with the average rates of Rs. 201 per ha. and Rs. 226 per ha. for the two regions will show that upward revision in water rates is necessary in all the States so

that the water rates are levied on a realistic basis and linked with cost of irrigation also :—

Average Water rates in different States

Sl. No.	State	Average water rates in Rs. per ha.	Date of enforcement	Average breakover rates (Rs. per ha.)
REGION I				
1.	Andhra Pradesh	70.66	1-7-74	201
2.	Karnataka	68.44	1-7-74	
3.	Kerala	65.50	1-7-74	
4.	Maharashtra	158.67	1-7-75	
5.	Tamil Nadu	Data is available for five districts out of 14 districts. Hence average rate is not computed.		
REGION II				
1.	Assam	No water rates.		226
2.	Bihar	58.92	17-8-74	
3.	Gujarat	123.82	16-6-76	
4.	Haryana	56.44	Kharif-75	
5.	Jammu & Kashmir	13.07	15-3-72	
6.	Madhya Pradesh	49.53	1-8-72	
7.	Orissa	(a)7.61		
		(b)23.64	4-12-72	
8.	Punjab	27.07	20-6-74	
9.	Rajasthan	39.26	Kharif-74	
10.	Uttar Pradesh	67.29	4-12-75	
11.	West Bengal	52.64	11-12-74	

(a) Inclusive of rates for rice. The rates for rice are very low.

(b) Exclusive of rice.

(c) Weighted average based on gross irrigated area under various crops.

8.14. In a report "Irrigation Rates and Betterment Levy—A Critical Study" undertaken by the Department of Irrigation the following guidelines have been spelt out for fixation of water rates :—

(i) The total recoveries on account of irrigation rates from all the projects taken together should not be less than the annual cost, consisting of operation and maintenance charges and at least a portion of the interest and depreciation on capital invested, incurred by the State for providing the service.

(ii) The irrigation rate should be equitable, in the sense that it should be related to the ability of the farmer to pay, leaving him a fair share of the net benefit.

(iii) The irrigation rates should be so pitched as not to leave any irrigation potential unutilised on account of either the system of charging rates or the level of particular rates.

(iv) In cases where the foregoing three considerations are satisfied the rates should be so fixed as to bring into the State an appropriate share of the net benefit as a part of the contribution of the irrigators to resource mobilisation for further investment for development.

8.15. The rates for flow and lift irrigation should be worked out separately. A copy of the study along with the guidelines has been furnished to the State Governments.

8.16. In a memorandum submitted to the Committee, it was stated :

"Although the benefit accruing from irrigation to the country in general is considerable, the direct revenue to the Government in the way of water rates is still not good enough to say that investment on irrigation has been paying proposition. It is, therefore, necessary to see that the water rates are fixed in such a way that we get good returns which can be reinvested further on new irrigation projects or for improving the existing ones."

8.17. In a note, the Department of Irrigation have stated that the First Conference of State Ministers of Irrigation (1975) adopted a resolution urging State Governments to increase the Water Rates for irrigation projects in a phased manner and also recommended that "Standing Inter-departmental Water Rates Review Boards" may be set up by the State Governments in order to review on a continuous basis the Water Rates structure and for making recommendations for appropriate increase in irrigation rates and recovery of betterment levy.

8.18. The Second Conference of State Ministers (1976) again adopted a resolution recommending the setting up of Inter-departmental Waer Rates Review Boards. This Conference also recommended that in a few States where on Water Rates are charged at present, suitable water rates should be introduced as soon as possible.

8.19. In pursuance of these resolutions, the following States have already set up Inter-Departmental Water Rates Review Boards :—

1. Bihar
2. Gujarat
3. Punjab
4. Rajasthan
5. Maharashtra
6. Orissa.

8.20. The following States have stated that the constitution of Water Rates Review Boards in their States have not been considered necessary :—

1. Karnataka ;
2. Uttar Pradesh ;
3. Andhra Pradesh.

8.21. Madhya Pradesh has mentioned that there was already a Water Rates Committee functioning in the State and that this Committee comprises of members of Vidhan Sabha and the State is examining as to how the functions of the standing Inter-Departmental Board and the above Committee be integrated so that they do not overlap.

8.22. The State of Nagaland has stated that the system of Irrigation as it exists in other parts of the country, is not feasible due to difficult hilly terrain and absence of perennial source of water. No major or medium irrigation projects has so far been undertaken. The irrigation works are undertaken by the villagers themselves. Government helps them with subsidy ranging from 25 per cent to 75 per cent. Since most of the State finances are spent in the form of subsidies, the Government has not so far, considered any irrigation rates.

8.23. The Government of Tripura has stated that the irrgation rates have not yet been fixed so far in that State. Therefore, the question of implementing the resolution made in the First Conference of State Ministers of Irrigation does not arise in that State.

8.24. The Union Territory of Dadra and Nagar Haveli has stated that there was no major or medium irrigation projects in the territory. The administration has completed some lift irrigation schemes only. Since 90 per cent of the population of the territory consists of Adivasi cultivators who are not yet irrigation minded and with a view to encourage for taking maximum benefits of irrigation, concessional Water Rates have been fixed. Till the Adivasi people become fully conversant for taking benefits of irrigation water, it would not be advisable to revise the Water Rates.

8.25. The other States have not yet indicated anything regarding setting up of the Inter-Departmental Water Rates Review Boards.

8.26 During evidence, the representative of the Department stated that Department of Irrigation has set up a Reviewing Committee, and one of its functions is to discuss the follow up action taken on the resolutions of the Minister's Conference. This matter would also be pursued by the Reviewing Committee with the other State Governments who had not formed the Reviewing Boards so far.

8.27. The Committee note that revenue realised through irrigation rates on the projects functioning at the time of Independence in 1947 was by and large able to meet the operational and maintenance expenditure of projects and also the interest on capital expenditure. But subsequently on account of the general escalations of cost and necessity of taking up bigger projects involving large storage structure, the position has changed considerably. Although the cost of projects has gone up considerably the water rates have not been revised upward proportionately. According to the figures furnished by the Department of Irrigation, the rates fixed by the State Governments are lower than the average water rates worked out on the basis of interest liability and cost of maintenance and operation.

8.28. The Committee note that as a rtsult of a critical study of irrigation rates and betterment levy, the Department of Irrigation has issued guidelines to the State Governments for fixation of water rates. The First Conference of the State Irrigation Ministers held in 1975 urged the State Governments to increase the water rates in a phased manner and recommended that standing Inter-Departmental Water Rates Review Boards might be set up by the State Governments in order to review on a continuous basis, the water rates structure and for making appropriate increase in the irrigation rates and recovery of betterment levy. The Second Conference of State Irrigation Ministers held in 1976 while reiterating the recommendation made by the First Conference, further recommended that suitable rates should be introduced in the States where no water rates were charged at present. The Committee note that so far only six States namely Bihar, Gujarat, Punjab, Rajasthan, Maharashtra and Orissa have set up Inter-Departmental Water Rates Review Boards and the matter is still under correspondence with other States. The Committee desire that necessary follow up action should be taken to persuade the remaining States to set up the Inter-Departmental Water Rates Review Boards.

8.29. The Committee hope that water rates would be fixed by these Boards realistically taking into account the various factors like operational and maintenance etc. expenditure of the projects and the effect on price structure of agricultural commodities.

8.30. The Committee would further stress that utmost economy should be observed in the execution of irrigation projects by reducing overheads, delays in execution etc. as these tend to increase the costs considerably.

CHAPTER IX

RESEARCH AND TRAINING

A. Research and Training

9.1 The Committee desired to be furnished with a note indicating the present arrangements for research in irrigation problems, the main problems tackled and those needing special attention and the measures taken to improve the design and construction technology to reduce the risk of damages to irrigation projects. The information furnished by the Department of Irrigation is given in the succeeding paragraphs.

Arrangements for Research

(i) To tackle the various irrigation problems connected with major irrigation projects, Irrigation Research Stations have been established in most of the States. There are two Research Stations run by the Union Government. They are the Central Water and Power Research Station, Poona and the Central Soils and Materials Research Station, New Delhi. The Central Water and Power Research Station, Poona is the premier hydraulic Engineering and allied research institution of India and is recognised as Regional Laboratory of United Nations—ESCAP. It has 36 Divisions to study the various problems through hydraulic models, experimental stress analysis etc.

(ii) Central Soil and Material Research Station, New Delhi conducts field and laboratory investigations for Water and Power Projects, along with research in all branches of material Science like Soil Mechanics, rock Mechanics and foundation engineering, concrete technology sediment investigations soil surveys, quality of sub-soil and river water for irrigation and other purposes.

(iii) The Central Board of Irrigation and Power an autonomous body, coordinates Research in the field of Irrigation Engineering and for dessimination of knowledge obtained through researches being carried out at the various research stations in the country.

(iv) Basic and fundamental research relating to river valley projects and flood control works have been initiated by CBIP. To encourage basic research in the form of grants is being given to the various research stations, education institutions and autonomous bodies to whom problems are allotted for conducting research.

Achievements

(i) Rivers in the flat alluvial plains of north India have large beds. To provide barrages and bridges across these rivers has been a problem, Research with hydraulic models has, however, made it possible to narrow their waterways through guide bunds and thus effect economy. The flood embankments of the Kosi and the flood works on the Brahamaputra at Dibrugarh were designed after experiments with hydraulic models.

(ii) Research has helped to develop proper profiles for spillways and energy dissipation arrangements in dams. The evolution of a roller-cum-ski-jump bucket design for energy dissipation at Hirakud dam was the result of intensive research at CWPRS, Poona. The design for deep seated sluice outlets was also developed there.

(iii) Apart from the hydraulic aspects of dam design, experimental stress analysis has helped to determine complex stress patterns, which are not normally amenable to theoretical treatment. The clays tone seam of the Bhakra Dam foundation was solved by photoelastic experiments at the CWPRS, Poona.

(iv) A number of important studies have also been conducted in connection with foundation treatment determination of foundation reaction, galleries, tunnels and other components of dams.

(v) As a result of soil testing and model experiments, it has been possible to construct high earth dams.

(vi) One of the important achievements of irrigation research is the evolution of suitable designs for construction of diversion works on permeable soils. Proper silt excluding devices have also been developed to minimise the entry of sediment into canals and channels.

(vii) Economical designs have been evolved for canal structures such as falls, and cross drainage works, energy dissipation arrangements, measuring devices and outlets.

(viii) Research on tubewells has been done to establish guidelines for the design and construction of gravel packed wells for maximum yield. The guidelines prepared by the U.P. Irrigation Research Institute has been accepted by the CBIP for use all over India.

(ix) Research, using the masonry testing facilities paved the way for the use of masonry in high dams such as the Nagarjunasagar.

Problems needing attention

(i) Many projects involving the construction of dams at sites pose more complex problems than those encountered so far. Dams have to be constructed where the foundation conditions are poor and the hazard of earth quakes exists. At places it may be difficult to obtain proper construction materials within a reasonable distance.

(ii) Many of the complex foundation and structural problems may not be amenable to mathematical treatment and can only be tackled with the aid of models or experimental methods of stress analysis Research will also be needed to facilitate the designing of structures which can withstand earthquakes. The school of Research and Training in Earthquake Engineering in the University of Roorkee has undertaken research for projects like the Beas, Ramganga, Yamuna, Sholayar and Ukai Dams. The School participated in the study of the earthquake at Koyna and suggested measures to strengthen the dam.

(iii) Standardisation can lead to economy. Research stations working in close collaboration with design centres could do much to promote standardisation.

(iv) The cost of construction materials can be brought down through research.

(v) Advanced research is necessary to develop new designs for large pumps, high head gates, valves and high capacity hoists required for dams.

(vi) Adequate research on rock mechanics is necessary for solving works involving underground excavations for power plants, stability of rock, slopes, stress in tunnels, design of foundation for underground structures etc.

(vii) Research is needed to revise many conventional concepts regarding the rate of flow and distribution of sediments in reservoirs.

(viii) In the case of major irrigation works, the conveyance system consists of hundreds of kilometres of canals and channels, cutting across varied terrain with numerous natural drainage systems. The chief loss during transmission is through seepage from the beds and sides of canals and channels. Loss can be reduced by lining. There is scope for research to discover cheaper materials and methods.

(ix) The CWPRS, Poona used the radio isotope technique successfully in tracing the movement of sediment in the Bombay Harbour. A few other research stations have also been conducting experiments in the use of radio isotopes for river discharge measurements, determination and tracing of seepage and soil compaction control and in the use of analogue computers to assess ground water potential. The future of research will involve the use of such tools on a larger scale. The research stations should therefore learn to make use of them.

(x) The performance of structures should be studied by embedding in them appropriate instruments and by making a regular study. Pore Pressures, and settlement in earthern dams, temperatures, stresses, strains, expansion and contraction in masonry and concrete dams, uplift pressures under barrage floors and stresses in retaining walls and arches could all be studied with advantage with such instruments.

Safety of Dams

(i) The entire activity of dam building in this country is in the hands of the Government either State or of the Centre. The Governments, have fully qualified design and construction organisations. The Central Water Commission of the Government of India plays an advisory role to the State Governments, when the State Governments undertaking the designs and construction of dams call for help.

(ii) Measures for the safety of the project is taken right from the investigation stage. For investigations relating to hydraulic structures considerable detailed geotechnical investigations coupled with geophysical and other allied studies are carried out in establishing the suitability of dam sites and Research environments.

(iii) In respect of designs of hydraulic structures the designs are updated with the latest trends in the field of designs and connected standards and is adopted in the day-to-day designs of hydraulic structures. Considerable amount of mathematical modelling, geotechnical studies, structural analysis and hydraulic modelling besides whenever necessary dynamic analysis of structures located in earth-quake regions are analysed and incorporated in the works thereby with the available techniques the hazards are kept at the minimum.

(iv) Regarding construction it is mandatory that in all medium and high dam construction a rigid quality control is exercised in the day-to-day construction. In doing so the technology is updated in its application to the works.

(v) The performance of structures are studied by the instruments embedded in the structures and remedial measures carried out as and when found necessary.

(vi) The idea for formation of a "Service for the safety of Dams" in India, specifically charged with the responsibility of reviewing important design features and exercising check during the construction, commissioning and subsequent operation of important dams so as to obviate or reduce the possibility of failures of such structures has been gaining ground in the last few years and gathering momentum with the coming to light of each case of distress in dams. In the first conference of State Ministers of Irrigation held in July 1975, a resolution was passed regarding the desirability of creation of dam safety service unit in the Central Water Commission. Such a dam safety service has been set up in the Central Water Commission.

9.2. During evidence, the Chairman, Central Water Commission stated that there were 13 failures and 27 accidents in Dams in our country. Since a large number of dams were being completed in the country, it was necessary to find out the healthiness of the structure over a period of year. The witness added that the States were not inclined to introduce dam safety service measures but in the First Conference of the State Irrigation Ministers this suggestion was accepted.

9.3. The Committee note that irrigation research stations have been established by most of the states to tackle the various irrigation problems connected with major irrigation projects. The Union Government have also set up two Research Stations viz—Central Water & Power Research station, Pune and Central Soil and Material Research station, New Delhi. The Central Water & Power Research Station, Pune is the premier Hydraulic Engineering Allied Research Institute and has 31 divisions to study various problems through hydraulic models, experimental stress analysis etc. The Central Soil and Material Research Station, New Delhi conducts field and laboratory investigations for Water & Power projects along with the research in all branches of material science. The Central Board of Irrigation and Power, an autonomous body coordinates research in the field of irrigation engineering and for the dissemination of knowledge obtained through researches being carried out at the various

research stations in the country. To encourage basic research, grants are being given to various research stations, educational institutions and autonomous bodies to whom problems are allotted for conducting research. The Committee desire that the problems for research for allotment to the various institutions should be carefully selected to avoid any overlapping and wasteful duplication of efforts. Priority should be given to the problems needing immediate attention and the progress made by the research stations should be kept under watch. The Committee also recommend that there should be a system of periodical evaluation of the research work done by the various Central and State Research stations, with a view to assessing the benefits from the research work done by them and effecting improvement in strengthening research efforts, where necessary.

9.4. The Committee note that the results of research conducted have been applied with advantage in some projects. The Committee, however, understand that much remains to be done for tackling problems of irrigation projects. The projects to be undertaken are likely to present many complicated problems not encountered so far as the schemes are undertaken at locations which are much less favourable than already completed. For example, dams have to be constructed where foundation conditions are poor and the hazard of earthquakes exists. At some places, it is difficult to obtain proper corstruction materials within reasonable distance. Cost of construction materials needs be brought down through research on the use of cheaper materials' standardisation which can lead to economy needs to be promoted. Research is also needed to revise many conventional concepts regarding the rate of flow and distribution of sediments in reservoirs. The Committee stress that research and development activities should be intensified to effect economy and to provide solution to many such problems as are expected to be encountered during the execution of new projects. The Committee also understand that future research would involve use of more sophisticated instruments and tools. The Committee are anxious that adequate funds be made available to cope with future activities of the research stations.

9.5. The Committee note that a dam safety service has been established in the Central Water Commission specifically charged with the responsibility of reviewing important designs features and exercising check during construction, commissioning and subsequent operation of important dams so as to obviate or reduce the possibility of failures of such structures. The Committee are concerned to learn that in the past there were 13 failures and 27 accidents in dams in our country. The Committee have no doubt that the dam safety service would intensify their activities in fulfilling the task assigned to them. They hope that with the setting up of dam safety service the failures and accidents on the dams will be minimised if not eliminated, altogether.

B. Training

9.6. The Committee desired to be furnished with a note indicating the improvements made in the education and training of irrigation engineers. In a note furnished to the Committee, the Department of Irrigation indicated the details of refresher courses, long term/short term courses and seminars organised by the Central Water Commission.

9.7. The Department of Irrigation has stated that a good amount of specialisation covering various aspects of planning, design, research and execution of projects exists in Central Water Commission and it was felt that this knowledge could be shared with the practising engineers through periodical refresher courses arranged in Central Water Commission. With this aim in view, a beginning was made during the year 1974-75 by arranging two Refresher Courses and encouraged by the response to these courses, more courses have been arranged in subsequent years. The relevant particulars of these courses are mentioned below :—

Name of Course	Duration	No. of participants			Total
		CWC	Nominated by State Govts.	Nominated by foreign Govts.	
1	2	3	4	5	6
1. Computer Programming and its Application in Water resources Planning . . .	3-10-74 to 23-10-74	25	9		34
2. Special Course on Project Management . . .	25-1-75 to 12-2-75	12	16	2	30
3. Special Course on Irrigation Engineering . . . (for Engineers nominated by govt. of Iraq)	28-9-75 to 30-10-75			12	12
4. Design & Installation of Hydraulic Gates for Controlled Structures . . .	19-1-76 to 7-2-76	17	18		35
5. Project Planning, Construction and Operation . .	7-2-76 to 6-3-76	15	11		26
6. Project Hydrology . .	12-7-76 to 31-7-76	13	7		20
7. Inventory Control Technique	16-8-76 to 21-8-76	6	26		32

1	2	3	4	5	6
8. Computer Programming	1-9-76 to 16-9-76	22	1	..	23
9. Use of Computer in Hydrogy and Water Resources Planing (in Co-operation with E S C A P)	16-9-76 to 14-10-76	16	13		29
10. Introduction to computer Terminal & Data Base Information System (in co-operation with Electronics Commission).	29-11-76 to 20-12-76	33	5		38
11. Canal Lining .	2-8-77 to 8-8-77	5	39	4	48
12. Inventory Control Techniques and Material Management.	16-8-77 to 27-8-77	5	32		37
13. Construction Cost Indices in River Valley Project.	13-9-77 to 24-9-77	4	22		26
14. Drainage Engineering.	4-10-77 to 19-10-77	5	18		23
15. Computer Orientation Course (in co-operation with Electronics Commission).	14-11-77 to 19-11-77	29	4		33
16. Agronomy & Agricultural Aspects in Irrigation Projects.	22-12-77 to 13-1-78	13	17		30
Total		220	238	18	476

9.8. During the last three years, 476 engineers including 220 engineers of CWC, 238 engineers deputed by various State Governments, engineering departments and 18 deputed by Government of Sudan, Afghanistan and Iraq, have been trained through these Refresher Courses.

9.9. Asked whether it was not possible to increase the number of trainees, the Chairman of CWC stated that there was difficulty in providing accommodation for more than 30—35 officers at a time. The Secretary, Department of Irrigation stated that the State Governments were also organising similar refresher courses on quite a large scale.

Long/Short Term Courses

9.10. The CWC has also been sending their officers for long-term Refresher Courses more than six months duration and also for short-term courses of less than six months duration to various technical institutions in the country. About 10 officers were sent for part-time courses and about 30 for long/short term courses during the year 1976-77.

Seminars/Symposia and Training under Colombo Plan

9.11. In addition to the above training programmes, CWC is also sponsoring officers for various technical Seminars/Symposia being held in the various parts of the country. Trainings are also being arranged in CWC for foreign trainees who come to India under Colombo Plan Training Scheme.

9.12. The Committee desired to know the action taken pursuant to the recommendations of the Expert Committee on Rise in Costs of Irrigation Projects that a comprehensive institute should be set up for training in Water resources sector for all officers-Engineers, Geologists, Accountants, Planners and Managers who are engaged in project works. The Chairman, CWC stated that this issue had been taken up with the help of the Indian Council for Agricultural Research. It was proposed to run a special course of one month duration for serving irrigation engineers with particular emphasis on agricultural engineering. The witness added that it was difficult for serving engineers to attend a course of longer duration.

Training in various aspects of Command Area Development Programme

9.13. In a note, the Department of Irrigation stated that a training programme for the senior officers working in different command area development projects was organised at the National Institute of Community Development, Rajendra Nagar, Hyderabad. The object of the training was to expose the officers to the various policy as well as technical, administrative and financing aspects of the Command Area Development Programme. The training was given by the staff of the National Institute of Community Development as well as senior officers of the Ministry of Agriculture and Irrigation, Agricultural Refinance Corporation and the State Governments dealing with various aspects of the Command Area Development Programme. The trainees were also taken on field visits to study the problems as well as the on-farm-development work done in different projects. The duration of the training ranged from 2-3 weeks.

9.14. The training of extension workers, the officers of the State Governments as well as the farmers is one of the activities of the Soil and Water Management Pilot Projects in different States. No State-wise and year-wise figures for the number of different categories of persons trained in these pilot projects are readily available. However, on an average about 20 extension workers are given re-orientation training in these pilot projects annually and 200 farmers on an average visit these Pilot Projects annually to see the various demonstrations of efficient soil and water management practices.

9.15. In view of the importance of the programme of command area development, there is need of a large number of trained workers at all

levels. A new extension system has been introduced in a number of projects in Rajasthan, Madhya Pradesh, Andhra Pradesh Projects etc. which provides for continuous training of extension workers.

9.16. During evidence, the representative of the Ministry stated that the training was extended to four batches of officers. They were now supposed to utilise the benefits of training in the implementation of the programme.

Study Tours to foreign Countries

9.17. In a note the Department of Irrigation stated that four batches comprising 18 senior officers during 1973-74 were sent on Study Tour on UNDP/FAO Fellowship to the foreign countries to see the various aspects of integrated command area development works. No report on the Study Tours was submitted by the first and third batches of officers only the second batch submitted a report. The fourth batch which went for a training course was not expected to submit any report.

9.18. During evidence, the representative of the Department stated that it had been decided to insist on submission of reports from the officers who might go abroad for training.

9.19. The Committee note that a beginning was made by the Central Water Commission in 1974-75 to arrange refresher courses in specialised fields for the benefit of practising engineers. During the period October, 1974 to January 1978, 476 engineers including 220 engineers of Central Water Commission, 238 engineers deputed by the various State Governments and 18 engineers deputed by 3 foreign Governments were trained. The Central Water Commission has also been sending its officers for long term and short term refresher courses to various technical institutes in the country. Besides, the Commission sponsors officers for various technical seminars/symposia being held in various parts of the country. In view of the increased activity in the development of irrigation, the Committee feel that greater attention should be paid to the training of practising engineers in the various specialised fields. The Committee note that the Commission propose to run another special course for the serving engineers with particular emphasis on agricultural engineering. The Committee desire that the Commission should identify more areas in which specialised refresher courses may be necessary for the serving engineers.

9.20. The Committee also suggest that the frequency of the courses and the number of trainees may also be suitably increased. It should also be ensured that the engineers deputed to the courses take the training seriously and not merely as a holiday trip so that the training imparted to them is really helpful in efficient discharge of their duties.

9.21. The Committee note that 4 batches of Senior Officers working in the different command area development projects were trained at the National Institute of Community Development, Hyderabad. The object of the training was to expose the officers to the various policies as well as technical, administrative and financial aspects of the command area development programme. The Committee also note that the training facilities for extension workers are extended by the Soil and Water Management Projects in the different States. The Committee desire that the department should constantly keep under review the need for trained officers and workers with a view to introducing more training programmes for senior and medium level officers and strengthening training facilities for extension workers.

9.22. The Committee are perturbed to note that out of 4 teams of officers sent during 1973-74 on Study Tours to foreign countries on UNDP/FAO fellowship to see the various aspects of integrated command area development works, 2 batches of officers who were expected to submit reports did not submit any report. The Committee take a serious view of the non-submission of reports by the officers concerned. They would urge that in all cases where officers are sent abroad on Study Tours the Department concerned should insist upon submission of reports so that the knowledge gathered by them can be of benefit to others. The Committee desire that officers concerned in these cases should be suitably dealt with for their failure to submit a report of the study tour.

CHAPTER X

MINOR IRRIGATION

10.1. Minor Irrigation schemes have an important role to play. They have the advantages that they provide considerable scope for individual and cooperative efforts, entail less burden on the budgetary resources of the States (as they are financed to a large extent through repayable loans obtained by the farmers from institutional sources), can be completed quickly and also yield quick results after completion. Minor surface water flow irrigation projects provide the only means of Irrigation in several undulating tracts which include the bulk of the chronically drought affected areas, are labour intensive and offer opportunity for rural employment. They are also of considerable help in recharging the meagre resources of the groundwater in the hard rock areas.

10.2. The groundwater development, on the other hand, has been playing an important role not only in increasing irrigation potential but also in tiding over the deficiencies of irrigation supply on canal system in critical periods and controlling hazards of water-logging and salinisation in the canal command. They have the advantage that, to a large extent, they are individually or jointly owned by the farmers themselves and thus provide them an instant and controlled system irrigation which is more conduive to modern agriculture.

10.3. As per information available in the Minor Irrigation Division of the Department of Agriculture, the estimated figures for ultimate irrigation potential and utilisation upto 1976-77 in respect of minor irrigation is given in the following table :—

		Irrigation Potential (M. ha)		
S. No.	Item	Ultimate	Upto 1976-77	Percentage utilisation
1.	Ground Water Resources	40	20	50%
2.	Surface Water Resources	15	7.6	50%
	Total :	55	27.6	50%

31 LSS/77—12

10.4. The following table gives the position regarding financial and physical targets and achievements under minor irrigation in the various Five Year Plans :

Sr. No.	Period	Plan Sector (Rs. in Crores)		Institutional Investment (Rs. in Crores)		Physical benefits (Million hectares)	
		Approved Outlay	Actual Expenditure	Estimated	Actual Investment	Target	Achievement
1.	During First Plan period	*			Neg.	3.34	3.83
2.	During Second Plan period	63.18	93.64		19.15	3.64	3.64
3.	During Third Plan period	183.81	269.05		115.29	5.16	5.21
4.	During 1966—69 Plan period	300.56	314.36		234.74	4.30	4.05
5.	During Fourth Plan period	511.67	512.58	650.00	661.06	7.20	7.23
6.	During V Plan period	772.55		1462.50		6.00	
7.	During 1974-75		111.04		172.49		0.80
8.	During 1975-76		128.59		175.00		1.19
9.	During 1976-77 (Anticipated)		172.06		215.00		1.49
10.	During 1977-78 (Approved)		197.18		260.00		1.79 (Target)

*Included in the Agricultural Production.

Note :

(1) During the 2nd and 3rd Five Year Plans, sizeable amounts were made available for minor irrigation programme under the Community Development sector. However, as no separate accounts for minor irrigation were kept for the expenditure under Community Development sector, precise figures for the amounts are not available.

(2) The figures in respect of targets and achievements upto the Fourth Five Year Plan pertain to total beenfits including stabilisation of irrigation on existing works, drainage and embankment benefits, benefits in the form of improvement in soil moisture, regime in the vicinity of works and ground water recharge from micro storage works, etc. The figures for irrigation potential related to gross additive figures without taking into account the irrigation potential lost due to depreciation of existing works. The target fixed during the Fifth Five Year Plan however relates to irrigation benefits only and that too to the net additive benefits after taking into account the loss of benefit due to depreciation on existing works.

Tentative targets prepared for the 5 year period (1978-79 to 1982-83) are indicated as below :

A. Outlays

1 .State plan Sector	Rs. 1800 crores
2. Institutional Sector	Rs. 2200 crores
Total	Rs. 4000 crores

B. Physical Targets

1. Irrigation potential to be created 9.0 million hectares.

10.5. The Department has satted that the above table would show that there have been no shortfall under the minor irrigation programme in the various Plans. However during the Fifth Plan a very substantial step in the rate of institutional investment was envisaged. Though the rate has increased considerably, it has not been of the order originally envisaged particularly in some States of eastern region because of prolonged weakness in the cooperative financing structure. The progress in the energisation of pumpsets has also been lagging behind due to shortage of electricity in some areas, non-availability of EC grade aluminium during 1974-75 etc. It has been stated that concerted efforts are being made to step up the rate of institutional investment as well as the programme for energisation of pumpsets and it is hoped that against the target of 6 million hectares, the actual achievement, inspite of the above mentioned constraining factors, will not be less than 5 million hectares.

10.6. In paragraph 2.78 of their 76th Report (1974-75) the Estimates Committee observed :

> "The draft Fifth Plan envisages a total investment of Rs. 2735 crores (Public Sector—Rs. 773 crores; Institutional—Rs. 1462 crores; Private—Rs. 500 crores). Even with this scale of investment, the utilisation of the potential by the end of the Fifth Plan would be only 30 million hectares as against the ultimate potential of 50 million hectares. The Committee feel that there is need for closer attention being paid to the minor irrigation programme so as to achieve the maximum benefit in the shortest possible time. The progress of implementation of programme, physical as well as financial, should be closely watched and timely action should be taken to remove the bottlenecks in the implementatiton of the programme, if and when, they arise."

In their reply Government informed the Committee (in the reply date 31-1-1976) :—

> "The present problems standing in the way of accelerating implementation of the minor irrigation programme have been identified and concerted action is being taken to introduce vigorous monitoring of the programme in these critical areas at the State as well as Central level. A centrally-sponsored scheme for strengthening the State Minor Irrigation Organisations in deficient areas has recently been approved by the Ministry of Finance. Under this scheme, 50 per cent matching grants would be made available to the States. This would enable more effective monitoring at the State level. Steps are also under way to strengthen the Central Organisation for monitoring."

10.7. The Committee desired to know about any time schedule fixed for achieving the ultimate irrigations potential, funds required for the purpose and how these are proposed to be raised. In a written reply (July 78) the Ministry stated :

"Based on the present price index, the total amount required for ultimate development of remaining minor irrigation potential 27.4 m. ha. in the country works out to Rs. 12,000 crores. This amount is to be derived from plan sector funds and institutional sources. It is not possible at present to indicate how these funds are to be raised. No time schedule for achieving the ultimate irrigation potential has been fixed as yet. However with the acceleration now being contemplated for Minor Irrigation in the country it may be possible to exploit the balance potential in the next 10-15 years."

10.8. A statement showing the targets and achievements Statewise during the First to Fourth Plans is given at Appendix IV. The statement indicates that there was shortfall in achieving the target in some states like, Andhra Pradesh, Bihar, Madhya Pradesh and Eastern States.

10.9. In a note furnished by the Department of Irrigation, it has been stated that the shortfall in the achievements in the States mentioned was due to :—

(i) Tight position of budgetary resources leading to inadequate Plan sector allocations for minor irrigation.

(ii) Credit structure of financing being generally weak in the States of Eastern Region.

(iii) Pressure or motivation for irrigation as experienced in the arid or semiarid regions, being lacking among the farmers in the Eastern Regions because of high rainfall.

(iv) Small and fragmented holdings standing in the way of investment on wells and tubewells on individual basis.

(v) The impact of high yielding varieties being comparatively less in the high rainfall areas.

(vi) Shortage of infra-structure of power lines.

(vii) shortage of key materials like cement, steel, diesel oil etc. during certain periods.

According to the Department, the measures taken to setp up the tempo of minor irrigation include :—

(i) Allocation of increased Plan sector outlays for minor irrigation on a priority basis.

(ii) Making concerted efforts to remove the bottlenecks in mobilising the institutional investment.

(iii) Setting up tubewell/Lift Irrigation Corporations in the State with a view to mobilising additional financial resources from the institutional sector.

(iv) Intensifying arrangements for monitoring of the programme at the Central as well as State level.

(v) Strengthening Surface Water (Minor Irrigation) and Ground Water Organisation in the States.

(vi) Stepping up rural electrification programme and improving the linkage between the rural electrification schemes and lending activities of the banks for minor irrigation works.

(vii) Providing power for irrigation pumping on an over-riding basis.

10.10. It has been further stated that the problems of institutional investment have been examined by Study Teams/Committees appointed by the Reserve Bank of India. The major deficiencies in the working of the Land Development Banks in the comparatively less developed States have been identified as weak capital base, heavy overdues, inadequate management of funds and insufficient staff for appraisal of loan proposals and supervision. Measures are being taken to remove these deficiencies.

10.11. The measures taken to enlist the participation of the Nationalised Commercial Banks in providing credit facilities to the farmers include :

(i) Repeatedly exhorting and pressing the banks at different forums to provide larger share of total advances to the agricultural sector including minor irrigation.

(ii) Increasing involvement of the commercial banks in the IDA credit projects being implemented through ARDC. Upto 1971 minor irrigation programme under these projects was being financed by cooperative banks have been involved to a large extent.

10.12. As a result of these measures, the annual loaning for minor irrigation has been considerably increased. It is roughly estimated that total loaning may be of the order of Rs. 35 crores during 1975-76.

Central Assistance

10.13. In a note the Ministry has stated that till 1968-69, Central assistance made available to the States was related to the individual schemes. Central assistance was given for minor irrigation schemes in the form of loans and grants. The actual financial pattern varied from scheme to scheme and during different periods, different patterns were in vogue. In general, for public schemes, 100 per cent loans were given except in the case of renovation of tanks and kuhls (hilly channels) in respect of which Central Assistance in the form of subsidiary was also given. In case of private works, subsidies, varying between 25 and 50 per cent on a 50 : 50 matching basis were provided and the balance assistance to cover the full cost was provided in the form of loan.

10.14. Since 1969-70, the Central assistance to which a State is entitled, as per financial rules in vogue is given in the form of block loans and grants for the State Plan as a whole and is not related to individual schemes. Under this revised pattern of Central assistance, whatever subsidies are to be provided to the farmers in respect of private schemes, these have to be met from the State Plan provisions. As the minor irrigation scheme became more popular, the general approach has been to discourage subsidies. These are now confined only to the small farmers.

10.15. In another note furnished by the Department, it is stated that as minor irrigation programme became popular, subsidies are made available for private works like wells, tubewells, pumpsets were withdrawn in several States. Subsidies are, by and large, made available in these States only under the Central Sector projects viz. SFDA, DPAP etc. These are limited only to the small and marginal farmers under these programmes. The tempo of private minor irrigation development continued at the rates envisaged in these States.

10.16. In some States where the facilities for institutional finance had not adequately developed, subsidies continued to be provided to the small and marginal farmers from the normal State Plan funds even outside SFDA, DPAP areas etc. In the States of Meghalaya, Manipur, Tripura and Nagaland subsidies ranging from 33&50 per cent are provided for pumpsets. In Bihar 50 per cent general subsidy is provided on dug-wells whereas in Chota Nagpur the quantum of subsidy available for dug-wells is in the range of 75—100 per cent. Subsidies upto 15 to 20 per cent have also been made available in Assam for small tubewells and pumpsets.

10.17. During the three years period, i.e. from 1966-67 to 1968-69, special Central assistance in the form of grants covering 50 per cent of the total expenditure was provided to the State Governments under a Centrally sponsored scheme, for setting up Ground Water Organisations in the States. A Centrally sponsored scheme has recently been approved for operation during the remaining period of Fifth Plan, under which 50 per cent grants on a matching basis will be provided for strengthening of surface water minor irrigation and ground water organisations in the States in certain specified areas and disciplines in which they are presently very weak.

10.18. In paragraph 2.95 of their 76th report (1974-75), the Estimates Committee recomended that in view of the importance of the Centrally sponsored scheme for strengthening the State Organisations for minor irrigation, Government may consider its implementation from the year 1975-76. In their reply the Department of Agriculture informed the Committee that the Ministry of Finance have since approved the Centrally sponsored scheme for a total cost of Rs. 6 crores during the Fifth Five Years Plan. The State Governments have been requested in September, 1975 to prepare detailed proposals in regard to the proposed strengthening of their existing minor irrigation organisations and send to the Ministry for sanction. The Committee in their 93rd Report desired that the State Governments may be approached, if necessary at higer levels, to submit the schemes for strengthening of their organisations for minor irrigation and this should be implemented on an urgent basis.

Depreciation and Repair of Minor Irrigation Works

10.19. In a note furnished to the Committee, it has been stated that all minor irrigation works have a limited span of life. The failure occurs due to siltation, damage from floods, cyclones, land slides etc. gradual depreciation followed by collapse of structures, and wear & tear of the pumping equipment. The failure occurs inspite of best maintenance although good maintenance would certainly prolong the life-span. The life-span range of storage and diversion works may be taken as 25-100 years, of dugwells 50-100 years, of public tubewells 15-25 years, of private tube-wells 5 and 12 years, of electric motors 10-15 years and of diesel engines 6-10 years. The rate of depreciation per annum for different minor irrigation works would thus vary from 1 per cent to 16 per cent. On the basis of areas irrigated by different categories of works, the weighted average roughly comes to 5-6 per cent per annum.

10.20. In paragraph 2.80 of their 76th Report (1974-75) the Estimates Committee recommended :

> "The Committee would like to point out that the renovation and minor repairs to existing wells/tanks is an important as the

creation of new irrigation potential. Mere statistics of newly dug wells/tanks would have no meaning unless all such wells/ tanks are useable. The Committee therefore recommend that the minor irrigation programme should also provide for renovation and major repairs to existing wells/tanks. In this context, the Committee would suggest the creation of facilities for short term training in tubewell repairs and servicing and the encouragement of service cooperatives of technical personnel who could undertake repairs of tubewells on custom basis."

10.21. In their reply dated 30-1-76 the Department of Agriculture informed the Committee as follows :—

"The suggestion of the Estimates Committee regarding short-term training courses for repair of tubewells and encouragement of service cooperatives of technical personal who could undertake repairs of tubewells on customs basis is being communicated to the State Governments for their consideration and implementation. The suggestion is also being communicated to the Machinery Division in the Department of Agriculture who are concerned with Agro-Service Centres.".

10.22. The Committee have been informed that there was no overall shortfall under the minor irrigation programme in the various plans. Upto the Fourth Plan against the target of 23.44 million hectares, the actual potential created was 23.96 million hectares (Gross). The Committee have however noticed that even up to the Fourth Plan there was shortfall in targets in some States like Andhra Pradesh, Bihar, Madhya Pradesh and Eastern States. The target fixed during the Fifth Plan is 6 million hectares (net). But the actual achievement during the first two years of the Fifth Plan was 1.99 million hectares only. The Committee apprehend that at this rate it would be difficult to achieve the target of 6 million hectares by the end of 1978-79. In view of the importance of minor irrigation for increasing production of agricultural commodities including food-grains, the Committee would like Govt. to take concerted measures to step up the execution of minor irrigation schemes so that the target of 6 million hectares is achieved by the end of 1978-79.

10.23. In paragraph 2.78 of their 76th Report (1974-75), the Committee had observed that there is need for closer attention being paid to minor irrigation programme so as to achieve the maximum benefit in the shortest possible time. The Committee have been informed that measure have been taken to step up the tempo of minor irrigation. These measures include allocation of increased plan sector outlay on priority basis and making concerted efforts to remove bottlenecks in mobilising institutional investment. During the Fifth Plan a very substantial step up in the

rate of institutional investment of the order of Rs. 1462 crores is envisaged. The Committee however note that the institutional investment during the first two years of the Plan was Rs. 347.49 crores only. They have been informed that the problems of institutional investment have been identified and measures are being taken to remove the deficiencies. In view of the fact that institutional financing is important for successful implementation of the programme of minor irrigation, the Committee urge that concerted steps should be taken to step up the investment of institutional finance and remove bottlenecks in its mobilisation so as to ensure that the target of Rs. 1462 crores envisaged for the purpose during the period 1974-75 to 1978-79, is achieved. The Committee would stress that special attention should be paid to less developed States where the credit structure is weak.

10.24. The other measures taken to step up tempo of minor irrigation are stated to be intensification of arrangements for monitoring of programmes at the Central as well as State level, strengthening Surface Water and Ground Water Organisations in the States, stepping up rural electrification programme and providing power for irrigation, pumping on an over-ridding basis. The Committee need hardly stress that all out efforts should be made to implement these measures and timely action should be taken to remove bottlenecks if any in their implementation. The Committee emphasise that effective steps should be taken to achieve the target of net addition of 6 million hectares envisaged by the end of 1978-79.

10.25. The Committee note that a Centrally sponsored scheme has been approved for strengthening the State Surface Water Minor Irrigation and Ground Water Organisation during the remaining period of Fifth Plan under which 50 per cent grant on a matching basis will be provided to the States. In their 23rd Action Taken Report (1975-76) the Committee while commenting upon the non-receipt of proposals from State Governments for strengthening their existing minor irrigation organisations desired that State Government should be approached, if necessary, at higher levels to submit scheme for strengthening of their organisations for minor irrigation and this should be implemented on an urgent basis. The Committee trust that the State Governments have submitted their schemes in this regard. In case where the schemes have not been received from the State Governments, the matter should be vigorously pursued with them. The Committee desire that these schemes should be implemented on urgent basis.

10.26. All minor irrigation works have a limited span of life. The failures occur due to siltage, damage from floods, cyclones, land slides etc. gradual depreciation followed by collapse of structures and wear and tear

of pumping equipment. The rates of depreciation per annum for different minor irrigation works have been stated to very from 1 per cent to 16 per cent. The weighted average roughly comes to 5 to 6 per cent per annum. The Committee desire that necessary steps should be taken to provide technical assistance to the States in the matter of better designing, construction and maintenance of minor irrigation works with a view to minimising loss of potential due to failures and depreciation.

In paragraph 2.80 of their 76th Report (1974-75) the Committee had recommended creation of facilities for short-time training in tubewell repairs and servicing and encouragement of service cooperatives of technical personnel who could undertake repairs of tubewells on custom basis. The Committee were informed that this suggestion was being communicated to the State Governments for their consideration and implementation. The Committee desire that the progress made in the implementation of this suggestion should be kept under close watch with a view to ensuring that tubewells are properly maintained.

Central Ground Water Board

10.27. The Central Ground Water Board was created in 1970 by upgrading the Exploratory Tubewells Organisation which had been existing since 1954 for carrying out exploratory drilling in areas considered worthy for large scale ground-water development. The ground water wing of the Geological Survey of India which had been carrying out hydrogeological investigations was merged with the Central Ground Water Scheme in August, 1972. The Central Ground Water Board is now unified agency at the Central level responsible for work connected with surveys investigations, assessment, development and management of groundwater resource. The Board functions under the Chairmanship of Joint-Secretary (Land & Water) in the Department of Agriculture. It has three wings each headed by an officer of the rank of Chief Engineer (who is wholetime technical member of the Board) responsible for development, drilling and hydrogeological work respectively. There is also a Member Secretary of the Board who is also Deputy Secretary in the Ministry. The Board operates through seven Regional Directorates and has 16 Drilling Divisions. In addition, the Board has establishments for seven special projects for comprehensive resources evaluation which are currently in hand in different representative areas of the country.

Functions

(i) Hydrogeological investigations on a macro level scale. About 30 per cent of the total area in the country had hitherto been covered under these investigations.

(ii) Carrying out deep exploratory drilling in prospective areas for large scale ground water development together with an approximate assessment of the ground water potential.

(iii) Undertaking special projects for complete resources evaluation in limited representatives basins with a view to learning and extending technology and developing norms and standards for planning and implementation of ground water schemes.

(iv) General monitoring of the ground water development—watching the situation in the State through observation of water levels on selected wells and other measures.

(v) Monitoring and evaluation of the ground water development programme in the States—identifying organisational and technical weaknesses and ensuring remedial measures.

(vi) Provide technical guidance to the States—improving technical standards in the planning, design and construction of tube-wells, dug wells, dug-cum-bore wells etc.—reviewing the existing criteria and practices in different regions and preparing technical handbooks and papers indicating areas and suggestions for improvements.

Achievements

(i) Systematic Hydrogeological Surveys

10.28. The Central Ground Water Board has been carrying out systematic hydrogeological investigations on a macro level scale. The area covered under these investigations till the end of the Fourth Five Year Plan was of the order of 10.69 lakh Sq. Km. It is expected that an additional area of 5 lakhs Sq. Km. will be covered during the Fifth Five Year Plan. The total area of the country requiring systematic hydrogeological survey is assessed as 26 lakh Sq. Km. Thus, an area of about 10.3 lakh Sq. Km. will be left uncovered at the end of the Fifth Five Year Plan. Against the Fifth Plan target of 5 lakh Sq. Km. upto the end of December, 1976 the coverage was 2,21,502 Sq. Km. The Ministry have stated that efforts will be made to accelerate the programme during the Sixth Five Year Plan and to obtain the required funds for this purpose. It is expected that the bulk of the remaining area would be covered during the Sixth Plan itself, if increased financial allocations are agreed to.

(ii) Ground Water Exploration and approximate Resources Evaluation

10.29. Till the end of Fourth Five Year Plan, 984 exploratory bore holes, 109 observation bore holes and 46 slim holes were drilled. The target envisaged for Fifth Five Year Plan is 606 exploratory bore holes,

451 observation bore holes and 86 slim holes. During the Fifth Five Year Plan upto the end of December, 1976, 238 exploratory bore holes, 141 observation bore holes and 28 slim holes have been drilled.

(iii) *Special Ground Water Projects*

10.30. Four special projects have already been completed and seven are under execution. These projects have been taken up in limited representative basins with a view to learning and extending technology and developing norms and standards for planning and implementation of ground water schemes. These projects also given an accurate assessment of the exploitable potential within the areas covered under the projects. The completed projects are :—

(i) Groundwater studies in Gaya Distt., Bihar.

(ii) Ground water studies in Jaisalmer, Jodhpur, Jalore Distts., Rajasthan.

(iii) Ground water studies in Bikaner, Churu, Jhunjunu, Sikar Districts of Rajasthan, and Mehsana and Banaskantha districts of Gujarat.

(iv) Ground water studies in Andhra Pradesh (Hyderabad Distt.).

(v) Need and Scope for Engineering Research on design aspects of ground water structures.

(vi) Integrated development of Water Resources for Irrigation.

(vii) Cases and remedies for failure of wells.

(viii) Problems of Ground Water Development

10.31. The Board has proved an exploitable potential of 675 million m^3 year in the drought prone districts of Rajasthan under the (ii) and (iii) projects listed above. This potential would provide irrigation to more than 70,000 hectares of area through 1500 high, medium and low capacity tubewells.

The seven on going projects are

(i) Narmada River Basin Project (likely to end by 31-8-1977).

(ii) Upper Yamuna Project (likely to end by 31-8-1977).

(iii) Vedavati River Basin Project (likely to end by 1978).

(iv) Sina & Man Project (likely to end by 1979).

(v) Noyil, Amravati and Poonani Basins projects (likely to end by 1979).

(vi) Ghaggar River Basin Project (likely to end by 1979).

(vii) Upper Betwa River Basin (likely to end by 1979).

Training Programme

10.32. In a note furnished to the Committee, it has been stated that the Central Ground Water Board has been conducting a training programme for in-service scientists and engineers including officers of the Board and Public and Private Sector undertakings. The training course is of three months duration in various aspects of hydrology, hydrogeology, photo-geology, remote-sensing geophysics, meteorology, water-well drilling, construction and testing techniques.

10.33. From 1966 to March, 1974 (end of Fourt Five Year Plan) 15 Training Courses have been conducted, and 335 officers were trained. In the 16th Training Course conducted in 1974-75, 22 officers were trained The 17th Training Course had 23 officers. In all by the end of 17th Training Course (1976-77), a total of 380 officers have been trained. The 18th Training Course is already on with effect from 1-11-1977 for training 26 officers.

10.34. It has been stated in a further note that the need for training facilities in the field of ground water are proposed to be reviewed in consultation with the State Governments in the next one to two years when the 6th Plan proposals of the Central Ground Water Board are drawn up. By that time, the staff being appointed by the State Ground Water Organisations under the Centrally Sponsored Scheme for strengthening of State Ground Water Organisations will also be in a position and a clear idea would, therefore, be available of the disciplines/areas in which the training facilities are required.

Monitoring of Water situation

10.35. With a view to monitoring the changes in the behaviour of the ground water system in the country as a result of increasing development programmes, the Central Ground Water Board has established about, 1000 national net work stations from which periodic water level measurements during the months of January, April, June, August and November are taken every year—In addition samples of water are collected and analysed to know the changes which might have undergone in this system as a result of development, discharge of industrial wastes and changes due to other factors.

Monitoring Ground Water Development

10.36. The programmes of groundwater development in the States are kept under regular review with a view to identifying technical, organisational and other weaknesses and initiating remedial measures. Wherever necessary or feasible, Central assistance and guidance are provided.

10.37. Two standing teams had been constituted for special monitoring of the programme in 6 States of the Eastern Region (U.P., Bihar, West Bengal, Assam, Orissa and Madhya Pradesh) which have yet more conspicuous potential for further development.

10.38. A long-term perspective plan for investigations to be carried by the Central Ground Water Board had been formulated in 1971. This perspective plan had tentatively visualised undertaking of 27 such projects to cover the different representative hydrogeological situations in the country. The position is proposed to be reviewed, in the light of the experience gained on the completed projects, when the Sixth Plan proposals of the Board are formulated.

10.39. Detailed guidelines and check lists have been prepared for the purpose of the review to be carried out by the Central Teams.

10.40. A Cell for monitoring of the programme is now in the process of being set up under Development Wing of the Central Ground Water Board. This Cell will have 4 Senior Officers for overseeing the programme on regional basis. Each officers will be expected to cover about 4-5 States. Each of these officers will undertake regular field visits to the States, keeping in constant touch with the problems encountered in the field and submit tour reports for corrective action.

Technical Guidance to the States

10.41. Following technical handbooks, guidelines and papers have been Prepared and circulated widely for providing guidance to the field officers :

(i) Hand Book on Boring and Deepening of wells.
(ii) Brochure on Drilling Equipment.
(iii) Design of Groundwater Structures.
(iv) Design Criteria, Construction Guide and Material Standards for Irrigation pipelines.
(v) Approach to Investigation and Planning for groundwater.
(vi) Guidelines for approximate evaluation of groundwater potentialities in a Region.
(vii) Need and Scope for Engineering Research on design aspects of groundwater structures.
(viii) Integrated development of water Resources for Irrigation.
(ix) Cases and remedies for failure of wells.
(x) Problems of Ground Water Development.

10.42. It has been stated by the Ministry that the reports compiled by the Central Ground Water Board on the basis of hydrogeological investigations and special studies are being put to full use by the States in the Planning of groundwater schemes in the design and construction of groundwater structures under these schemes. Similarly, technical literature produced by the Development Wing of the Central Ground Water

Board has gone a long way in bringing about improvement in the planning and execution of schemes.

Legislation for Regulation of Ground Water

10.43. The Irrigation Commission in their report (1972) recommended that State Governments should have legal power to regulate ground water. The National Commission on Agriculture also in their report (1976) recommended :—

> "The legislation for regulating and controlling the use of ground water is used in States where over exploitation is already in evidence. A Model Bill was circulated to the States by the Union Ministry of Agriculture in 1970. The States should expedite the enactment."

In the Draft Fifth Five Year Plan Document it has been stated that :—

> "In some States, such as Gujarat, Haryana, Punjab, Rajasthan and Tamil Nadu, the development of ground water will be reaching its limit during the Fifth Plan period. Regulation, control and management of ground water will, therefore, have to be given special attention in these States from the very beginning of the Fifth Plan. Suitable ground water legislation will be necessary for proper regulation. In addition in the planning for ground water, emphasis will be on increased utilisation by manipulation of—aquifers through induced recharge."

10.44. The Committee note that out of the total area of about 26 lakh Sq. Kms. requiring systematic hydrogeological survey in the country, the Central Ground Water Board had covered an area of 10.69 lakh Sq. Kms. upto the end of Fourth Five Year Plan. It is expected that an additional area of 5 lakh Sq. Kms. will be covered during by the end of 1978-79.

Thus an area of about 10.3 lakh Sq. Kms. will be left uncovered by the end of the end of 1978-79. The Committee have been informed that it is expected that the bulk of the remaining area would be covered during the subsequent plan if increased financial allocations are agreed to. The Committee are not satisfied with the progress made in carrying out hydrogeological surveys. They consider that in view of the importance of these surveys for assessing the ground water potential to met the needs of irrigation and drinking water, higher priority was required to be accorded to this work. The Committee urge that necessary steps should be taken to accelerate the survey programme of the uncovered area and adequate funds may be made available for the purpose, so that hydrogeological survey of the remaining area is completed during the next five years.

10.45. An important function of the Central Ground Water Board is to carry out deep exploratory drilling in prospective areas for large scale ground water development with an approximate assessment of ground water

potential. Upto the end of Fourth Plan, 984 exploratory bore holes, 109 observation holes were drilled. The target for the period 1973-74 to 1978-79 is 606 exploratory bore holes, 451 observation holes and 86 slim holes. Against these targets upto the end of December, 1976, 238 exploratory bore holes, 141 observation bore holes and 28 slim holes have been drilled. The Committee feel that the progress made in deep exploratory drilling by the Central Ground Water Board is far from satisfactory. As the large scale development of ground water would depend on the deep exploratory drilling, the Committee desire that vigorous efforts should be made to step up the programme and achieve the targets laid down for the period 1973-74 to 1978-79. The Committee further suggest that a perspective plan with time bound programme may be drawn up for undertaking deep exploratory drilling work. The Committee need hardly emphasize that techniques should continue to be improved to increase the percentage of successful bores.

10.46. The Committee find that a long term perspective plan for investigations to be carried out by the Central Water Board had been formulated in 1971. This perspective plan had tentatively visualised undertaking of 27 projects to cover different representative hydrogeological situations in the country. The Committee, however, find that so far only four special projects have been actually completed and seven are under execution. The Committee feel that progress in the completion of the projects is very slow. In view of the importance of these projects in developing technology, norms and standards for planning and implementation of ground water schemes, the Committee desire that the completion of the seven projects in hand should be expedited. The Committee have been informed that the position is proposed to be reviewed in the light of experience gained on the completed projects when the subsequent Plan proposals of the Board are formulated. The Committee recommend that the question of taking up the remaining projects should be carefully considered and a time bound programme prepared for their completion.

10.47. The Committee note that two Standing Teams have been constituted for special monitoring of the programme in six States of the Eastern region (U.P., Bihar, West Bengal, Assam, Orissa and Madhya Pradesh) and detailed guidelines and check lists have been prepared for the purpose of review to be carried out by the Central Teams. A Cell for monitoring of the programme is now in the process of being set up under the Development Wing, of Central Ground Water Board. The Committee desire that the setting up of the Cell should be expedited. The Committee stress that serious attention should be paid by the Standing Teams and Monitoring Cell to keep the programme of ground water development under close review. They should identify the technical, organisational and other weaknesses in the development programme and take necessary steps to remove

the bottlenecks coming in the way of speedy development of ground water resources.

10.48. The Committee note that technical hand books, guidelines and papers have been prepared and circulated widely for providing guidance to field officers. The reports completed by the Central Ground Water Boards are being put to full use by the States in planning of ground water schemes, in the design and construction of ground water structure under these schemes. The Committee hope that in the light of experience gained, the Central Ground Water Board would continue to review the guidelines and provide technical literature for bringing about improvement in planning and execution of ground water development schemes.

10.49. From 1966 to March, 1974 (end of the Fourth Plan) 15 training Courses have been conducted by the Board in which 335 officers were trained. 22 officers were trained in the 16th Course (1974-75) and 23 officers were trained in the 17th Course (1976-77). Thus a total of 380 officers were trained at the completion of the 17th Course. At present 26 officers are being trained in the 18th course which started with effect from 1st November, 1977. The Committee have been informed that the need fo rtraining facilities in the field of ground water are proposed to be revised in consultation with the State Governments in the next one or two years when the subsequent Plan proposals of the Central Ground Water Board are drawn up. The Committee feel that adequate trained man power will go a long way in bringing about efficiency and economy as also in removing organisational and technical weaknesses in the ground water development programmes. The Committee, therefore desire that the requirements for training of officers and staff should be carefully reviewed.

10.50. The Irrigation Commission in their report (1972) and the National Commission on Agriculture in 1976 recommended that legislation should be enacted for regulating the use of ground water in the States wherever over-exploitation is in evidence. The Committee understand that in some States like Gujarat, Haryana, Punjab, Rajasthan and Tamil Nadu, the development of ground water will reach its limit during the Fifth Plan. They note that a Model Bill was circulated to the States by the Union Ministry of Agriculture in 1970. The Committee desire that the question of having suitable legislation for regulation, control and management of ground water should be pursued with the State Governments concerned.

10.51. The Committee are of the view that rain waters and surplus river waters in rainy season can be used with advantage to recharge the underground water wherever the underground water level has gone down and the low water table is causing scarcity of water. They would like to suggest that feasibility studies for utilisation of such waters may be undertaken and necessary schemes formulated and implemented to augment the underground water resources.

CHAPTER XI

ORGANISATION

A. Department of Irrigation

11.1. Consequent on the bifurcation of the erstwhile Ministry of Irrigation and Power, a separate Department of Irrigation was set up with effect from 1st November, 1974 under the reconstituted Ministry of Agriculture and Irrigation. According to the Department, this has helped in ensuring a unified and coordinated direction from the Ministry for the speedy implementation of the irrigation and command development projects as well as for providing other inputs for maximising agricultural production.

11.2. The Department of Irrigation is responsible for laying down the national policy for the development and regulation of the country's water resources in respect of Major and Medium irrigation schemes. It formulates policy and seeks to promote national programmes in the field of irrigation and flood control. The Department also assists the States in settling the water disputes by negotiations and discussions. Where such joint consultations do not lead to settlement, tribunals are set up under the provisions of the Inter-State Water Disputes Act, 1956.

11.3. The Irrigation Commission in their report (1972) recommended that for the appointment of Secretary in Ministry of Irrigation and Power technocrats should be treated at power with generalists. In a note the Deptt. of Irrigation have stated that both technocrats and generalists are treated at par in the case of appointment to the post of Secretary to a newly constituted Department of Irrigation. In fact, the present Secretary is an Engineer.

11.4. The Irrigation Commission in their report (1972) recommended that the Central Ground Water Board should be transferred from the Ministry of Agriculture to the Ministry of Irrigation and Power. The National Commission on Agriculture (1976) recommended transfer of minor irrigation and command area wing from the Department of Agriculture to the Department of Irrigation. The Committee desired to be furnished with a note indicating the action taken on the recommendations of the Commission and when a decision in this regard is likely to be taken, and whether similar action was being taken by the State Governments also. In a

written reply, the Department of Irrigation have informed the Committee that the recommendation is linked up with the other recommendations of the National Commission on Agriculture on administrative aspects. These recommendations will be examined by the Committee of Secretaries. It is not presently possible to indicate the precise time when a final decision is likely to be taken on this recommendation. The recommendation has not been endorsed to the State Governments for similar action.

11.5. The Committee desired to know the nature of coordination maintained between the departments of Irrigation and Agriculture so that there is conjunctive utilisation of the water resources.

11.6. In a note furnished by the Department of Irrigation it has been stated that Development of water resources being essentially a state subject, the responsibility for investigations, formulation, implementation and operation of irrigation projects vests mainly with the State Governments/ Union Territories. This being the constitutional position, the powers of control and regulation exercised by the Central Government are mostly advisory in nature. For that, major and medium projects fall under the responsibility of Department of irrigation and minor projects including ground water fall under the Department of Agriculture.

11.7. Co-ordination, is however, maintained between the Departments of Irrigation and Agriculture so that there is conjunctive utilisation of water resources in the following manner :—

(1) Both the Deptts. are under the overall charge of one Cabinet Minister *i.e.* Union Minister of Agriculture and Irrigation. All important matters are, therefore, put up to him after these have been considered from all aspects by the different Deptts.

(2) Major and Medium Irrigation Projects, which come to the Centre, are examined by the Central Water Commission under the Deptt. of Irrigation in consultation with the Deptt. of Agriculture (Water Management Division) and Ministry of Finance. Thereafter the Projects are put up to the Technical Advisory Committee constituted by the Planning Commission for consideration regarding their acceptance for inclusion in the States Developmental Plans. The Technical Advisory Committee comprises representatives of the Deptt. of Irrigation, Deptt. of Agriculture, Ministry of Finance and the Planning Commission. After acceptance by the Technical Advisory Committee, the Planning Commission issues the final approval, keeping in view the financial aspects also.

(3) For sometime past, the Department of Irrigation had set up various Commissions/Committees to consider the various aspects of development of irrigation in general and major and medium schemes, in particular, such as :—

(i) Irrigation Commission.

(ii) Committee on Rise in Costs of Irrigation and Multipurpose projects.

(iii) Committee on Integrated Development of Surface and Ground Water.

(iv) Committee on unification of laws relating to irrigation in the country.

(v) Central Team on operational programmes.

11.8. The representatives of the Department of Agriculture have been generally associated on such bodies.

11.9. A coordination committee consisting of Secretaries of each of the Departments under the Ministry of Agriculture and Irrigation has also been set up to oversee the activities of the various departments particularly on the progress and programme under the 20-Point Programme.

Central Water Commission

11.10. The Central Water Commission, a vital adjunct of the Department of Irrigation is the premier technical organisation in the country in the field of water resources development and has played an important role in the fields of planning, investigations, designs and research of multipurpose river valley projects and flood control. The Commission is charged with the general responsibility of initiating, coordinating and furthering—in consultation with the State Governments concerned—schemes for the control, conservation and utilisation of water resources of irrigation, navigation and flood control throughout the country.

11.11. The Irrigation Commission in their report (1972) recommended that the Chairman, Central Water and Power Commission should be an ex-officio Special Secretary in the Ministry of Irrigation and Power. In a note, the Department of Irrigation have stated that the Chairman, Central Water Commission has been given an ex-officio status of the Secretary to the Government of India.

11.12. During evidence the Chairman, Central Water Commission stated that there were a large number of inter-State aspects about which with the

status of Secretary it had been possible to have a dialogue with the Secretaries of the State Governments directly across the table and it had been possible to solve a large number of problems which were pending for a long time like Ravi, Beas Waters, Narmada Waters dispute etc. The Central Water Commission was also fully involved in evolution of the policies of the Government and helped in monitoring the projects. The Chairman of the Commission with the status of Secretary was able to function very effectively and take timely steps with the State Governments for removing the bottlenecks and achieving the targets. The Chairman was also able to participate in the inter-Ministerial Meetings and have direct discussions with his status as Secretary. In this way the functions of the Commission had improved.

11.13 The Committee note that with effect from 1st November, 1974, a separate Department of Irrigation has been set up under the reconstituted Ministry of Agriculture and Irrigation. The Department of Irrigation is responsible for laying down the National Policy for development and regulation of country's water resources in respect of major and medium irrigation schemes. Minor irrigation, Command Area Wing and Central Ground Water Board are under the control of the Department of Agriculture. The Irrigation Commission in their report (1972) recommended that the Central Ground Water Board should be transferred from the Ministry of Agriculture to the Ministry of Irrigation and Power. The National Commission on Agriculture recommended in 1976 transfer of minor irrigation and Command Area Wing from the Department of Agriculture to the Department of Irrigation. The Committee have been informed that no decision has yet been taken on the recommendations of the Irrigation Commission made in 1972 and of the National Commission on Agriculture in 1976. These recommendations would be examined by the Committee of Secretaries, and it is not presently possible to indicate the precise time when a final decision is likely to be taken on these recommendations. The Committee regret the delay in taking decision on these important recommendations. They would like Government to take an early decision in the matter. The Committee hope that in the meantime, effective coordination would be maintained between the various Departments with a view to speedy implementation of the irrigation and Command Area Development projects.

11.14 The Committee are glad to note that in pursuance of the recommendations of the Irrigation Commissions (1972), both technocrats and generalists are treated at par in the case of appointment to the post of Secretary to the newly constituted Department of Irrigation. The Committee hope that this will help in increasing the efficiency and expedition of work in the Department.

B. Control Boards

11.15. In a note the Department of Irrigation have informed the Committee that to ensure to participation of Centre during the construction stage of a project and in order to provide efficient administrative set up to facilitate quick decision making, Central Government has been responsible in establishing control boards for the efficient execution of various major inter-State projects. These control boards deal with all aspects relating to problems in regard to specific projects including inter-State aspects, if any, keep a close watch on the progress of works, expenditure etc., scrutinise project estimates and accord administrative approval and arrange expert advice and consultancy as necessary.

11.16. There are two types of Control Boards for various irrigation projects viz. single State Control Board and the Inter-State Control Boards are those where the project is a joint venture of two or more States. These Control Boards consist of the representatives of the Central Government and the representatives of participating State Governments. The three main objectives of setting up the Control Boards are :—

(1) Participation of the Central Government during the construction stage of these projects ;

(2) Providing efficient administrative machinery at the highest level to facilitate quick decision taking ; and

(3) Providing superior over-all direction and control over the execution of the project.

11.17. The following inter-state Control Boards are functioning at present :—

(i) Mahi Control Board.

(ii) Gandak Control Board.

(iii) Tungabhadra Control Board.

(iv) Bhakra Management Board.

(v) Beas Construction Board.

Two more Control Boards namely Betwa River Board and Bansagar Control Board have been set up recently. These Boards have not yet started functioning.

11.18. During evidence the Secretary, Department of Irrigation stated that Control Board had a special significance in case of an inter-State project and the Control Board should function in such a way that differences are ironed out. The inter-State Board met once in six months or a year, but

emergent meetings were also held depending on the agenda. Pending decisions by the Board, problems were put up before the Chairman. The decision of the Chairman were put up before the Control Board for ratification.

11.19. In a note, the Department of Irrigation have stated that the Control Boards meet periodically. The Board takes decisions on all the important matters placed before it requiring urgent action. Standing Committees have been also constituted, to examine certain aspects of the project. The decisions taken by the Standing Committees are placed before the Control Board at their subsequent meetings for approval. Apart from the Standing Committees and also where there are no such Committees, emergency procedure is laid down for taking decision at very short notice. In such cases, the matter is generally referred to the Chairman of the Control Board for taking a decision.

11.20. In another note, the Department of Irrigation stated that in case of Mahi Bajajsagar Projects, a number of special Committees have been constituted to examine different aspects of the project. Some of the important Committees are : Stores Purchase Committee; Tender Examination Committee; Special Tools and Plants Committee ; Building Programme Committee etc. The recommendations of the Special Committees are placed before the Control Board at their subsequent meetings for approval. There are no such Standing Committees in case of Gandak Project; the works falling within the territory of the two participating States of Uttar Pradesh and Bihar are carried out by the respective State Governments. The Tungabhadra Project has almost been completed. There is, therefore, no question of any such Standing Committee for the project.

11.21. The Irrigation Commission in their report (1972) recommended that all large Inter-State projects and State project costing Rs. 500 million or more, should have a Control Board. Even for projects costing less than Rs. 500 million but which are of a complicated nature, the Control Board would be desirable. To be effective, Control Boards should be delegated the maximum powers and they should in turn be liberal in delegating powers to the Chief Engineers of Projects in the interest of efficiency. In States where several projects are under construction, a single Control Board with Standing Committees for each project would sufice. This would help to promote the best use of manpower and equipment. Where a major project receives special financial assistance from the Union Government, the Centre should be adequately represented on the Control Board.

11.22. The Committee note that for the efficient execution of various major inter-State projects, the Central Government has established Control Boards. At present five inter-State Control Boards are functioning (Mahi,

Gandak, Tungabhadra, Bhakra and Beas) and two more Control Boards (Betwa and Bansagar) have been set up recently but these have not started functioning. The Committee note that there is no uniformity in the functioning of the various Control Boards, while the Mahi Project has a number of special committees to look after different aspects of the project, there are no such committees in case of Gandak and Tungabhadra projects. There is also no fixed periodicity for the meeting of the Control Boards. The Committee consider that since the Control Boards are functioning in a number of projects, it would be desirable if their working is evaluated with a view to evolving a broad organisational pattern and bringing about improvements in their functioning so as to make them more effective for speedy and economic execution of the projects.

NEW DELHI :
March 3, 1978
Phalguna 12, 1899(*S*)

SATYENDRA NARAYAN SINHA,
Chairman,
Estimate Committee

APPENDIX I

(Paragraph 2.18)

Statement showing the Financial and Physical Targets and Achievements plan wise

I. Under Major and Medium Irrigation Projects

Rs. Crores/' 000 ha.

State	First Five Year Plan (1951-56)				Second Five Year Plan (1956-61)			
	Financial		Pysical (Potential)		Financial		Physical (Potential)	
	Outlay	Expenditure	Target	Achieve-ment	Outlay	Expenditure	Target	Achieve-ment
1	2	3	4	5	6	7	8	9
Andhra . .	..	37.47	..	77	32.31	57.43	200	181
Assam	2.00		88		6.64	1.02	33	..
Bihar	9.73	15.55	274	125	33.53	26.54	238	269
Bombay .	22.69	44.72	192	@	67.90		473	
Madhya Pradesh	3.08	8.69	46	4	11.87	30.10	139	30
Madras .	34.08	25.42	176	125	13.65	15.20	76	125
Orissa	3.00	55.28	194	4	26.54	20.00	503	363

1	2	3	4	5	6	7	8	9
Punjab	3.26	31.87	280	1238	29.94	38.19	761	100
Uttar Pradesh .	19.11	28.41	551	329	25.80	25.12	403	272
West Bengal .	15.37	44.52	372	159	17.71	22.46	504	350
Hyderabad .	24.79	@	124	@	30.31	@	316	@@
Madhya Bharat	3.28	@	34	@	17.97	@	116	@@
Mysore .	7.16	38.69	12	48	16.54	27.39	77	140
Pepsu	0.34	@		@	5.93		257	@@
Rajasthan	5.04	31.03	100	197	24.50	25.30	460	30
Saurashtra	4.75	@	44	@	9.19	@	57	@@
Travancore-Cochin .	4.78	@	7	@	6.17	@	71	@@
Jammu & Kashmir .	3.40	2.18	31	2	2.83	0.98	63	2
Ajmer .	0.11	@			0.95	@	8	@@
hopal . .					2.80	@	5	@@
Coorg					0.24	@	1	@@

1	2	3	4	5	6	7	8	9
Delhi	..		..	..	0.17	@	8	@@
Himachal Pradesh	0.80		80	..	..	..	31	..
Kutch	0.91		38	@	0.92	@	16	@@
Manipur	..			..	0.09	..	..	..
Tripura	..	..		..	..	@	..	..
Vindhya Pradesh	..	@	..	..	2.23	@	37	@@
Andaman & Nicobar	..	..	..	..	..	..	..	..
NEFA	..	..	..	..	..	..	..	..
Pondicherry	..	..	..	..	0.22	@	1	..
Bhakra Nangal	N.A.	@	551	@	@@	@	@@	@
Harike	N.A.		..	..	@@	@	@@	@
Damodar Valley	N.A.	@	241	@	@@	@	@@	@
Hirakud	N.A.	@	106	@	@@	@	@@	@
Gujarat.*	@@	@@	@@	64	@@	12.41	@@	185
Maharashtra*	@@	@@	@@	21	@@	52.65	@@	47
Kerala*	@@	11.79	@@	93	@@	7.91	@@	49
Union Territories	@@	0.62	..	..	@@	17.30	..	..
Total	167.61	376.24	3468	2489	386.95	380.00	4854	2143

*Re-organised States

@ Included under the concerned reorganised State(s)

@ @ Included under the concerned old State(s)

N.B. (1) The outlays and targets are as per old States.

(2) Expenditure & achievements are as per reorganised States unless otherwise indicated.

Rs. Crores/'000 Hect.

State	Third Five Year Plan (1961-66)				Annual Plans (1966-69)				Fourth Five Year Plan (1969-74)			
	Financial		Physical		Financial		Physical		Financial		Physical	
	Outlay	Expen-diture	Target	Achieve-ment	Outlay	Expen-diture	Target	Achieve-ment	Outlay	Expen-diture	Target	Achieve-ment
1	2	3	4	5	6	7	8	9	10	11	12	13
Andhra Pradesh	73.80	91.52	1080/491	368	59.07	60.87	511	78	76.00	118.71	629	219
Assam	2.28	1.43	35/3	..	3.27	1.89	19	20	7.67	3.97	52	22
Bihar	61.57	68.12	1115/807	239	55.39	55.96	700	259	111.00	130.46	1050	569
Gujarat	51.24	46.02	436/399	92	46.17	47.86	154	99	103.00	125.91	350	182
Haryana	Included under Punjab.				Included under Punjab	4.33	10.54	34	56	29.90	65.87	150	173
Himachal Pradesh	..	..	..	..	..	..	..	..	..	..	..	..	..
Jammu & Kashmir	6.00	1.61	24/16	10	0.61	0.43	5	6	5.66	6.62	16	21
Karnataka	40.66	30.86	281/329	177	24.47	32.03	125	132	75.25	134.29	95	62
Kerala	11.42	10.29	103/106	15	10.48	9.16	45	23	26.75	27.36	119	43
Madhya Pradesh	41.60	36.95	530/388	208	22.70	20.50	162	187	83.06	77.61	360	47
Maharashtra	66.04	63.10	453/208	129	55.39	58.00	163	119	142.25	166.33	380	276
Manipur	..	..	..	..	..	..	..	..	..	1.41	..	..
Meghalaya	Included under Assam	..	..	..	..	..	..	..	..	..	..	..
Nagaland	..	..	..	..	..	..	..	..	..	..	..	..
Orissa	21.41	26.22	522/346	127	20.99	20.44	266	131	25.00	20.89	260	60
Punjab	22.04	19.21	425/342	206	8.61	6.92	3	60	15.88	31.72	25	60
Rajasthan	85.10	72.19	667/444	234	30.69	33.62	186	235	88.73	119.19	290	151
Sikkim	..	..	..	..	..	..	..	..	..	..	..	..
Tamil Nadu	27.42	30.86	86/48	22	13.43	12.54	24	(—)65*	35.60	26.95	70	29
Tripura	..	..	..	..	..	..	..	..	..	0.01	..	..

Uttar Pradesh . .	51.71	55.07	646/404	311	49.13	46.93	87	142	90.00	157.70	680	497
West Bengal . .	18.92	15.32	167/150	93	11.74	11.54	59	48	19.00	25.13	240	135
Union Territories .	0.10	7.23	..	..	0.83	0.58	..	10	3.56	2.13	..	..
Central Schemes . .	18.03	..	..	..	5.12	5.38	..	..	15.50	10.80	..	..
Total	599.34	576.00	6570/4481**	2231	422.51	435.19	2543	1540	953.81	1253.06	4766	2546

*The reduction is due to removal of area under stabilization.

**Revised target as adopted at the midterm appraisal in November, 1963.

The earlier, target was considered optimistic.

Appendix II

(Paragraph 2.23)

Statement showing Financial Investments, Physical Targets and actual Achievements during 1974-75

(Rs. Crores/'000 ha)

Sl. No.	Name of State	1974-75			
		Outlay	Expenditure	Potential target	Potential achieved
1	2	3	4	5	6
1.	Andhra Pradesh	28.20	32.51	39	47
2.	Assam	3.45	2.84	32	..
3.	Bihar	34.50	35.61	150	89
4.	Gujarat	32.24	43.25	45	58
5.	Haryana	12.72	15.79	20	28
6.	Himachal Pradesh	0.04	..	..	..
7.	Jammu and Kashmir	2.32	2.26	12	5
8.	Karnataka	22.84	32.73	72	63
9.	Kerala	7.03	7.77	20	3
10.	Madhya Pradesh	32.46	33.64	23	21
11.	Maharashtra	50.25	47.25	90	45
12.	Manipur	1.32	1.51	7	..
13.	Meghalaya	0.04	0.01	..	..
14.	Nagaland	..	..	..	..
15.	Orissa	10.20	8.26	32	39
16.	Punjab	5.95	7.72	25	13
17.	Rajasthan	29.16	28.97	120	48
18.	Sikkim	..	..	..	..
19.	Tamil Nadu	7.75	7.26	30	32
20.	Tripura	0.02	0.01	..	..
21.	Uttar Pradesh	65.81	76.94	424	291
22.	West Bengal	5.65	5.64	77	39
	Total States	351.95	389.97	1218	821
	Union Territories	1.74	1.73	..	..
	Central Sector	3.13	2.74	..	..
	Grand Total	356.82	394.44	1218	821

APPENDIX II—(contd.)

(Paragraph 2.23)

Statement showing the Financial & Physical Programme and Performance during 1974-75, 1975-76 *and* 1976-77

(Rs. Crores/'000 ha.)

Sl No.	Name of State/ Union Territories	1975-76 (Financial)		Physical		1976-77 (Financial)		Physical		Remark
		Outlay	Expenditure	Target	Achievement	Outlay	Expenditure	Target	Achievement	
1.	Andhra Pradesh	40.25	59.67	60	40	73.20	78.58	40	104	
2.	Assam	3.90	2.93	13	..	5.65	5.70	13	15	
3.	Bihar	46.21	46.69	132	130	51.00	51.00	79	99	
4.	Gujarat	44.80	45.93	76	90	52.63	52.63	55	75	
5.	Haryana	20.90	20.40	47	52	48.60	45.40	51	62	
6.	Himachal Pradesh	0.15	0.20	..	..	0.43	0.44	..	..	
7.	Jammu & Kashmir	3.72	3.74	11	2	7.14	7.24	5	6	
8.	Karnataka	26.95	28.61	37	38	37.50	40.75	37	34	
9.	Kerala	13.55	13.88	24	23	20.85	20.75	13	19	
10.	Madhya Pradesh	40.15	39.22	70	69	53.60	56.25	84	130	
11.	Maharashtra	64.91	66.68	81	63	94.63	94.21	105	114	
12.	Manipur	3.10	3.02	6	..	3.45	4.00	..	..	
13.	Meghalaya	0.04	0.01	..	..	0.02	0.02	..	..	
14.	Nagaland	..	..	..	..	..	..	..	..	
15.	Orissa	13.60	14.25	48	58	21.90	22.00	40	38	
16.	Punjab	8.97	8.02	25	30	17.90	16.17	30	50	
17.	Rajasthan	38.70	37.48	60	57	52.22	50.04	51	60	
18.	Sikkim	..	..	..	..	0.50	0.35	..	..	
19.	Tamil Nadu	11.00	13.84	10	2	20.77	22.11	4	2	
20.	Tripura	0.02	..	..	..	0.04	0.04	..	..	
21.	Uttar Pradesh	82.21	82.43	187	341	106.65	107.26	348	192	
22.	West Bengal	10.50	9.66	53	43	16.09	16.09	45	73	
	Total States :	473.63	496.66	940	1038	684.77	690.98	1000	1073	
	Union Territories :	1.64	1.67	..	..	2.96	3.14	..	..	
	Grand Total :	475.27	498.33	940	1038	687.73	694.12	1000	1073	

APPENDIX III

(Paragraph 3.20)

Statement showing the advance plan assistance to States for selected irrigation project 1977-78

(Rs. Crores)

Sl. No.	State/Project	Outlay available in the approved Annual Plan 1977-78	Additional outlay in 1977-78	Advance Plan Central assistance in 1977-78	Outlay to be provided by the State
1	2	3	4	5	6
1.	*Andhra Pradesh*				
	On-going Schemes				
	1. Tungabhadra HLC Stage II	5.00	1.00	0.50	0.50
	2. Vansadhara Stage I . .	5.00	1.00	0.50	0.50
	3. Godavari Barrage . .	11.00	2.00	1.00	1.00
	New Schemes				
	1. Soma Silla Stage I . .	5.00	1.00	0.50	0.50
	2. Medium Schemes . . (Vattivagu, Suvarnamukhi Reservoir & Peddavagu)	2.50	1.00	0.50	0.50
	TOTAL	28.50	6.00	3.00	3.00
2.	*Bihar*				
	On-going Schemes				
	1. Sone H.L C	3.00	1.00	1.00	
	New Schemes				
	1 Bateswevesthan . .	..	0.25	0.25	
	2 North Coel . . .	4.50	2.00	2.00	
	3. Durgawati . . .	2.00	1.00	1.00	
	4 Tilaya Diversion . .	0.05	1.00	1.00	
	5 Konar Diversion . .	0.95	1.00	1.00	
	6 Dakranalla . . .	1.00	1.00	1.00	
	7 Medium Schemes (Batana, Torai, Sugathan, Phutwaria and Guman) . . .	2.70	3.00	3.00	..
	TOTAL	14.20	10.25	10.25	..

(Rs Crores)

1	2	3	4	5	6
3.	*Gujarat*				
	On-going Schemes				
	1. Panam	5.07	1.00	0.50	0.50
	2 Mahi Bajaj Sagar	5.80	2.00	1.00	1.00
	3 Damanganga	5.00	1.00	0.50	0.50
	4 Kadana	7.81	3.50	1.75	1.75
	Medium Schemes				
	(Ver II, Baldeva, Pigut, Singode, Hiran State II, Machundri, Deo, Kalu Bahar, Amipur, Jivapur (Und), Wankieshwar, Bhey & Rajawal)	6.50	2.50	1.25	1.25
	New Schemes				
	1 Karjan	0.05	0.75	0.37	0.38
	2. Sukhi	1.00	0.75	0.38	0.37
	Modernisation of Fatehwadi Canal system	..	0.50	0.25	0.25
	TOTAL	31.23	12.00	6.00	6.00
4.	*Haryana*				
	On-going Schemes				
	1 Pt. Jawahar Lal Nehru Lift Irrigation Scheme	6.20	5.00	5.00	
	Modernisation Schemes				
	1. Lining of Channels	1.16	1.00	1.00	
	Augmentation Tube Wells	..	1.00	1.00	..
	TOTAL	7.36	7.00	7.00	..
5.	*Karnataka*				
	On-going Schemes				
	Major				
	1. Malaprabha	12.00	3.00	1.50	1.50
	2. Ghataprabha Stage III	3.00	2.00	1.00	1.00
	3. Upper Krishna Stage I	10.00	4.50	2.25	2.25
	New Schemes				
	Medium Schemes				
	1. Hirehalla 2. Teetha 3. Saudagar 4. Chulki Nala 5. Amarja	1.38	2.00	1.00	1.00

(Rs. Crores)

1	2	3	4	5	6
	Modernisation of Irrigation Systems				
	1. Modernisation of Tungabhadra Canal	..	0.50	0.25	0.25
	TOTAL :—	26.38	12.00	6.00	6.00
6.	*Kerala*				
	On-Going Schemes				
	1. Pamba .	4.00	0.50	0.50	
	2. Pazhassi .	3.70	0.50	0.50	
	3. Kanhirouzha	3.00	0.50	0.50	..
	4. Kallada	4.50	2.00	2.00	..
	TOTAL :—	15.20	3.50	3.50	..
7.	*Madhya Pradesh*				
	On-going Schemes				
	1. Tawa . . .	10.30	1.00	1.00	
	2. Mahanadi Reservoir .	10.50	3.20	3.20	
	3. Pairy	3.00	1.00	1.00	
	4. Medium Schemes (Sukha, Junk Diversion, Sindh Diversion & Mokroda) . .	5.60	1.80	1.80	..
	New Schemes				
	1. Hasdeo Bango	0.50	1.00	1.00	
	2. Upper Wainganga	3.50	3.00	3.00	
	3. Medium Schemes (Johilla Tank, Mehroi Tank, Kachan Tank, Umrar Tank, Manswewari and Jarmada Tank. .	1.82	2.00	2.00	..
	TOTAL :—	35.22	13.00	13.00	..
8.	*Maharashtra*				
	On-going Schemes				
	1. Jayakwadi Stage I & II . .	18.35	3.50	1.75	1.75
	2. Kukadi Stage I	9.00	1.00	0.50	0.50
	3. Pench Irrigation	7.50	2.00	1.00	1.00
	4. Krishna	7.50	1.00	0.50	0.50
	5. Khadakwasla	5.00	1.00	0.50	0.50
	6. Medium Schemes (Ambavalley, Harranbari Aner, Chargaon, Amalnala & Kalzar)	2.53	3.00	1.50	1.50

(Rs. Crores)

1	2	3	4	5	6
	New Schemes				
1.	Surya.	2.25	1.00	0.50	0.50
2.	Manjra	4.85	1.00	0.50	0.50
3.	Mahladevi	2.25	1.00	0.50	0.50
4.	Medium Schemes (Goki, Dham, Aron Sina, Wandri, Weghadi, Janapur and Paidag)	2.99	2.50	1.25	1.25
	TOTAL :—	62.22	17.00	8.50	8.50
9.	*Orissa*				
	On-going Schemes				
1.	Medium Schemes (Ong, Sunder, Kalo, Daha, Ramiala, Sunei, Khadkei) . .	7.95	3.00	3.00	..
	New Schemes				
1.	Upper Kolab	1.03	1.00	1.00	..
2.	Medium Schemes (Talasara, Badanala and Sarapgarh)	..	2.00	2.00	..
	TOTAL :—	8.98	6.00	6.00	..
10.	*Punjab*				
	On-going Schemes				
1.	Lining of Canals	6.09	3.00	3.00	..
	New Schemes				
1.	Extension and Improvement to Shahnahar Canal System	1.00	1.00	1.00	..
2.	Thein Dam	0.85	4.00	4.00	..
	Augmentation Tubewells .	..	2.00	2.00	..
	TOTAL :—	7.85	10.00	10.00	..
11.	*Rajasthan*				
	On-going Schemes				
1.	Mahi-Bajaj Sagar	7.99	2.00	2.00	..
2.	Jakham . .	0.50	1.50	1.50	..
	New Schemes				
1.	Rajasthan Canal Stage II . . .	12.00	2.00 (For 5 Lift Canals)	2.00	..
	Medium Schemes				
1.	Wagon Diversion	0.55	2.00	2.00	..
2.	Kothaul				
3.	Margia				
4.	Kamla Amba				
	TOTAL	21.04	7.50	7.50	..

APPENDIX IV

(Paragraph 10.7)

I

Physical Achievements during First Plan and Second Plan Period under Minor Irrigation

('000 hectares)

Sr. No.	State/U.T.s.	First Plan		Second Plan	
		Target £	Achievement ££	Target @	Achievement @@
1	2	3	4	5	6
1.	Andhra Pradesh	N.A.	70.4		
2.	Assam	311.4	350.9		
3.	Bihar	844.3	717.9		
4.	Bombay	235.4	139.4		
5.	Madhya Pradesh	34.7	38.4		
6.	Madras	225.2	205.6		
7.	Orissa	175.6	74.9		
8.	Punjab	98.3	334.7		
9.	Uttar Pradesh	449.5	604.2		
10.	West Bengal	377.6	491.2		
11.	Hyderabad	133.7	58.7		
12.	Madhya Pradesh	16.1	25.9		
13.	Mysore	68.4	113.7		
14.	PEPSU	125.5	56.3		
15.	Rajasthan	78.0	44.1		
16.	Saurashtra	42.5	74.1		
17.	Travancore & Cochin	15.2	59.5		
18.	Jammu & Kashmir	N.A.			
19.	Ajmer	2.9			
20.	Bhopal	23.7			
21.	Bilaspur	4.0	38.8		
22.	Coorg	..			
23.	Delhi	4.5			

1	2	3	4	5	6
24.	Himachal Pradesh	33.8			
25.	Kutch	44.4			
26.	Manipur	..			
27.	Tripura	0.9			
28.	Vindhya Pradesh	3.7			
29.	NEFA	..			
30.	Pondicherry	..			
	TOTAL	3349.30	3834.70*	3642.0	3642.0

*This includes 336.2 thousands hectares of area irrigated through State tubewells for which State-wise break up is not available.

£*Source* : First Five Year Plan, Planning Commission, p.221.

££*Source* : Review of the First Five Year Plan, Planning Commission, 1957, p.91-92.

@*Source* : Second Five Year Plan, Planning Commission, 1956 State-wise break-up is not available page 269.

@@*Source:* Third Five Year Plan, Planning Commission, State-wise break-up is not available.

II

Physical targets and achievements during Third Plan period, Annual plan periods (1966—69) *and Fourth Plan under Minor Irrigation*

(Lakh hectares)

Sr. No.	Name of State/U.Ts.	Third Plan		During 1966—69		During Fourth Plan	
		Target*	Achievement	Target	Achievement	Target@	Achievement
1	2	3	4	5	6	7	8
1.	Andhra Pradesh	5.77	4.74	2.59	2.30	4.00	1.68
2.	Assam	1.50	1.62	1.14	1.03	1.40	1.85
3.	Bihar	4.31	3.91	3.72	3.96	8.00	5.52
4.	Gujarat	4.82	4.58	2.35	2.28	5.00	5.17
5.	Haryana		Included in Punjab	0.38	0.40	2.50	2.50
6.	Himachal Pradesh	0.06	0.08	0.09	0.14	0.10	0.13
7.	Jammu & Kashmir	0.22	0.18	0.12	0.13	0.60	0.37
8.	Karnataka	0.73	2.09	1.55	1.91	2.20	1.16
9.	Kerala	1.04	1.34	0.58	0.44	0.80	0.66
10.	Madhya Pradesh	2.88	1.99	2.30	2.04	6.20	5.25
11.	Maharashtra	4.90	6.03	3.78	3.31	6.00	4.47
12.	Manipur	0.06	0.08	0.02	N.A.	0.17	0.15
13.	Meghalaya		Included in Assam			0.10	0.11
14.	Nagaland	N.A.	0.06	0.02	0.04	0.09	0.08
15.	Orissa	1.09	1.22	0.94	0.66	1.00	0.97
16.	Punjab	4.16	3.70	1.51	0.77	6.00	6.13
17.	Rajasthan	1.94	2.67	1.38	1.56	3.00	3.27
18.	Tamilnadu	2.34	3.07	2.35	2.22	5.00	5.00
19.	Tripura	0.08	0.06	0.10	0.08	0.04	0.09
20.	Uttar Pradesh	11.92	12.83	16.12	15.23	24.00	24.78
21.	West Bengal	3.65	1.67	1.85	1.84	2.50	2.82
	Total States	51.47	51.92	42.89	40.34	78.70	72.16
	Total U.Ts.	0.14	0.16	0.11	0.17	0.31	0.17
	All India	51.61	52.08	43.00	40.51	72.00	72.33

1	2	3	4	5	6	7	8
1.	Andaman & Nicobar Islands	—	—	..	—	0.235	0.240
2.	Arunachal Pradesh	0.03	0.02	0.010		7.000	5.122
3.	Chandigarh	——Included in Haryana——			--	0.776	1.487
4.	Dadra & Nagar Haveli	—	—	Neg.		0.662	0.450
5.	Delhi	0.030	0.040	0.090		16.460	1.530
6.	Goa, Daman, & Diu	N.A.	0.080	0.010	N.A.	1.460	2.130
7.	Mizoram.	——Included in Assam——				—	0.748
8.	Pondicherry	0.080	0.020	Neg.		4.690	5.140
	Total U.Ts.	0.140	0.160	1.110	0.170	31.283	16.845

*Source : Third Five Year Plan Planning Commission.

@Though the total comes to 79.01 lakh hectares, All India target is assumed as 72.00 lakh hectares.

APPENDIX V

Summary of Main Conclusions/Recommendation

Sl. No.	Reference to Para No. of the Report	Conclusions/Recommendations
1	2	3
1.	1.25	The Committee note that so far no systematic study or analysis of utilisable water resources of the country has been done except for the Indus River system. A separate Directorate of Surface Water Resources was however set up in the Central Water and Power Commission in 1965 to undertake studies in regard to surface water resources for all river basins excluding Ganga, Brahmputra, and Indus basin. Out of the 31 basins indentified for these studies, the Directorate has so far completed studies in respect of 5 basins only. 11 basins consisting of 4 sub-basins of the Krishna and 7 sub-basins of the Godavari involve reference to Tribunals and the availability and requirement of water in case of Krishna has already been gone into by the Tribunal and is being looked into in the case of Godavari. In one case (Pennar) no further study is stated to be necessary as the water has been largely utilised. Study for one more basin viz. Cauvery has been completed in the form of the Report of the Cauvery Fact Finding Committee.

2	1.26	The Committee have been informed that there is difficulty in obtaining the requisite data in regard to the 7 basins. The Committee regret the slow progress in completing these studies which would form the basis for the development and utilisation of the water resources of these basins economically and efficiently. They urge that Government should take effective measures to collect the requisite data and lay down a time bound programme for the completion of the stndies at the earliest. A careful watch should be kept regarding the progress made in completing these studies so as to take remedial measures without delay.
3.	1.27	The Committee note that data about Ganga was being collected by Ganga Basin Water Resources Organisation and that there is a proposal to set up Brahmaputra Central Board. The Committee would like Government to expedite the collection of data and completion of studies in respect of these major rivers so that the potential of these rivers is fully utilised for irrigation and other purposes in an integrated and coordinated manner in the best interest of the country.
4.	1.28	The Committee note that at present the average annual flow of the various rivers or groups of rivers in the country is estimated at 180 million hectares metres and utilisable flow is about 70 million hectare metres. Of this, only about 25 million hectare metres has been utilised at present. The Committee consider that to meet the food and fibre needs of the increasing population of the country, it is of the utmost importance that high priority is given to the utilisation of the utilisable flow of the various rivers or groups of rivers in the country. It is a matter of regret that only about one-third of the utilisable irrigation potential has been harnessed so far. The Committee need hardly stress that concerted measures

1	2	3
		should be taken by Government for the maximum utilisation of the irrigation potential of the country so as to derive the maximum benefit from the existing water resources. The Committee urge that detailed plans for harnessing, managing and utilising the existing water resources economically and efficiently to the optimum, should be drawn up and that special attention should be paid to meet the irrigation needs of drought prone areas.
5.	1.47	The Committee consider that for the proper management of the rivers and waterways as also for optimum utilisation of the utilisable water in the overall interest of the country, it is but appropriate that the Central Government should play an active role in the development and use of water resources. For this purpose it may also be desirable that a National Water Policy is evolved in consultation with the States. The Committee would like Government to seek the cooperation of the State Governments in this regard and examine the question of enacting suitable legislation under Entry 56 of the Union List of the Constitution.
6.	1.48	The Committee note that the question of direct involvement of the Centre in the planning of uses of waters of inter-State rivers and other related matters is under active examination. The Committee desire that this matter should be finalised early.
7.	1.49	The Committee recommended that for the construction of all major river valley projects having inter-State aspects, Control Boards should be set up consisting of the representatives of the Central Government and the State Governments concerned with a view to ensuring their patricipation during the construction stage.

8. 2.11

The Committee note that before September, 1975, the irrigation projects were classified into three categories namely, major, medium and minor on cost basis. A review of the procedure revealed that the categorisation on the basis of costs which differed widely from region to region resulted in relative disadvantages to some States. Besides, there was possibility of under-estimating the projects to categorise them as medium or minor to avoid submission of detailed project reports. The basis of classification of the projects was changed in September, 1975 from cost of the project to the areas irrigated. It has been stated that the revised classification is more scientific and objective. It avoids the possibility of under-estimating of major projects as medium ones in order to do away with the submission of a detailed project report to the Planning Commission and detailed scrutiny. The system also removes the disadvantages to some States or regions where cost of the projects were higher as compared to other regions. The Committee, however, are surprised that inspite of these admitted drawbacks the old system of classification was allowed to continue till September, 1975.

9. 2.12

The Committee note that in the past in many States like Gujarat, Maharashtra and Kerala, a large number of major and medium projects were taken up simultaneously which were beyond their financial resources with the result that projects have been lingering on for a number of years. In a few cases yearly outlay provided for the projects was very meagre and it was hardly sufficient to cover even the normal yearly escalation in the project costs. The Conference of the State Irrigation Ministers has recommended that the States should concentrate on the on-going schemes for getting optimum return on the investments. It has been stated by the Department of Irrigation that efforts have been made to see that more funds

1	2	3
		are provided by the States for the major and medium irrigation schemes so that the projects can be completed quickly. The Committee note that some success has been achieved in this regard particularly in Kerala where progress in the completion of selected on-going projects has been expedited.
10.	2.13	The Committee note that while the State authorities are now little more conscious about completing the on-going projects, continuous pressure is being brought on the authorities concerned to take up more and more new projects. The Committee feel that there is all the greater need for drawing up priorities for consideration of irrigation project schemes based on the need of the area, the plan projections for development, in order to utilise the scarce financial resources for achieving the best results in larger public interest. The Committee need hardly point out that special consideration in this behalf should be given to irrigation projects for areas which are prone to chronic drought conditions or which would help in the development of relatively backward areas more specially tribal areas.
11.	2.44	The Committee note that against the ultimate irrigation potential of 57 million hectares from major and medium schemes in the country, a potential of 23.5 million hectares has been created by 1976-77. The potential available upto the end of Fourth Plan was 20.7 million hectares. Prior to the Plan period, the major and medium schemes were providing. irrigation to 9.7 million hectares only. During 23 years of planned development upto the end of Fourth Plan, another 11 million hectares were added. Thus the average increase upto the end of Fourth Plan has been

about 0.50 million ha. annually. The Committee are concerned at this slow rate of development of irrigation potential upto Fourth Plan, which is one of the main inputs for increasing food production for our vast and growing population. At this rate, it would have taken more than half a century to develop the remaining irrigation potential. The country could ill afford this slow rate of development due to its mounting population. The Committee need hardly emphasise that it is essential that irrigation schemes are implemented at a much faster pace to maximise the agricultural production.

The Committee have been informed that tentatively as per present thinking the ultimate potential of 57 million hectares will be fully developed by the year 2010, but no assessment regarding requirement of funds for achieving this target has been made so far. The Committee feel that it is necessary to prepare a perspective plan to develop the ultimate irrigation potential and to inter-weave it in the national Plans for implementation according to a time bound programme.

12. 2.45 The State-wise development of irrigation indicates wide imbalances in the percentage of the irrigation potential realised upto the end of 1976-77. While some States like Punjab and Tamil Nadu have achieved 77%, and 72.1% respectively of the ultimate irrigation potential, there are many States which are lagging far behind in their achievement. The development in a few States is about 20 per cent or even less, the examples being Assam 5.8%, Madhya Pradesh 21.5 per cent and Bihar 23.6%. In some backward and hilly States like Himachal Pradesh, Manipur, Meghalaya, Nagaland, Tripura and Sikkim even data about the ultimate irrigation potential is not available because of lack of proper

1	2	3
		organisation in the States. The Committee do not feel happy over this uneven development of irrigation potential from major and medium schemes in the various States during the past plans. The Committee need hardly emphasise that the prosperity of a State to a large measure depends on the increase in the agricultural production for which irrigation is an important input. The Committee strongly feel that imbalances in the development of irrigation facilities should receive serious attention. The Committee suggest that perspective plans aiming at optimum development of water resources should be prepared by each of the States, laying down priorities for implementation and taking into account the needs of drought prone and backward areas.
13.	2.46	The Committee are perturbed to note that during the First to Fourth Plans although the expenditure on the irrigation projects exceeded the outlays provided, the actual achievements consistently fell short of the physical targets. In the first plan against the target of 3468 thousand hectares, the actual potential created was 2486 thousand hectares, shortfall being 28.3 per cent. In the Second Plan, against the target of 4845 thousand hectares, the achievement was 2143 thousand hectares, shortfall being 55.8%. In the third Plan against the revised target of 4481 thousand hectares, the achievement was 2231 thousand hectares, shortfall being 50%. During the Annual Plans (1966—69) against the target of 2543 thousand hectares the achievement was 1540 thousand hectares, shortfall being 39.5%. In the Fourth Plan against the target of 4766 thousand ha. achievement was 2546 thousand hectares, shortfall being 46.6%. To sum up while in financial terms, the expenditure, over

outlay for major and medium irrigation schemes upto the end of Fourth Plan exceed by Rs. 490 crores, that is, against an outlay of Rs. 2530 crores the actual expenditure amounted to Rs. 3020 crores, there has been a serious shortfall of the order of 11.255 million hectares (51.4%) in the achievement of physical targets that is, against a target of creation of addtional irrigation potential of 22.201 million hectares, the actual achievement was 10.966 million hectares.

14. 2.47 As pointed out earlier one of the reasons for shortfall in achievements has been proliferation of projects under construction resulting in the thin spread of financial, managerial and technical resources of the State and delay in completion. The other reasons for slow progress as identified by a Committee of Experts were lack of proper investigations, change in scope of projects, scarcity in construction materials, delays in land acquisition, lack of project management and monitoring and cost escalation. The Expert Committee emphasised the importance of proper and thorough investigation of projects, proper phasing of the construction of projects to yield benefits expeditiously, provision of adequate funds from year to year, need for adequate delegation of power, continuity of key personnel, training of officers engaged in the project works and adoption of modern management techniques. The Committee note that the implementation of the recommendations was commended to the State Governments at the Chief Ministers Conference held in August, 1974. The Committee need hardly emphasise that the shortcomings which were responsible for slow implementation of the Projects in the past, should be avoided in future. The Department of Irrigation should enlist the cooperation of the State Governments in this regard and keep watch over the implementation of the remedial measures.

1	2	3
15.	2.48	The Committee note that the additional irrigation potential likely to be created from the major and medium schemes during the Fifth Plan period (1974-75—1978-79) was placed at 5.8 million hectares. During 1974-75, the first year of the Fifth Plan, against the target of 1218 thousand hectares, the actual achievement was 792 thousand hectares. The Committee note that during 1975-76 there was a marked increase in irrigation potential. Against the revised target of 1029 thousand hectares the actual achievement was 1038 thousand hectares. The achievement during 1975-76 was double the average annual achievement at 0.50 million hectares in the Fourth Plan. During 1976-77, the achievement was 1073 thousand hectares against the revised target of 1200 thousand hectares, although on the basis of a review conducted in December 1976—January 1977, the achievement was anticipated to be 1220 thousand hectares. The Committee feel unhappy about the actual achievement during 1976-77 falling short of the revised target to the extent of 127 thousand hectares. The Committee desire that the reasons for this sizeable shortfall in achieving the target may be carefully analysed with a view to taking necessary remedial steps.
16.	2.49	The revised targets fixed for 1977-78 and 1978-79 were 1310 thousand hectares and 1505 thousand hectares respectively. According to the information now furnished to Committee (November, 1977), the total outlay proposed for 1977-78 is of the order of Rs. 988.87 crores and the benefits expected would be 1313 thousand hectares. The details of outlays and targets for the next five years are yet to be finalised. It is

broadly assessed that there would be the requirements of Rs. 7400 crores for major and medium irrigation programme during the next five years and a target of creation of additional irrigation potential of 8 million hectares would be feasible of achievement with this outlay during the period.

17. 2.50 The Committee note that the various measures taken during 1975-76 included identification of core projects whose tempo needed to be stepped up, preparation of works programme, additional central assistance to accelerate progress of selected projects, setting up of monitoring organisations at the central, state and project levels, efforts to obtain assistance from the World Bank, optimising the operation of the existing projects and resolving inter-State disputes and clearance of pending projects. The Committee feel that in view of persistent shortfalls in plan targets in the past, these measures should have been thought of much earlier.

18. 2.51 The Committee note that the programme of development of irrigation had been accorded priority in the Fifth Plan, an outlay of Rs. 3135 crores had been provided for major and medium schemes for creating an additional potential of 5.8 million hectares. As per the revised assessment it was estimated that funds to the tune of over Rs. 3450 crores would be required to achieve the plan target. The State Governments had also been advised about the project-wise contribution to fulfil the overall target. They had also been advised to plan for 10 to 15 per cent higher target to allow for unforeseen slippages. The Committee note that the strategy for the next five year Plan starting from April, 1978 was discussed at the Conference of the State Ministers held on 8 and 9 November, 1977 and the State Ministries heartily welcomed the high priority being given to irrigation and agreed to take necessary measures. The Committee desire that determined efforts should be made by the Ministry with the

1	2	3
		active cooperation of the State Governments to achieve the target of 8 million hectares laid down for the next plan starting from April, 1978.
19.	2.52	The Committee desire that necessary steps in this direction should be initiated in right earnest without loss of time to finalise the Annual Plan for 1978-79 and also details of the targets and outlays for the next plan, The Committee emphasise that investigation of schemes and preparation of project reports in respect of new projects for the next plan to be taken up particularly in tribal and drought prone areas and modernisation of existing systems to improve their efficiency should be intensified. The Committee need hardly emphasise that Plans should be realistic and adequate funds should be provided for these programmes.
20.	2.53	The Committee note with concern that although the flood problem in the Ganga and the Brahmaputra basins is serious requiring moderation of peak discharges in reservoirs, it has not been possible so far to construct major storage reservoirs in these regions mainly on account of lack of economically viable sites considering high seismicity of region and high sediment contents of the rivers which severely limit the life and utility of such reserves. The Committee are anxious that examination of schemes for construction of reservoirs in the Brahmputra and Ganga Basins, and other flood prone areas should be paid serious attention so that not only floods are moderated but also valuable water reservoirs are utilised for creating additional irrigation potential.
21.	2.54	To the extent possible post-monsoon flows of water should be suitably

stored in all river beds for irrigation. The Committee desire that a shelf of schemes should be prepared and these should be taken up according to priority.

22. 2.80 The Committee are concerned to note lack of proper investigation and surveys of projects before preparation of project reports by the State Governments. This has resulted not only in the delay in implementation but also in escalation of costs of projects. The project reports submitted by the State Governments to the Central Water Commission suffer from many deficiencies. The Project reports have consequently to be referred back to the State Governments, resulting in avoidable correspondence and delay in clearance. In order to remove deficiencies the Central Water Commission have issued guidelines for investigation of major projects and realistic preparation of cost estimates. Besides the Planning Commission have issued a format and check list indicating the various points to be covered in connection with the different aspects of investigation of projects and preparation of project reports.

23. 2.81 The Committee are concerned to note that these guidelines are not properly followed by the State Governments and projects submitted by the State Governments continue to be wanting in proper investigation or cost estimates. It is unfortunate that sometimes on account of local pressures, the projects are referred to the Central Water Commission without carrying out adequate surveys and investigaions. The Committee feel unhappy over this state of affairs.

24. 2.82 The Committee feel that there is need for providing adequate incentives and facilities to the staff engaged on investigation/survey in view of the

1	2	3
		hardships involved in undertaking this work in difficult and remote areas. The Committee were informed that this matter has been taken up with the State Governments only in a broad way. The Committee hope that necessary and conclusive action would be taken in this regard. The Committee need hardly emphasise the importance of posting competent and qualified staff in the requisite disciplines for investigation and survey work as proper investigation of the project in the very beginning will make expeditious clearance and implementation of projects and obviate costly delays.
25.	2 83	The Expert Committee on Rise in Costs of Irrigation and Multi Purpose Projects (1973) had recommended that for investigation of projects the States should have a broad based organisation involving all disciplines (engineering, geology, hydrology, agriculture etc.). The Conference of State Irrigation Ministers held in July, 1975 also made this recommendation. The Committee note that the States have been requested to set up a broad based organisation and also take steps for improving the data base for planning water resources projects. The Committee are surprised that the State-wise information regarding the measures taken by the States to strengthen the technical personnel and machinery in respect of investigation and preparation of project reports is not available with the Commission. The Committee would like the Ministry to ascertain what follow up action has been taken by the States in setting up a broad based organisation for investigation and formulation of new projects and improving the data base for planning water resources.

26.	2.84	The Committee note that the set up for technical examination of the projects in Central Water Commission has recently been strengthened and the procedure streamlined. Out of 649 projects referred to the Central Water Commission up to 31 December, 76, 334 projects (117 major and 217 medium) were still under examination.
27.	2.85	The Committee stress that with the strengthening of the staff and streamlining of their procedure, the Commission should make concerted efforts to minimise the time for clearance of projects referred to by the State Governments. The Committee desire that stricter norms should be laid down and enforced in that behalf.
28.	2.86	The Committee suggest that the Ministry should include in the Annual Report factual data about the number of schemes referred to the Commission/Union Government the number received back the time taken in the process, the broad reasons therefor and the measures taken proposed to be taken to improve the position.
29.	2.87	In view of the various lacuna in the investigation carried out by the State Governments and the project reports prepared by them the Committee feel that it is in the interest of the State Governments if the Central Water Commission is associated with the investigation of major projects costing more than Rs. 30 crores from the very beginning so that any deficiencies during the course of investigation could be remedied at the earliest. The Committee suggest that the system of association of the Commission through the Reviewing Committees may be watched for some time and improvements made in the light of experience gained in its working. The

1	2	3
		Committee need hardly point out that if the Commission and more particularly the Members of the Reviewing Committee approach the State authorities in a spirit of rendering assistance in the speedier preparation of the projects, the State authorities are bound to reciprocate this gesture, thus making for better coordination and understanding.
30.	2.117	The Committee are concerned to note that the Review Committees which were required to meet twice a year did not actually hold the meetings at the desired frequency. The result was that the projects were not reviewed regularly. It was only in 1974 and 1975 that special efforts were made to closely monitor the progress of the projects. The Committee regret that adequate attention was not paid by the Reviewing Committees to the task of reviewing the progress of projects assigned to them.
31.	2.118	The Committee note that the work earlier entrusted to the Reviewing Committees has now been assigned to Monitoring Units. The Reviewing Committees have recently been reconstituted and assigned the task of review of the various aspects of irrigation development in the States. The Committee would urge that the functions now assigned to the Reviewing Committees should be critically reviewed to ensure that there is no overlapping with the functions assigned to the monitoring units under the new system. It should also be ensured by periodical evaluation that these Review Committees function effectively. The Committee have been informed that the functioning of the monitoring system has been very encouraging and very effective. The creation of the Central Monitoring Units

has enabled periodical review of the progress and timely removal of bottlenecks. They note that the Monitoring organisation at the Centre is being further expanded to cope with the assigned increased functions and the proposals for staffing and the creation of infrastructure are under examination. The Committee desire that early decision should be taken to facilitate the effective functioning of Central Monitoring Units. The Committee desire special attention to be given to projects which have been lagging behind.

32, 2.119 The Committee have been informed that Monitoring Units have yet to be set up at the State level and project level in respect of 12 and 10 projects respectively. The Committee desire that the setting up of Monitoring Units at the State and Project level may be pursued with the State Governments concerned vigorously. The Committee would like to evaluate the working of the monitoring system periodically with a view to bring about necessary improvements in the light of experience gained and to make sure that the expenditure being incurred on it is justified by the results achieved.

33. 2.120 The Committee are surprised that since its constitution no sitting of the Central Coordination Committee has been held as no bottlenecks requiring the attention of this Committee are stated to have arisen. The Committee are not convinced. They desire that the Central Coordination Committee should meet periodically to undertake an overall review of the progress and programmes of major irrigation projects to accelerate implementation of projects.

34. 2.120 The Committee regret to note that very few State Governments are sending the progress reports in time. While the Committee appreciate that

the progress of the projects is now being reviewed by the Central Monitoring Units during discussion with the project authorities, they would like to observe that monitoring is resorted to by the Central units only for 27 projects at present. The Committee feel that it is necessary that the progress reports in case of other projects should also be received by the Central Water Commission regularly, to enable them to keep a watch over the implementation of the projects and remove any bottlenecks. The Committee desire that the question of timely submission of the progress reports may be pursued with the State Governments and successfully resolved.

The Committee note that in the first Plan the total plan expenditure on major and medium irrigation projects had received a relatively large share amounting to 15.3 per cent of the total plan outlay. In the subsequent plans the percentage of expenditure on major and medium irrigation projects declined considerably, being 8.1 per cent in the Second Plan, 6.79 per cent in the Third Plan, 6.56 per cent in the Annual Plans (1966—69) and 7.3 per cent in the Fourth Plan. Although the outlay on major and medium irrigation projects had increased many fold from Rs. 300 crores in the First Plan to Rs. 3095 crores in the Fifth Plan, yet its percentage to the total Plan outlay works out to 7.8 per cent only. In view of the fact that very large water resources have yet to be harnessed in the interest of increasing and stabilising agricultural production programme of development of irrigation needs high priority. The Committee feel that the percentage outlay on major and medium irrigation projects needs to be reviewed.

36. 3.26

The Committee note that at present although the Central assistance is given as block loans and grants outlay in respect of selected projects is earmarked which ensures adequate funding to the important schemes. Admittedly there were few cases where funds were diverted for purpose other than irrigation. The Committee desire that there should be built in safeguards in the issue of sanctions to ensure that the funds earmarked for selected irrigation projects are not diverted by the State authorities for other purposes/projects.

37. 3.27

According to the Department of Irrigation till the end of 1974-75, the availability of funds was generally inadequate to achieve the targets laid down. Inadequate availability of funds coupled with the other factors resulted in shortfall in achievement of targets in various plans and projects. Some typical examples are Nagarjunasagar (Andhra Pradesh), Gandak (Bihar and Uttar Pradesh), Malaprabha (Karnataka) and Kallada (Kerala).

The Committee note that good results were achieved from the special advance assistance amounting to Rs. 55.8 crores given for 18 projects during the year 1975-76. Due to constraint on resources the execution of the projects was slow and not going at the optimum pace physically capable of achievements. An additional irrigation potential of 283,000 hectares was developed over and above the potential envisaged with the normal outlays, thus adding significally to the benefits. For the year 1976-77 an amount of Rs. 75.20 crores was sanctioned as advance plan assistance to be given to 26 major and 14 medium irrigation projects in 14 States. Out of the total assistance of Rs. 75.20 crores, the Centre was to provide Rs. 48.10 crores while States have to provide Rs. 27.10 cross from their own resources. The actual amount released by the Ministry

1	2	3
		of Finance was Rs. 39.90 crores. As a result of this additional outlay an additional potential of 165 thousand hectares was expected to be created in 1976-77. According to the Ministry as a result of the advance central assistance during 1975-76 and 1976-77, the achievements have exceeded the physical targets. During the year 1977-78, it has been proposed to increase the outlay by 125.75 crores comprising Rs. 100 crores as advance plan assistance by the central and Rs. 25.75 crores additional outlay to be provided by certain States from their own resources to accelerate the progress on certain on-going schemes and for new starts to maintain tempo of irrigation development. Some States have suggested some additions/ alterations to the proposal and these were being examined.
38.	3.28	The Committee would stress that while giving special assistance to the States particular consideration should be given to the backwardness of the area to be served, existence of large unharnessed water resources and the ability of the State to undertake large projects as recommended by the Irrigation Commission (1972). Special attention should also be paid to reduce the imbalance in the various States as compared to the known potential and requirements.
39.	3.29	The Committee desire that proposal for additional outlay for the year 1977-78 including the central assistance should be finalised in consultation with the State Governments expeditiously so that the projects selected should not suffer for want of funds and the expected additional potential is actually created. The Committee need hardly stress that Government should draw lessons from the slow progress due to the inadequacy of funds provided for important projects in the past and take suitable steps to ensure that the

projects which may be of national importance are rendered special assistance in greater measure in future to accelerate their implementations. The Committee desire that a close watch should be kept over the progress of these projects.

40. 3.43 The Committee urge that effective steps should be taken to collect expeditiously all the information desired by the World Bank so as to finalise agreements with the bank for loan assistance for these projects. The Committee further desire that in respect of projects for which agreements have already been entered into, concrete measures should be taken for the timely execution of the Projects and release of waters for agricultural purposes to generate resources to pay back the loans and pave the way for funding of more such projects by the World Bank.

41. 3.44 The Committee are anxious that the assistance from the Bank should be utilised fully to speed up the construction of the projects. The Committee suggest that the Department of Irrigation/Central Water Commission should find out if any difficulties are experienced by the State Governments receiving loans from the World Bank in fulfilling the conditions stipulated for the purpose which might be resulting in delay in the release of the assistance and slow progress of projects. Necessary steps should be taken in consultation with the World Bank and the State Governments to resolve such difficulties.

42. 3.50 The Committee are perturbed that no perceptible progress has been made in setting up of Cost Control Cells in major irrigation projects although the matter is being pursued with the State Governments since 1962. In May, 1962 the State Governments were advised to take action on the

1	2	3
		recommendations of Rates and Cost Committee which *inter-alia* suggested establishment of costing cells in River Valley Projects costing Rs. 15 crores or above. The Committee are surprised that the Ministry took 7 years to prepare the mode pattern of costing cells and its duties and functions, which were communicated to the State Governments only in August, 1969. The Committee desire that the reasons for this inordinate delay should be investigated.
43.	3.52	The Committee desire that as projects costing Rs. 30 crores or more are major projects for which sanction is required to be issued by the Central Government, it may be made obligatory for the authorities submitting the estimates to include in it a provision for Cost Control Cells. The Committee would like Government to scrutinise in particular the provision for this Cell before according sanction.
44.	3.53	It is also desirable that the modern pattern of functions and duties of the Cost Control Unit which were outlined as long as 1969 are reviewed in the light of developments and updated to make them more pertinent and relevant.
45.	3.54	The Committee need hardly point out that what is important is the exercise of continuous effective check and control on cost factors so as to see that the flow of expenditure is kept within the sanctioned estimates and that cost analysis is put to effective use to carry out on course corrections in the interest of economy and improving efficiency.

46.	3.55	The experience gathered in the maintenance of cost control data may be put to effective use in due course of time by developing a system of management accountancy to aid well-informed cost-conscious decisions being taken in the interest of selection of best-suited projects and in ensuring their economic execution.
47.	3.56	The Committee would also like that the officers in the executive who are entrusted with the duties and responsibilities of execution of projects are also made cost-conscious by making available to them meaningful literature and by holding suitable training courses of short duration for them.
	3.57	The Committee would like to clarify that Cost Control Cell has to justify itself by the results achieved and a watch should be kept at a higher level to see that it does not degenerate into a mere routine constituent of the set up.
48.	3.60	The Committee need hardly point out that the Central Government should set a high example by preparing a meaningful performance budget for the Department of Irrigation which would help to co-relate the financial outlay with the physical contents of work, provide parameters to evaluate performance, indicate benefits expected and which have actually accrued.
49.	3.61	The Committee need hardly remind that the performance budget is only a means to an end and, therefore, it is of the utmost importance that the State Governments are persuaded and assisted to have a meaningful performance budget which would help the legislators and the public to understand better the implications of financial outlay, evaluate performance and call to account those entrusted with the power to expand and implement projects.

1	2	3
50.	3.62	The Committee note that the Expert Committee on Rise in Costs of Irrigation and Multipurpose Projects (1973) recommended adoption of performance budgeting system for execution of River Valley Projects with a view to exercising effective financial control. In a recent meeting held in the Department of Personnel it was recommended that performance budgeting should be introduced by the State Governments in one or two departments for example the Departments of Agriculture and Irrigation by 31st March, 1977. The Committee would like to know whether the State Governments have introduced the system of Performance Budget in the Department of Irrigation with effect from the current year.
51.	3.63	The Committee desire that the question of introducing the performance budgeting system in the River Valley Projects may be seriously pursued with a view to ensure implementation.
52.	3.69	The Committee attach great importance to the delegation of adequate administrative and financial powers to Chief Engineers/Project Managers in the interest of expeditious and timely completion of projects. The Committee stress that the Central Government should set a worthy example by delegating these powers to Project Managers for projects which are directly under them or for projects which are under Control Boards functioning under the Central Government.
53.	3.70	The Committee would also like to know the extent to which powers have actually been delegated by the State authorities to the Chief Engineers/ Project Managers particularly in respect of large and medium projects.

The Committee need hardly point out that where the States have not yet enhanced the delegation of such administrative and financial powers the matter may be pursued with them at a high level so as to expedite the matter.

54. 4.12 The Committee note that many irrigation systems in the country are very old and their usefulness is limited by structural handicaps like outmoded head works, absence of silt-excluding devices etc.

The Committee note that remodelling or replacement of old structures has been taken up only in a few isolated cases. The Committee regret to observe that the programme for modernisation of old irrigation works has not been implemented in a systematic manner and due importance does not appear to have been given by the State Governments to this matter. They would like that greater attention should be paid to remodelling of existing irrigation systems and the matter should be continuously pursued with the State Governments.

55. 4.13 The Committee understand that during the last conference of the State Irrigation Ministers (1976), 15 projects had been identified as priority ones to be included in the Fifth Plan and the State Governments had been asked to prepare projects reports for modernisation. But so far, project reports in respect of only 5 of these projects have been received from the State Governments and are under scrutiny in the Central Water Commission. The Committee desire that the question of preparation of project reports for the remaining 10 projects should be vigorously pursued with the State Governments concerned and the project reports already received scrutinized by the Central Water Commission expeditiously. All efforts should be made

1	2	3
		to ensure that the 15 priority projects are implemented during the Plan period and the improved benefits flowing from them evaluated. The Committee also desire that progress made in the implementation of the scheme should be kept under close watch with a view to initiating measures to ensure their expeditious completion. The benefits accruing from the Schemes should be evaluated and publicised. The experience gained and lessons learnt as a result of the execution of these schemes may be taken into account while sanctioning new projects.
56.	4.14	The Committee desire that the State Governments should also be impressed upon to complete the review of the pre-plan and earlier plan projects expeditiously and prepare a systematic programme of their modernisation in a phased manner. The project reports for those projects which are to be included in the Plan may be prepared immediately.
57.	4.15	The Committee note that the Central Team constituted by the Department of Irrigation has so far visited 12 irrigation projects. The team has made recommendations for modification of shortcomings in the projects and preparation of project reports. Guidelines have also been evolved for preparation of projects for modernisation. In all, the Department of Irrigation have selected 32 projects for review by the Team. The Committee would like the Central Team to complete the review of the remaining projects entrusted to them according to the time schedule. The Committee hope that the recommendations made by the Central Team, would be helpful to the State Governments in reviewing their other projects for modernisation.

58.	4.19	The Committee are concerned to note that there is wastage of water to the extent of 35 to 50 per cent due to seepage. According to the Department wastage could be reduced to 15 per cent if all the channels were lined. The Committee appreciate that due to financial and other constraints it may not be feasible to take up at one time the lining up of all the channels. The Committee note that Government have accepted the recommendations of the National Commission on Agriculture (1976) regarding priorities to be given to lining of busy channels in new projects and smaller channels in existing projects subject to examination of relative economics in each case. They hope that a phased programme will be prepared for lining of channels in new and existing projects giving priorities to these channels where there is too much water wastage to maximise utilisation and its benefits. The Committee feel that lining of channels should be an integral part of the project and this aspect should be borne in mind while scrutinising the project before sanction.
59.	4.20	The Committee understand that inefficiency in canal operations also results in wastage of water through seepage. The seepage can be controlled if the canal operations are run for 24 hours. The Committee would like the authorities to so regulate the canal operations so as to minimise the seepage. The Committee suggest that the matter may be suitably pursued by the Centre with the authorities concerned.
60.	4.28	It is well-known that water-logging is harmful to the crops as it decreases response to the inputs and restricts cropping pattern, besides causing salinity. Provision of drainage is therefore, very important and is inseparable from irrigation. Proper drainage not only increases crop yield but also provides better cropping system and results in better utilisation of soil and water resources.

1	2	3
61.	4.29	The Committee are distressed to learn that up to the Fourth Plan, the provision of drainage was not attended to while framing the project estimates. Field drains are practically non-existent in the command or irrigation projects and intermediate and main drains are not properly maintained in majority of the projects. The Expert Committee set up by the Ministry of Agriculture and Irrigation in 1974 have in their Report (1976) indicated that surface irrigation without proper and/or adequate ground water development has resulted in an alarming rise in ground water table in some parts of the country, creating problems of water logging thereby affecting crop growth adversely and rendering large areas less productive. The Committee are constrained to observe that the awareness about the need for an adequate system of drainage has come rather too late. The Committee feel that the problem of drainage and water logging should have been foreseen at the time of preparation of project reports in respect of the earlier plan schemes and adequate provision made therein. The Committee trust that in the new schemes approved for inclusion in the Plan, drainage system has been adequately planned for.
62.	4.30	In view of the fact that the importance of drainage has been admittedly over-looked till the formulation of the irrigation project schemes in the Fifth Plan. The Committee desire that institutional arrangements should be made to see that this lapse does not occur again.
63.	4.31	The Committee have been informed that no survey has been made about the extent of loss/wastage of water in different irrigation projects and the areas suffering from water logging in their commands. However, according to

the review made by the National Commission on Agriculture, the projects where considerable loss|wastage of water have been found are those of lower Bhwani Project (Tamil Nadu), Shatranji Project (Gujarat) Ghod Project (Maharashtra) and Harsi Project (Madhya Pradesh). Some of the other irrigation projects where drainage problems have been acute are Tungabhadra Nira Canals, Hirakud, Lower Ganga Canal, Kosi, Gandak, Mahakadana, Chambal and Godawari deltas. The World Bank has anticipated acute drainage problem in Sharda Sahayak Project if remedial measures are not urgently taken.

64. 4.32 The Committee are alarmed at the problem of drainage existing in a number of important projects. The situation would not have arisen if adequate attention had been paid to the problem of drainage in earlier plans. The Committee desire that the State Governments should formulate schemes for improvement of drainage system and priority should be given to those projects where the drainage prblem is very acute. In regard to Sharda Sahayak Project, it is imperative that timely action is taken to remedy the acute drainage problem anticipated by the World Bank. The Committee emphasise that the Irrigation potential created at heavy investments should not result in good cultivated land in command areas being rendered unfit for cultivation because of bad drainage and water logging conditions. They would like that an indepth survey of the irrigation water logging in their command areas be made and remedial measures taken according to a time bound programme.

65. 4.44 The Committee note that studies made of some reservoirs have revealed that the actual rate of siltation in most of them has exceeded the original estimates and in some cases even by more than twice. According to the

1	2	3
		Department of Irrigation, hardly anything can be done about the silt deposited in the existing reservoirs. The future siltation can be reduced by adopting soil conservation measures in the catchment areas of the reservoirs. The State Governments are adopting some soil conservation measures in this regard and the Central Government has also sponsored some schemes for this purpose. The Irrigation Commission (1972) had recommended that soil conservation measures in all major projects should be completed in the next 20 years. The Committee note that attenion to soil conservation measures is being paid from Third Plan onward. During the Third, Fourth and Fifth Plans, 30 River Valley Projects in all, have been selected for treatment under the centrally-sponsored scheme of soil conservation in their catchment areas. The Committee are, however, distressed over the tardy progress made in implementation of the Central Sector Scheme. The total area requiring treatment in these catchments is about 79 million ha. of which 10 million ha. of the area is estimated to be critically eroding and needing treatment on a higher priority basis. Beginning from the Third Plan period till the end of 1975-76, only an area of 1.14 million ha. has been actually treated at a total expenditure of Rs. 50.75 crores under the Central Sector Scheme. According to the Department at this rate the remaining area of 8.96 million ha. could be covered in a period of 110 years at an estimated cost of Rs. 1330 crores, while the Fifth Plan provision for this purpose is Rs. 32.46 crores. The Committee note that under the State Sector Schemes an area of 18.71 million ha. has also been treated up to 1975-76. In view of the enormity of the problem and the slow progress made in this regard so far, the Committee suggest that an integrated and realistic programme for treatment of catchment of the various River

Valley Projects to be implemented under the Central Sector and State Sector Schemes should be prepared on a long-term basis. Priority may be given to the treatment of catchments of these reservoirs where the rate of siltation is very high.

4.45 The Committee have been informed that the present norms of silitation are inadequate and a proposal for constitution of a Special Committee to review the norms of siltation in the country is under consideration of the Department of Irrigation. The Committee are greatly concerned at the enormity of siltation problem faced by major and medium dams|reservoirs. They need hardly point out that the rate of siltation and the measures to keep it within safe level should have been an integral part of preparing the detailed project schemes and should have received most critical scrutiny before the sanction was accorded. Had these pre-requisites been complied with in letter and spirit, Committee feel that the present predicament about silting up of a number of reservoirs thus reducing, their useful capacity and life would not have arisen in the present acute form. The Committee would like that the study team proposed to review the norms for siltation of dams and reservoirs may be constituted without further delay and they should be asked to review in depth the adequacy or otherwise of decision followed in the light of field experience as also the practice obtaining in other advanced countries so as to ensure that proper norms are laid down at least now in this behalf and strictly observed.

66. 4.46 The Committee find that in so far as the siltation of canals is concerned, no systematic study on a national basis has been made. But the common experience is that practically all the canals do get silted up and have to

1	2	3
		be desilted. These problems are tackled by the project authorities which are under the control of State Governments. The Committee note that the Central Water Commission who are expected to render expert technical assistnce to the State Governments, have not laid down any guidelines regarding the proper maintenance of irrigation works. The Commission has stated that it has no experience about the maintenance of canal systems. The Committee suggest that the Commission may review the problem in consultation with the States and for this purpose either an Expert Committee may be constituted or a seminar etc. held with a view to evolve guidelines to reduce the incidence of siltage in the canals and evolve efficient measures for maintenance of the canal system in the interest of putting the water resources to best use.
67.	5.11	The Committee note that the utilisation of created irrigation potential which was 91.6% at the end of the Third Plan and 92.5% at the end of the annual plans (1966—69), came down to 90.7% at the end of the 4th Plan and to 88.6% at the end of the 1976-77.
68.	5.12	With a view to ensuring full utilisation of the irrigation potential created, Government should keep a close watch over the implementation of the guidelines on different aspects of Command Area Development Programme by the State Governments and monitor the progress made in utilisation.
69.	5.13	It is well-known that utilisation of irrigation facilities results in increased production of foodgrains and other crops. The Committee cannot but stress too strongly the importance of optimum utilisation of the created

irrigation potential on which heavy investments have been made. The Committee are distressed to note that at the end of 1976-77 there was a vast gap of 2.7 million hectares in the utilisation compared to the created irrigation potential. The Committee would like Government to take determined measures to ensure simultaneous execution of Command Area Development works so that the irrigation potential created is utilised immediately. The Committee would like that a close watch should be kept on the utilisation of irrigation potential in respect of all irrigation projects and remedial measures taken expeditiously to avoid any bottlenecks in the utilisation of irrigation facilities.

70. 5.20

The Committee note that the non-provision of field channels constitutes the main cause for the lag in the utilisation of irrigation potential. This is *:nter-alia*, attributed to lack of spirit of cooperation among the cultivators and lack of funds particularly with small farmers. The Committee of State Ministers of Irrigation recommended that adequate provisions should be made in the existing State laws to empower Irrigation Departments to take up field channel works on behalf of the cultivators. The Committee were informed that to expedite the construction of field channels, most of State Governments have enacted suitable laws. The draft model Irrigation Bill which has been commended to the State Governments, by the Department of Irrigation also makes suitable provision in this regard. The Committee desire that this matter should be pursued vigorously with the State Governments concerned to ensure that adequate provision in this regard is made by all of them.

1	2	3
71.	5.21	The Committee learn that under the command area development programme, the work of construction of field channel is done at the cost of farmers, by arranging loans from institutional sources. This work is however in the initial stages and is likely to catch up as the flow of institutional funds gets streamlined. The Government of India has also been giving loans to the State for accelerating the construction of field channels. The Committee need hardly emphasise the importance of field channels in ensuring accelerated utilisation of irrigation potential. The Committee urge that concerted efforts should be made to streamline and remove bottlenecks in the flow of institutional credit for the construction of field channels so that there is no lag in the utilisation of created irrigation potential.
72.	5.22	The Committee find that a number of important projects in the State of Andhra Pradesh, Assam, Bihar, Gujarat, Maharashtra and Uttar Pradesh are lagging behind in the construction of field channels. The Committee desire that necessary steps should be taken to expedite the construction of field channels in these projects and the Committee informed of the development effected as a result thereof.
73.	5.36	The Committee feel concerned over the large gap between the irrigation potential created by the Kosi Project and its utilisation. As against the potential of 416,000 ha. created by the end of March, 1976, the utilisation upto the March, 1977 was 198,000 ha., the lag in utilisation being 218,000 ha. (52%).
74.	5.37	One of the major reasons for under-utilisation of the potential is the inability of the canal to take full discharge due to heavy siltation in head

reaches and frequent shut down of power house after its completion. The Committee consider that it is necessary to have a permanent solution of the problem of siltation. They are not happy over the delay in taking a decision on the recommendations made by the Expert Committee set up in 1973 in this regard. The Committee desire that a decision on these recommendations should be taken without further delay.

75. 5.38 An other reason for under-utilisation of the irrigation potential is the unrealistic cropping pattern envisaged in the project. The project report envisaged sizeable percentage of area to be irrigated in the monsoon period but due to heavy rainfall during the monsoon period the cultivators were not prepared to take water from the canal. The Committee would like Government to take concerted measures to promote hot weather and other crops which would result not only in utilisation of the irrigation facilities but higher yields and income to the farmers.

76. 5.39 The Committee note that there is inadequate response from cultivators about construction of field channels and that there are inadequate extension facilities in the Command area. They note that Kosi Command Area Authority was set up in October, 1973. The Committee desire that under the Command Area Development Programme, concerted efforts should be made to speed up construction of field channels, develop proper cropping pattern and provide adequate extension facilities. The Committee need hardly stress that all efforts should be made to fully utilise the irrigation potential created at a considerable cost.

77. 5.40 The Committee understand that because of occurrance of high patches and water logged areas in the project command, the area actually available

1	2	3
		for irrigation is less than what was assumed in the original project. A Committee set up by the Government of Bihar in September, 1973 has suggested reduction in the potential of the project and that the matter is under consideration of the Government of Bihar. It is thus evident that the project report was not prepared after careful survey and investigation. The Committee emphasise that the irrigation potential should be realistically estimated at the time of preparation of project reports.
78.	5.41	The Committee would like to point out that the main reasons which have been adduced for under utilisation of irrigation potential in this project are :— (i) Unrealistic Crop pattern envisaged in the original project. (ii) Heavy siltation. (iii) Inadequate extension facilities in the Command area. The Committee consider that these difficulties are largely the result of defective planning and surveying and want of advance action. The Committee desire that a careful study be made of the difficulties/deficiencies experienced in these projects so as to draw meaningful lessons to avoid the same in future projects. The Central Water Commission should take necessary remedial measures to ensure better planning of irrigation projects by State Governments and their critical scrutiny by the Commission. The guidelines regarding the preparation of irrigation project reports may be modified suitably where considered necessary.

79.	5.44	The Committee are distressed to note that in the case of the Gandak Project, out of total potential of 731 thousand hectares created up to March, 1976 the actual utilisation at the end of March, 1977 was 400 thousand hectares. The lag in utilisation was 331 thousand hectares (45.3%) even after a lapse of one year. Out of the two beneficiary States of Bihar and U.P., the position of utilisation was much worse in Bihar. The Committee would like to stress that a concerted drive should be undertaken for the construction of field channels, execution of drainage schemes and development of Command Area, particularly in the State of Bihar where the lag in utilisation of potential is very large.
80.	5.50	The Committee are concerned to find that while the created irrigation potential increased to 393,000 ha. up to the end of the March, 1976, the utilisation continued to be 288,000 ha. up to March, 1977, the lag having increased to 105,000 ha. (26.7%). The Committee desire that serious attention should be paid to improve the utilisation of the potential created.
81.	5.51	The Committee are constrained to observe that originally the distribution system of this project was to be constructed unlined with a lower capacity. With lining the capacity has been increased from 75% to 110% that is an increase of 35%. The Committee are unable to appreciate why this aspect was not taken care of at the planning stage of the project which is in the desert area. They would like that the lining of the distribution system which has already been constructed unlined should be expedited, particularly in vulnerable reaches.
82.	5.52	The Committee note that a loan of 83 million dollars has been sanctioned from the World Bank for the development of the Command Area.

1	2	3
		The Committee desire that greater attention should be given to the colonisation scheme and the development of the Command area so that the potential created is fully utilised within a minimum time lag.
83.	5.55	The Committee note that considerable under-utilisation of the irrigation potential continues in Tungabhadra H & L Level Canals. The lag between potential created by March, 1976 and utilisation achieved by March, 1977 was 71 thousand hectares (15.8%). With a view to improving utilisation of irrigation potential, a scheme for strengthening and raising the canal embankments has been taken up for execution. The Committee hope that necessary follow up action will be taken on the recommendations of the Central Team with a view to effect improvements in the project and maximise the utilisation of the potential. The Committee urge that the preparation of project report for improvement and modernisation would be expedited and implementation undertaken at the earliest.
84.	5.70	The Committee note that the lack of field channels is the main reason in under utilisation of irrigation potential in Kakrapar, Ukai, Mahi State-I, Chambal, Sone and Ramganga projects. Command Area Development Authorities have been set up in these projects. The Committee desire that the work relating to the construction of field channels should be given priority. It should be ensured that necessary funds are to be made available for the purpose of construction field channels and other on-farm development works.

85. 5.71 The Committee find that in some projects like Kakrapar, Ukai and Mahi Stage-I the under-utilisation of irrigation potential created is also due to the fact that under the existing cropping pattern, the demand of water by cultivators is low particularly during the monsoon. The Committee consider that these aspects should be taken care of at the time of preparation of the projects and advance preparations should be made to educate the farmers to take a new cropping pattern which would increase the yield and the income. The Committee desire that the cropping pattern in the areas of these and other such projects should be carefully evolved and necessary steps taken to encourage the cultivators to adopt improved variety of crops in order to ensure fuller utilisation of irrigation potential and greater benefit to the farmers through increase in yields. The Committee suggest that cropping pattern and the irrigation water requirements in the Command Areas of the various projects should be kept under constant review in view of rapid development in the new varieties of crops.

86. 5.88 The Committee note that a modest beginning was made during the Fourth Five Year Plan in respect of Command Area Development Programme, Central assistance was provided to the States in the form of infrastructure items like construction of Ayacut roads and market complex in the command area of 19 irrigation projects in the country. The cost of works sanctioned was Rs. 29.29 crores but due to constraints of resources and curtailment of budget provision a sum of Rs. 14.78 crores only was released to the States till the end of the Plan. With regard to the Land Development Programme it was contemplated that the State would provide necessary services and inputs and the Cooperative Sector could be brought in to get credit facilities for farmers but the participation of the States did

1	2	3
		not come up to expectations. The Committee are concerned to note that while some progress was made in the construction programme of roads and markets with Central assistance, the State Governments did not make the expected headway in their implementation of the land development programme as a whole. As a result of review, it was decided that the roads and market programmes should not be proceeded with and higher priority should be given to construction of field channels and on-farm development works. The Committee regret to observe that the Command Area Development programme for the Fourth Plan was neither well conceived nor properly implemented in the field.
87.	5.89	The programme of work for the Fifth Plan covers survey, design and preparation of plans for on-farm development which include construction of field channels, field drainage, land levelling and land shaping, strengthening of existing extension services, improvement of irrigation systems, strengthening of communications, scientific crop planning etc. Fifty one irrigation commands in 16 States having ultimate irrigation potential of about 13 million hectares have been identified for integrated Command Area Development. A provision of Rs. 120 crores has been made in the Central sector, and Rs. 96.63 crores in the State sector. An investment of Rs. 210 crores is envisaged from institutional sources for giving loans to the farmers for on-farm development works. The Committee however find that progress of implementation of the programme continues to be tardy. Out of 51 only 36 Command Area Development authorities have been set up. The question of setting up Command Area Development authorities is still under correspondence with some States like Tamil Nadu and Kerala. Whatever be the

decision about the Constitution of the authority, the Committee stress that integrated development of Command Areas should not be allowed to suffer. The work should be progressed to achieve the physical targets in the Fifth Plan. During the First two years of the Fifth Plan an amount of Rs. 26 crores was released by the Centre to the States which include Rs. 11.6 crores for spill over works of the Fourth Plan. There were serious shortfalls in achievement of targets in construction of field channels (shortfall 16 thousand hectare) field drainage (shortfall 4 thousand hectare) and land levelling and shaping (shortfall 87 thousand hectare). The Committee are not satisfied with the progress of establishment of Command Area Development Authorities, flow of funds and the achievements during first two years of the Fifth Plan. The Committee would like that the activities of the Command Area Organisations should be closely watched and monitored and any bottlenecks experienced in the smooth progress of work should be removed without delay. It is also important that the Central Committee on Acceleration of Irrigation Projects, Command Area Development and Coordination Committee set up by the State Governments are made effective in the speedy implementation of the programme. The Committee need hardly emphasise that integrated development of command area is necessary to achieve optimum utilisation of irrigation potential created and increased agricultural production. The Committee suggest that physical target in hectares and increased agricultural production should be fixed for each Command Area and achievements reviewed periodically.

88. 5.90 The Department should ensure that the State authorities submit progress reports regularly and these are scrutinised carefully with a view to resolving difficulties and extending technical assistance for speedier implementa-

1	2	3
		tion. Periodical visits should be paid to the main projects so that the problems affecting implementation of the programme are discussed and resolved with the Command Area Development Authorities in the field.
89.	5.91	During the Fifth Plan an investment of Rs. 210 crores is envisaged from the institutional source for giving loans to the farmers for on-farm development works. The procedure for arranging bank loans for on-farm development involving millions of farmers was stated to be lengthy and complex and had stood in the way of quick progress in the implementation of the command area development programme. The Committee would like a close watch to be kept over the difficulties coming in the way of implementation of the Command Area Development Programme with particular reference to meeting the needs of the farmers and remedial measures taken without delay. They would like to judge the adequacy and efficacy of the measures already taken and that may henceforth be taken by the results achieved in the implementation of on-farm development works.
90.	5.92	The Committee desire that intensive effort should be made to ensure effective participation by the farmers in the various activities of the command area development programme. In areas which are at present not covered by the programme, the farmers may be motivated to take up such works themselves.
91.	5.101	The Committee note that according to the Expert Committee on the Integrated Development of Surface and Ground Water (June 1976) although integrated development and conjunctive use of surface and ground water is

in vogue in some form or the other in some States, there is no scientific planning behind this. The Expert Committee has recommended establishment of Pilot schemes for integrated and conjunctive use in the commands of 19 projects in 11 States. The Conference of the State Irrigation Ministers held in September, 1976 also recommended that the State Governments concerned should undertake Pilot projects and collect all the relevant techno-economic data. The Committee desire that the matter should be vigorously pursued with the State Governments concerned and a close watch kept over the progress made by the Pilot projects in the collection of the requisite data. The Committee need hardly emphasis the importance of integrated area planning with harmonised development of surface and ground water resources with a view to achieving optimal utilisation of total water resources and maximising agricultural production. The Committee desire that as a result of the experience of the working of pilot projects, suitable schemes may be taken up involving scientific planning of integrated use of surface and ground water resources in the country.

92. 5.105 The Committee note that with a view to ensure efficient water use and soil management in irrigation commands, 50 Pilot Projects on Soil and Water Management are proposed to be established by the end of the Fifth Plan. 46 Pilot projects have so far been sanctioned including 23 such projects sanctioned upto the end of Fourth Plan. The Committee however find that out of these, only 13 projects have so far been completed. The Committee are unhappy over the slow progress made in completing the Pilot projects which have been assigned the important task of evolving and demonstrating soil and water management practices in an integrated manner. The Committee desire that vigorous steps should be taken to speed up the completion of the

1	2	3
		remaining projects. The Committee need hardly emphasis that the experience gained from these projects should be utilised in planning soil and water management programmes in the irrigation commands on a large scale.
93.	6.7	The Committee note that a sum of Rs. 2.45 crores was sanctioned in September, 1975 by the Ministry of Irrigation and Power for data collection and studies for preparation of schemes to utilise surplus water resources of the river basins in the drought prone areas during the Fifth Five Year Plan. For this purpose a Drought Area Study Organisation has been set up in the Central Water Commission. The Organisation will carry out comprehensive studies for all the 88 districts in 12 States which have been identified as drought prone areas by the erstwhile Ministry of Food and Agriculture and the Irrigation Commission (1972). These studies would involve identification of Drought Prone Areas, availability of water at present, potential for harnessing further water and possibility of transferring water from adjoining areas having surplus water. According to the Department of Irrigation, the study is expected to take time since active support of the State Governments is essential for purposeful study of making suitable schemes for the benefit of drought prone areas. The Committee, however, find that data collection for only 2 districts in U. P. and Gujarat was expected to be completed during 1976-77 and this work is to be taken up in 35 districts during 1977-78. The Committee are not satisfied with the programme envisaged for the years 1976-77 and 1977-78. They desire that the data collection and detailed studies should be speeded up and a time bound programme prepared for completing the whole work with active cooperation of the State Governments.

94.	6.8	The Committee note that under the Drought Prone Areas Programme 24 medium irrigation schemes having irrigation potential of 59,000 hectares, have been sanctioned the States of Bihar, West Bengal, J & K, Tamil Nadu, Andhra Pradesh, Gujarat, Haryana, Rajasthan, Madhya Pradesh, Maharashtra, Karnataka, Uttar Pradesh and Orissa at an estimated cost of Rs. 34 crores. Only such schemes have been selected as can be started immediately and completed within 2 or 3 working seasons so that substantial benefit can accrue by the end of the Fifth Plan. Besides, minor irrigation schemes with an outlay of Rs. 111 crores have also been included in the programme for the Fifth Plan. During the period April, 1974 to 30th September, 1976, a number of minor irrigation schemes have been completed creating an irrigation potential of about 76,000 hectares at an expenditure of Rs. 41 crores. The Committee are anxious that these medium and minor irrigation schemes included in the Drought Prone Area Programme should be given periority and all out efforts be made to complete them during the Fifth Plan, so that the needs of the areas are met to the extent possible.
95.	6.9	The Committee note that during the period 1974—77 an amount of Rs. 114 crores was spent for relief works in drought prone areas and of that, nearly Rs. 88 crores was allocated for augmentation of water for irrigation and drinking. The Committee recommend that a shelf of schemes should be kept handy for implementation in drought prone areas where such funds could be usefully spent in order to create durable capital assets which would help to reduce the proneness to drought.
96.	6.10	The Committee desire that it should be ensured that bottlenecks like inadequacy of funds should not stand in the way of providing irrigation

1	2	3
		facilities in the drought prone areas. The Committee emphasis that creation of irrigation facilities in these areas would go a long way in reducing large scale expenditure incurred on relief measures in these areas.
97.	7.16	The Committee note that under the provisions of Inter-State Water Disputes Act, 1956, 3 tribunals were appointed in 1969 to adjudicate on water disputes pertaining to Krishna, Godavari, Narmada rivers. Working of these tribunals has shown that recourse to adjudication by tribunals for Inter-State Water Disputes is very dilatory, time consuming and expensive and has in no way acted as deterrent to the multiplicity of dispute. Only one tribunal (Krishna Water Dispute Tribunal) has given its final report in May, 1976. The other two disputes on Godavari and Narmada Waters which are before the tribunals are still outstanding. The Committee feel concerned that these disputes have not been settled even after a lapse of seven years. They would urge that effective measures may be taken by all concerned so that these disputes are settled expeditiously.
98.	7.17	The Committee are glad to note that during the last few years good results have been achieved in the settlement of seven Inter State Water Disputes as a result of negotiations. Out of remaining four major disputes, in case of Godavari and Narmada Waters, as a result of negotiations the States concerned have reached some agreements, pending decisions of the tribunal without prejudice to their claims before the tribunals. Under these agreements some projects can be cleared for being taken up by the States concerned. in the case of 2 other major disputes relating to the use of waters of Yamuna

and certain rivers in Bihar and West Bengal also some progress has been made. The Committee desire that all out efforts should be continued to bring about settlement of the outstanding issues.

98. 7.18 The Committee need hardly emphasise that the Union Government should assume an effective and beneficial role in the speedy settlement of Inter-State Water Disputes so that the interest of the country as a whole for the development of irrigation facilities does not suffer because of such disputes.

99. 8&9 The Committee note that there is multiplicity of State Laws covering various aspects of Irrigation Management and Administration. As early as 1972 the Irrigation Commission had recommended that the laws relating to irrigation should be unified and simplified. In pursuance of the recommendations of the Commission the Indian Law Institute which was asked to study existing irrigation Acts and suggest a model legislation for guidance of States, prepared a draft of "Model Canal Irrigation and Drainage Bill". A Committee of Experts which was appointed in July, 1974 to examine the Draft Bill finalised it in February, 1976 which was commended to the State Governments for adoption. The second State Irrigation Ministers' Conference held in September, 1976 also considered the model bill and recommended that this may be considered by the State Governments for adoption with such modifications as may be necessary. The Committee are concerned that a period of more than four years has been taken in drafting and finalising the Model Bill. The Committee feel that in view of the importance of a uniform legislation, the process of drafting and finalisation of the model bill should have been expedited and a time limit fixed therefor. The Committee note that the Bill contains important provisions aimed at fuller utilisation of created irrigation potential and greater

1	2	3
		crop production. It provide for expeditious construction of field channels, on-farm development, drainage, scientific cropping pattern, public participation in administrative irrigation system, checking unauthorised use of water, and settlement of disputes. The Model Bill also seeks to remove impediments in realisation of betterment levy and provides a basis for determining the unearned increment in the value of land as a result of irrigation. The Committee desire that the Department of Irrigation should activity pursue with the State Governments the speedy adoption of the model bill, with necessary modifications relevant to their local conditions, so that the important objective of fuller utilisation of irrigation potential is realised at the earliest.
100.	8.28	The Committee note that so far only six States namely Bihar, Gujarat, Punjab, Rajasthan, Maharashtra and Orissa have set up Inter-Departmental Water Rates Review Boards and the matter is still under correspondence with other States. The Committee desire that necessary follow up action should be taken to persuade the remaining States to set up the Inter-Departmental Water Rates Review Boards.
101.	8.29	The Committee hope that water rates would be fixed by these Boards realistically taking into account the various factors like operational and maintenance etc. expenditure of the projects and the effect on price structure of agricultural Commodities.
102.	8.30	The Committee would further stress that utmost economy should be observed in the execution of irrigation projects by reducing overheads, delays in execution etc. as these tend to increase the costs considerably.

103.	9.3	The Committee note that irrigation research stations have been established by most of the States to tackle the various irrigation problems connected with major irrigation projects. The Union Government have also set up two Research Stations viz. Central Water & Power Research Station, Pune and Central Soil and Material Research Station, New Delhi. The Central Board of Irrigation and Power, an autonomous body coordinates research in the field of irrigation engineering and for the dissemination of knowledge obtained through researches being carried out at the various research stations in the country. To encourage basic research, grants are being given to various research stations, educational institutions and autonomous bodies to whom problems are allotted for conducting research. The Committee desire that the problems for research for allotment to the various institutions should be carefully selected to avoid any overlapping and wasteful duplication of efforts. Priority should be given to the problems needing immediate attention and the progress made by the research stations should be kept under watch. The Committee also recommend that there should be a system of periodical evaluation of the research work done by the various Central and State Research Stations, with a view to assessing the benefits from the research work done by them and effecting improvement in strengthening research efforts, where necessary.
104	9.4	The Committee note that the results of research conducted have been applied with advantage in some projects. The Committee, however, understand that much remains to be done for tackling problems of irrigation projects. The Projects to be undertaken are likely to present many complicated problems not encountered so far as the schemes are undertaken at locations which are much less favourable than already completed. For example,

1	2	3
		dams have to be constructed where foundation conditions are poor and the hazard of earthquakes exists. At some places, it is difficult to obtain proper construction materials within reasonable distance. Cost of construction materials needs be brought down through research on the use of cheaper materials' standardisation which can lead to economy needs to be promoted. Research is also needed to revise many conventional concepts regarding the rate of flow and distribution of sediments in reservoirs. The Committee stress that research and development activities should be intensified to effect economy and to provide solution to many such problems as are expected to be encountered during the execution of new projects. The Committee also understand that future research would involve use of more sophisticated instruments and tools. The Committee are anxious that adequate funds be made available to cope with future activities of the research stations.
105.	9.5	The Committee note that a dam safety service has been established in the Central Water Commission specifically charged with the responsibility of reviewing important designs, features and exercising check during construction, commissioning and subsequent operation of important dams so as to obviate or reduce the possibility of failures of such structures. The Committee are concerned to learn that in the past there were 13 failures and 27 accidents in dams in our country. The Committee have no doubt that the dam safety service would intensify their activities in fulfilling the task assigned to them. They hope that with the setting up of dam safety service the failures and accidents on the dams will be minimised if not eliminated, altogether.

106. 9.19 The Committee note that a beginning was made by the Central Water Commission in 1974-75 to arrange refresher courses in specialised fields for the benefit of practising engineers. In view of the increased activity in the development of irrigation, the Committee feel that greater attention should be paid to the training of practising engineers in the various specialised fields. The Committee note that the Commission propose to run another special course for the serving engineers with particular emphasis on agricultural engineering. The Committee desire that the Commission should identity more areas in which specialised refresher courses may be necessary for the serving engineers.

107. 9.20 The Committee suggest that the frequency of the courses and the number of trainees may also be suitably increased. It should also be ensured that the engineers deputed to the courses take the training seriously and not merely as a holiday trip so that the training imparted to them is really helpful in efficient discharge of their duties.

108. 9.21 With regard to Command Area Development Programme the Committee desire that the department should constantly keep under review the need for trained officers and workers with a view to introducing more training programmes for senior and medium level officers and strengthening training facilities for extension workers.

The Committee are perturbed to note that out of 4 teams of officers sent during 1973-74 on Study Tours to foreign countries on UNDP/FAO fellowship to see the various aspects of integrated command area development works, 2 batches of officers who were expected to submit reports

1	2	3
		did not submit any report. The Committee take a serious view of the non-submission of reports by the officers concerned. They would urge that in all cases where officers are sent abroad on Study Tours the Department concerned should insist upon submission of reports so that the knowledge gathered by them can be of benefit to others. The Committee desire that officers concerned in these cases should be suitably dealt with for their failure to submit a report of the study tour.
109.	10.22	The Committee have been informed that there was no overall shortfall under the minor irrigation programme in the various plans. Upto the Fourth Plan against the target of 23.44 million hectares, the actual potential created was 23.96 million hectares (Gross). The Committee have however noticed that even up to the Fourth Plan there was shortfall in targets in some States like Andhra Pradesh, Bihar, Madhya Pradesh and Eastern States. The target fixed during the Fifth Plan is 6 million hectares (net). But the actual achievement during the first two years of the Fifth Plan was 1.99 million hectares only. The Committee apprehend that at this rate it would be difficult to achieve the target of 6 million hectares by the end of 1978-79. In view of the importance of minor irrigation for increasing production of agricultural commodities including food-grains, the Committee would like Government to take concerted measures to step up the execution of minor irrigation schemes so that the target of 6 million hectares is achieved at the end of 1978-79.
110.	10.23	In view of the fact that institutional financing is important for successful implementation of the programme of minor irrigation, the Committee urge that concerted steps should be taken

to step up the investment of institutional finance and remove bottlenecks in its mobilisation so as to ensure that the target of Rs. 1462 crores envisaged for the purpose during the period 1974-75 to 1978-79 is achieved. The Committee would stress that special attention should be paid to less developed States where the credit structure is weak.

111. 10.24 The other measures taken to step up tempo of minor irrigation are stated to be intensification of arrangements for monitoring of programmes at the Central as well as at State level, strengthening Surface Water and Ground Water Organisations in the States, stepping up rural electrification programme and providing power for irrigation, pumping on an over-ridding basis. The Committee need hardly stress that all out efforts should be made to implement these measures and timely action should be taken to remove bottlenecks if any in their implementation. The Committee emphasise that effective steps should be taken to achieve the target of net addition of 6 million hactares envisaged by the end of 1978-79.

112. 10.25 The Committee note that a Centrally sponsored scheme has been approved for strengthening the State Surface Water Minor Irrigation and Ground Water Organisation during the remaining period of Fifth Plan under which 50 per cent grant on a matching basis will be provided to the States. The Committee trust that the State Governments have submitted their schemes in this regard. In case where the schemes have not been received from the State Governments, the matter should be vigorously pursued with them. The Committee desire that these schemes should be implemented on urgent basis.

1	2	3
113.	10.26	All minor irrigation works have a limited span of life. The failures occur due to siltage, damage from floods, cyclones, land slides etc. gradual depreciation followed by collapse of structures and wear and tear of pumping equipment. The rates of depreciation per annum for different minor irrigation works have been stated to vary from 1 per cent to 16 per cent. The weighted average roughly comes to 5 to 6 per cent per annum. The Committee desire that necessary steps should be taken to provide technical assistance to the States in the matter of better designing, construction and maintenance of minor irrigation works with a view to minimising loss of potential due to failures and depreciation. In paragraph 2.80 of their 76th Report (1974-75) the Committee had recommended creation of facilities for short-time training in tubewell repairs and servicing and encouragement of service cooperatives of technical personnel who could undertake repairs of tubewells on custom basis. The Committee were informed that this suggestion was being communicated to the State Governments for their consideration and implementation. The Committee desire that the progress made in the implementation of this suggestion should be kept under close watch with a view to ensuring that tubewells are properly maintained.
114.	10.44	The Committee are not satisfied with the progress made in carrying out hydrogeological surveys. They consider that in view of the importance of these surveys for assessing the ground water potential to meet the needs of irrigation and drinking water, higher priority was required to be accorded to this work. The Committee urge that necessary steps should be taken

to accelerate the survey programme of the uncovered area and adequate funds may be made available for the purpose, so that hydrogeological survey of the remaining area is completed during the next five years.

115. 10.45 The Committee feel that the progress made in deep exploratory drilling by the Central Ground Water Board is far from satisfactory. As the large scale development of ground water would depend on the deep exploratory drilling, the Committee desire that vigorous efforts should be made to step up the programme and achieve the targets laid down for the period 1973-74 to 1978-79. The Committee further suggest that a perspective plan with time bound programme may be drawn up for undertaking deep exploratory drilling work. The Committee need hardly emphasize that techniques should continue to be improved to increase the percentage of successful bores.

116. 10.46 The Committee find that a long-term perspective plan for investigations to be carried out by the Central Water Board had been formulated in 1971. This perspective plan had tentatively visualised undertaking of 27 projects to cover different representative hydrological situations in the country. The Committee, however, find that so far only four special projects have been actually completed and seven are under execution. The Committee feel that progress in the completion of the projects is very slow. In view of the importance of these projects in developing technology, norms and standards for planning and implementation of ground water schemes, the Committee desire that the completion of the seven projects in hand should be expedited. The Committee recommend that the question of taking up the remaining projects should be carefully considered and a time bound programme prepared for their completion.

1	2	3
117.	10.47	The Committee stress that serious attention should be paid by the Standing Teams and Monitoring Cell to keep the programme of ground water development under close review. They should identify the technical, organisational and other weaknesses in the development programme and take necessary steps to remove the bottlenecks coming in the way of speedy development of ground water resources.
118.	10.48	The Committee hope that in the light of experience gained, the Central Ground Water Board would continue to review the guidelines and provide technical literature for bringing about improvement in planning and execution of ground water development schemes.
119.	10.49	The Committee feel that adequate trained man-power will go a long way in bringing about efficiency and economy as also in removing organisational and technical weaknesses in the ground water development programmes. The Committee, therefore desire that the requirements for training of officers and staff should be carefully reviewed.
120.	10.50	The Committee desire that the question of having suitable legislation for regulation, control and management of ground water should be pursued with the State Governments concerned.
121.	10.51	The Committee are of the view that rain waters and surplus river waters in rainy season can be used with advantage to recharge the underground water wherever the underground water level has gone down and the low water

table is causing scarcity of water. They would like to suggest that feasibility studies for utilisation of such waters may be undertaken and necessary schemes formulated and implemented to augment the underground water resources.

122. 11.23 The Committee note that with effect from 1st November, 1974, a separate Department of Irrigation has been set up under the reconstituted Ministry of Agriculture and Irrigation. The Department of Irrigation is responsible for laying down the National Policy for development and regulation of country's water resources in respect of major and medium irrigation schemes. Minor irrigation, Command Area Wing and Central Ground Water Board are under the control of the Department of Agriculture. The Irrigation Commission in their report (1972) recommended that the Central Ground Water Board should be transferred from the Ministry of Agriculture to the Ministry of Irrigation and Power. The National Commission on Agriculture recommended in 1976 transfer of Minor Irrigation and Command Area Wing from the Department of Agriculture to the Department of Irrigation. The Committee have been informed that no decision has yet been taken on the recommendations of the Irrigation Commission made in 1972 and of the National Commission on Agriculture in 1976. These recommendations would be examined by the Committee of Secretaries, and it is not presently possible to indicate the precise time when a final decision is likely to be taken on these recommendations. The Committee regret the delay in taking decision on these important recommendations. They would like Government to take an early decision in the matter. The Committee hope that in the meantime, effective coordination would be maintained between the various Departments with a view to speedy implementation of the Irrigation and Command Area Development Projects.

1	2	3
123.	11.14	The Committee are glad to note that in pursuance of the recommendations of the Irrigation Commission (1972), both technocrats and generalists are treated at par in the case of appointment to the post of Secretary to the newly constituted Department of Irrigation. The Committee hope that this will help in increasing the efficiency and expedition of work in the Department.
124.	11.22	The Committee note that for the efficient execution of various major inter-State projects, the Central Government has established Control Boards. At present five inter-State Control Boards are functioning (Mahi, Gandak, Tungbhadra, Bhakra and Beas) and two more Control Boards (Betwa and Bansagar) have been set up recently but these have not started functioning. The Committee note that there is no uniformity in the functioning of the various Control Boards, while the Mahi Project has a number of Special Committees to look after different aspects of the project, there are no such committees in case of Gandak and Tungbhadra projects. There is also no fixed periodicity for the meeting of the Control Boards. The Committee consider that since the Control Boards are functioning in a number of projects, it would be desirable if their working is evaluated with a view to evolving a broad organisational pattern and bringing about improvements in their functioning so as to make them more effective for speedy and economic execution of the projects.

MGIPRRND—(Sec. IV Day)—31 LSS/77—22-3-78—1050