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GOVERNMENT OF INDIA
MINISTRY OF WATER RESOURCES

Report of the Working Group On Major & Medium Irrigation and Command Area Development For the XII Five Year Plan (2012-2017)

New Delhi, November, 2011

FOREWORD

It gives me great pleasure to present the report of the Planning Commission's Working Group on Major and Medium Irrigation and Command Area Development (MMI and CAD) for the 12th Five Year Plan. The working group had a broad representation from Government of India, State Governments, Research community as well as NGOs. The working group had eight meetings during which views were solicited from various quarters to identify the problems and challenges of the MMI and CAD sector that the 12th Five Year Plan should address. The working group identified five key challenges:

[a] achieving fuller utilization of created facilities;
[b] improving water use efficiency in MMI projects;
[c] ensuring physical and financial sustainability of MMI projects;
[d] rationalizing irrigation service fees (ISF) and improving their collection ratio;
[e] incentivizing State Irrigation Agencies for the promotion of Participatory Irrigation Management (PIM) and volumetric water pricing and delivery to Water User Associations (WUAs).

MMI and CAD projects form the backbone of the country's water and agricultural economy. Their contribution to national food security is vital and hence sustainable improvement in their utilization and management is critical for national water security.

The Working Group was of the view that growing gap between irrigation potential created (IPC) and irrigation potential utilized (IPU) is a major area of national concern. The gap is increasing because of several reasons, *inter alia*:

[1] slow pace of CAD works;
[2] depletion of professional staff in state irrigation agencies;
[3] paucity of non plan funds available with irrigation departments resulting in decline in operation and maintenance of MMI projects and growing default maintenance.

Closing the IPC-IPU gap is also a "low hanging fruit" which can be picked by investing in CAD works, ARM projects and irrigation management reforms. The Working Group has therefore tried to strike a balance between developmental activities, irrigation management reform and capacity building of state irrigation agencies. A fine balance has also been struck in the investment proposals between taking up of new projects and improving the speed of existing and old projects.

Improving the management of MMI and CAD sector is also hampered by the lack of adequate data needed for benchmarking and monitoring the performance of MMI projects in the country. In many other sectors of the economy such macro-level data gets generated from standardized management information system implemented at the project/enterprise level. In the MMI sector, such management information systems remain underdeveloped. The Working Group is strongly of the view that the water resources information system (WRIS) being implemented by CWC/Ministry of Water Resources should be significantly augmented. This would make it possible to monitor the progress in the 12th Five Year Plan along specific monitorable targets recommended by the Working Group as follows:

i. Reducing the gap between IPC and IPU by 10 million hectare (mha) through CAD etc.
ii. Increasing the ISF collection of MMI to the level recommended by the 13th Finance Commission;
iii. Increasing ISF collection through WUAs to 50 percent of the total for the MMI sector of the country;

iv. Increasing the MMI irrigated area served by volumetric water delivery and irrigation service contracts with WUAs to 1 million ha;
v. Restoration of about 2.2 mha of lost irrigation potential through ERM of MMI projects
vi. Creation of additional irrigation potential of about 7.9 mha
vii. Improving water use efficiency from current level of about 30% to about 36%.

An outlay of Rs.341,900 Crores is recommended for the MMI sector of which Rs.208,600 Crores would be in the state sector and Rs.133,300 Crores would be in the central sector. The bulk of the investments proposed are for completing ongoing projects, undertaking selected new projects, imparting major trust to ERM and CAD projects. In addition, the working group has also proposed allocations for strengthening WRIS, restructuring water resources organizations and for promoting research and capacity building. Recommendations have been made for restructuring AIBP and increasing its allocations.

An Irrigation Management Fund of Rs.10,000 Crores has been proposed. The Working Group recommends that the Central Government should provide every year a matching grant to each state equal to its irrigation service fee (ISF) collection. The Working Group believes that this would not only incentivize state irrigation department to improve ISF collection through better service provision but also make more resources available in the hands of MMI system managers for proper operation and maintenance of systems. Additionally, the Working Group has also recommended a 30% incentive on all ISF collected by a state through WUAs. An additional 20% incentive is recommended for ISF collected against volumetric water supply to WUA under irrigation service contracts between WUAs and irrigation departments. Under this scheme, in principle, the irrigation department of any state can augment its operating budgets substantially by rationalizing its ISF, by improving the collection ratio, by aggressively promoting PIM and volumetric water delivery. The Working Group is of the view that such a scheme of incentivizing state irrigation agencies will, with proper implementation, produce myriad beneficial impact. In particular, it will: [a] improve the ISF collection ratio; [b] generate more accurate data on irrigation potential utilized; [c] give strong fillip to PIM; [d] speed up CAD; [e] encourage rationalization of ISF levels; [f] encourage volumetric water supply and pricing; [g] foster partnership between irrigation agencies and WUAs; and [h] in general help reduce the gap between IPC and IPU.

I would like to place on record my appreciation and thanks to all the members of the Working Group. A number of officers and staff members of the Ministry, National Water Development Agency and Central Water Commission have provided valuable contribution during the course of preparation of the report. I acknowledge the efforts made by all of them and would particularly like to mention the active contributions of Shri M. E. Haque, Member(WP&P), Central Water Commission, Shri A. B. Pandya, Director General, NWDA and Member Secretary of the working Group and his team comprising of Shri P. S. Kutiyal, Director(P&P), and Shri Shashank Bhushan, Astt. Director(P&P), other officers and staff of P&P Directorate, CWC who painstakingly compiled the report and made necessary arrangements during various meetings.

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Introduction

Planning Commission constituted a Steering Committee and eight Working Groups related to water resources and sanitation for XII Five Year Plan. The Working Groups inter alia, include the Working Group on "Major & Medium Irrigation and Command Area Development (MMI & CAD)". This Working Group on MMI & CAD duly mentioning its Terms of Reference has been constituted by the Planning Commission vide Letter No. 25(1)/A/2010-WR dated 15.10.2010.

Water Availability and Irrigation Demand in India

Considering the high variability in the yield of the rivers both temporally and spatially, conservation of water resources becomes very important. As per available information, a total of about 225 billion cubic metre (BCM) of surface water storage have been created. Further due emphasis has been laid on water conservation through rainwater harvesting and artificial recharge to the groundwater. However, the per capita storage of about 190 cubic meters in the country is miniscule as compared to per capita storages in countries like USA, Australia, Brazil & China which are about 5961, 4717, 3388 and 2486 cubic meters respectively. Due emphasis has to be laid on conservation of water, recycling of water into utilizable water, introducing efficient methods and better management practices. This is more so to meet the increasing demand of water for various purposes in view of growing population, industrialization and urbanization.

Considering from XII Plan onwards, the demand gap could be of the order of 250 BCM for irrigation by 2050. Even if a fair percentage of this additional demand is borne by groundwater, the extra burden on surface irrigation will be of the order of 150 BCM to achieve self-sufficiency by 2050. The need and urgency about creating more storage through Major & Medium Irrigation sector in the country is apparent

A Critical review of MMI projects

Major & medium irrigation sector has been at the core of many of the activities envisaged to provide a sustainable solution for food security and agricultural growth. The created irrigation potential in respect of major and medium projects increased from 9.72 mha in preplan period to 46.24 mha (tentative) including 4.60 MHa anticipated to be created in XI Plan. In the corresponding period the potential utilization has increased from 9.70 mha during pre plan period to 35.10 mha (including 1.36 Mha anticipated during XI plan).

Although plan expenditure on irrigation has increased from Rs. 441.8 crore in the Ist Plan to Rs. 100106 crore in the X Plan, the share in total plan expenditure has decreased from 23% in the Ist Plan to 6 % in the X Plan.

Time and cost overruns have been a major cause for worry with MMI projects. Overall, the escalation is influenced strongly by local conditions and cost overruns occur due to time overruns and consequent price escalation over time. This indicates that implementation strategies adopted by the

individual project authorities need detailed study and specific solutions for prevention of further escalation in the costs. Provision of financial resources in a timely fashion with adequate capacity to manage them by the implementing departments is the need of the hour.

The Working Group identified total number of projects reported in XII plan is likely to be 583 including 236 Major, 265 Medium and 65 ERM projects and 17 special category projects involving diverse activities like dam safety, special repairs etc. When the list of projects submitted as a result of this exercise was compared with the list of 553 spillover projects provided at the end of X plan, it was found that 202 projects that were proposed to be taken up at the end of X plan find no mention about their progress during the plan. From the present physical and financial status it is, expected that In all, 327 ongoing projects including 154 major, 139 medium and 34 ERM projects will require financial inputs in XII plan for their implementation. It has assessed that 130 Projects have been taken up in XI Plan, while 116 projects including 45 major, 66 medium and 5 ERM projects are reportedly completed during XI Plan and 37 projects (8 major, 28 medium and 1 ERM projects) having liabilities during XII Plan. There are proposals for 28 major, 32 medium and 25 ERM new projects to be taken up in XII plan. The number of projects likely to be spilled over into the XII Plan works out to 337 including 155 major, 147 medium and 35 ERM projects.

Command Area Development and Water Management

Cumulative Command Area covered in respect of field channels till X Plan is 18.06 Mha. For the XI Plan, an achievement of 0.394 and 0.429 Mha have been made during 2007-08 and 2008-09 respectively. In the case of field drains, the achievement is still poorer at about one-tenth of field channels. This could be a reason for aggravating water logging problems. Reclamation of Water logged Areas under the Centrally Sponsored Command Area Development Programme, 579 schemes of 9 states, have been approved for reclamation of 78.81 th. ha. water logged area. Out of this, an area of 52.11 th. ha. has been reported to be reclaimed.

Ministry of Water Resources brought out a model act to be adopted by the State Legislatures for enacting new Acts/ amending the existing irrigation Acts for facilitating the Participatory Irrigation Management **(**PIM). Despite repeated emphasis by Government of India so far, only 15 States have enacted PIM Acts/ amended the existing irrigation Acts. The participation of farmers in the management of irrigation would include transfer responsibility for operation & maintenance and also collection of water charges to the Water Users' Association in their respective jurisdiction. So far 63167 Water Users' Associations have been formed in various States covering an area of 14.623 M.ha. under various commands of irrigation projects.

A number of irrigation projects in the country have been operating much below their potential due to shortage of funds for O&M related activities. The scope of the CADWM Programme has, therefore, been expanded to take care of such deficiencies occurring above the outlet (on canal system of capacity up to 4.2 cusec) through proper rehabilitation under Correction of System Deficiencies. This would eventually improve the output of the activities below the outlet as well. A cost norm of Rs. 6000/- per ha. has been kept for this activity.

Institutional Reforms

In the revised system of water management, consisting of representative bodies, there would be need for an organisation between the field level (FOs and WUAs) and the river basin level. The intermediate level may be called the `Water district' on the analogy of the usage in several countries. We suggest that the composition of the water district bodies and the setting of hydrological boundaries for each water district and a frame work of regulation have to be devised by each state.

There have been suggestions to form a body consisting entirely of either State or the local government representatives or of water users or to have a government body above that of water users. Various proposals and its representative characters and details have to be ironed out in the National Water Resources Council (NWRC), before legislation is initiated.

Historically, the role of Water Resources Departments have been resource assessment, planning and construction centric with downstream developmental activities in the fields of Agriculture being left to agricultural extension services and associated departments. Over the passage of time, the synergies have been lost and now a need is being felt to set up a multi disciplinary mechanism under one umbrella to look into all aspects of a major/ medium project management. Over the time increase in focus on efficient O & M implementation is also being felt acutely. Working Group has assessed these problems and has recommended a mix of hard and soft measures for the purpose.

Since water has diverse uses, the entire subject cannot be brought under one Ministry and therefore it is essential to ensure coordination. The Ministry and the Central Water Commission generally suffer from the same kind of constraints as those of the State Departments. The challenges of integrated water development and management can be faced only if the apex institution at the national level is suitably equipped for it. There is a need that CWC should be restructured into a statutory high powered inter-disciplinary Commission with maximum autonomy in order to deal with policy and reforms and various issues in Water Resources. The ongoing exercise in the Ministry need to be supported.

The role of Government in water sector has to be redefined in the context of the setting up of water regulatory bodies meant to take over part of the functions of existing Government departments. A new institutional structure need to be devolved with existing Governmental powers for regulation of water use and apportion entitlements to use water between different categories of use, to establish water tariff system as well as to fix criteria for water charges. Water Regulatory Authority, will strengthen the control over water resources.

Assessment of AIBP Impacts and a Proposal for Change

AIBP has been a very successful programme in enhancing irrigation potential in the country is evident from the fact that the irrigation development in major/ medium sector which was about 2.2 Mha per plan till VIII plan increased to 4.10 Mha per plan during IX plan subsequent to introduction of AIBP as a support mechanism and has further increased to 5.3 Mha in X plan.

So far, 287 major/ medium irrigation projects have been included under AIBP out of which, 134 projects have been completed. Cumulative Irrigation potential created from these Major/medium projects up to March 2010 is about 62 lakh ha. Central assistance amounting to Rs. 48,747.806 crore has been provided to the States so far, since inception of the programme.

For XI Plan, total allocation proposed for AIBP is of Rs.43,710 crore for targeted creation of irrigation potential of 58.46 lakh ha. Allocation proposed for National projects is Rs.7000 crore. The Planning Commission has concurred for allocation of Rs.39,850 crore during the plan period. Year-wise Physical and Financial achievements during XI Plan is given below:

(Rs. In crore and potential in Lakh ha.)

Description	2007-08	2008-09	2009-10	2010-11	2011-12	Total
Actual releases under AIBP	5445.7	7598.2213	6945.59	6837.203		
Potential target under AIBP	15.00	11.96	10.50	10.50	10.50	58.46
Potential achieved under AIBP	6.44	6.55	9.82	Under Assessment	Under Assessment	

Existing Guidelines and number of suggestions received on the funding mechanism of AIBP and constraints faced by State Governments, as well as Reforms suggested in the programme has been described in detail in Chapter-4.

Major and Medium Irrigation Projects-Strategy

Strengths and weaknesses of the implementation of Majorand Medium projects have been discussed by the Working Group. Apparently, the progress achieved has not been well documented and a clear picture of performance needs to build from the verifiable data. It is clear that the department in MMI sector has non-uniform across the states and the developmental needs of the states have to be addressed in an individual fashion. For this purpose, a well balancThe focus of the strategies for the XII Plan has to be on: (a) full utilization of the created facilities; (b) improving water use efficiencies; and (c) completion of ongoing projects in a time bound mannered approach is needed covering the entire gamut of MMI sector commencing from the Planning and implementation of projects to establishment of last mile facilities of CAD and setting up of institutional mechanism for sustained efficient operation of the assets created. Working Group has deliberated all these aspects exhaustively and the views have been recorded in the report.

Targets and Outlays

i. Infrastructure Development

Si. No.	Activity	Physical Target	Total Outlay	Remarks
1	Completion of ongoing MMI Projects	7.2 Mha	2,17,500	Includes Central Assistance of Rs 72500 crores under AIBP
2	ERM of MMI	2.2 mha	17,000	Includes CA of Rs 7000 crores under AIBP
3	New MMI projects	0.70 mha	42,200	Includes CA under AIBP for Rs 6200 crores
4	CAD	10 mha	30000	Includes CA for Rs20000 crores

ii. Improving Efficiency & reform measures

A very important target for XII Plan is to improve the efficiency of the irrigation project by at least 20%. The present level of efficiency of major and medium irrigation project has been assessed to be about 30% and it is planned to improve the existing level of efficiency of major and medium irrigation projects by 20% (from present level of about 30% to targeted 36%).

Sl. No.	Activity	Proposed Outlay	Remarks
1	Adoption of Better Management Practices	2800	To be supported through NWM
2	Physical Measures in terms of (a) ERM of Major and Medium Irrigation Project, and (b) Command Area Development		Physical targets and financial outlays indicated at Sl. No. 2 and 4 of Table-1.
3	Dam Safety and Rehabilitation for better performance	2200	To be supported through Central Sector DRIP
4	Irrigation management programme (IMP)	10000	
5	Implementation of about five pilot schemes in different regions	10000	To be supported under NWM

The Working Group is of the firm view that there is urgent need for capacity building of the professional associated with development and management of water resources systems and the training of the functionaries at all level to ensure efficient management. The activities and allocations are:-

Sl. No.	Activity	Rs. In crores
1	Mass Awareness Programme	500
2	Promote short-term & long-term courses	200
3	Promotion of Research in WRD	700
4	Capacity-Building Programme	300
5	**Total**	**1700**

ii. Strengthening of Planning & Monitoring mechanism

Sl. No.	Activity	Rs. In crores
1	Restructuring of WR Departments in states and at Centre	700
2	Investigation of schemes identified under National Perspective Plan	2000
3	Collection, compilation & analysis of Hydrologic Data	5800
4	**Total**	**8500**

Summary of Proposed Outlays

I. State Plan

- Creation of facilities through infrastructure development — Rs 2,01,000 crores
- Strategy for improvement of the structures as well as adoption of better management practices for improving the efficiency — Rs 3,900 crores
- Education and Capacity Building — Rs 800 crores
- Strengthening of Planning and Monitoring Mechanism — Rs 2,900 crores

Total — **Rs 2,08,600 crores**

II. Central Plan Schemes (Rs in crores)

Sl. No.	Name of the Scheme	Proposed outlay during XII Plan
Central Sector Schemes		
1	Development of Water Resources Information System	3980
2	Hydrology Project	120
3	River Basin Management	1300
4	Research and Development	400
5	National Water Academy (NWA)	50
6	Information, Education and Communication (IEC)	250
7	National Water Mission(NWM)	10,900
8	Human Resources Development / Capacity Building	400
9	Irrigation Management Programme	10,000
Total Outlay Proposed For Central Sector Schemes		27,400
State Sector Schemes		
1	Accelerated Irrigation Benefits Programme (including the activities related to command area development and water management which were covered under CAD&WM during XI Plan)	1,05,700
2	Dam Rehabilitation and Improvement Project	200
Total Outlay Proposed For State Sector Schemes		1,05,900
Total Central Plan Outlay Proposed		**1,33,300**

III. Proposed Outlay for Major and Medium Irrigation Sector (Rs in crores)

- State Plan — **2,08,600**
- Central Plan — **1,33,300**
  - Central Sector Schemes — 27,400
  - State Sector Schemes — 1,05,900
- **Total Plan Outlay** — **3,41,900**

Improvement in Management Practice and Reform Measures

The reform measures should inter-alia include: (a) rationalization of water charges; (b) establishment of regulatory mechanism; (c) comprehensive capacity building programme for project management personnel including the field level workers; and (d) adoption of modern management tools etc. The management practices should, inter-alia, include:

i. establishment of minimum Irrigation Service Fee (ISF) at a reasonable level, as prescribed by the Thirteenth Finance Commission;
ii. promotion of Participatory Irrigation Management through WUAs at outlet and distributary level;
iii. maximization of the collection of ISF from users through WUAs, among other things, by allowing WUAs to retain at least 50 percent of ISF collected for maintenance of the distribution system;
iv. undertaking, in a campaign mode, a program to close the gap between IPC and IPU through farmer-participatory CAD works;
v. enhancing the resources available to the MMI departments for improving O&M of irrigation systems through technological improvements such as automation and use of ITES;
vi. broadening the disciplinary skill-set available with irrigation departments to include social science and agriculture extension skills; and
vii. substantially improving the amount and quality of training and capacity building opportunities for MMI staff at all levels.

Data Collection and Information System

An outlay of Rs 5,800 crores has been proposed during XII Plan for additional data collection and making WRIS fully operational.

Higher Studies, Research, Capacity Building, and Mass Awareness programme

Working Group very strongly recommends for higher studies and research covering all aspects of water resources management. Similarly capacity building and career development programmes for water resources professional including those associated with water management at the field level are strongly recommended. The recommendations inter alia include-

- Core grant up to Rs 20 crore to identified national institutes of eminence – such as IITs, IIMs, NIT, ISB, etc. to establish centres of excellence in irrigation management.
- Provide each of the 14 WALMI's grant-in-aid of Rs 5 crore over the five year period to strengthen their training, research and extension work.
- Specific provision of funds is made to develop management information systems for MMI schemes with specific purpose of generating real-time information on the working and performance of these systems to enable their benchmarking.

Re-structuring of Water Resources Organizations

It is considered necessary to undertake the re-structuring of the Water Resources Departments in the States and the related organizations in Centre to achieve the objective. Accordingly, outlay of Rs 500 crores for State government Departments and Rs 200 crores for central organizations is recommended for the purpose.

Irrigation Management Fund

The Working Group is in agreement with the general line of argument taken by the Thirteenth Finance Commission and recommends that the central assistance should be linked to outcomes in terms of MMI performance and impacts. An outlay of Rs 10,000 crores has been proposed for the purpose. It is also proposed that a very strict monitoring mechanism should be put in place for implementation of "Irrigation Management Fund".

CHAPTER-1

MAJOR AND MEDIUM IRRIGATION SYSTEMS IN INDIA'S WATER FUTURE: AN OVERVIEW

1.1 Introduction

Planning Commission constituted a Steering Committee and eight Working Groups related to water resources and sanitation for XII Five Year Plan. The Working Groups inter alia, include the Working Group on "Major & Medium Irrigation and Command Area Development (MMI & CAD)". This Working Group on MMI & CAD has been constituted by the Planning Commission vide Letter No. 25(1)/A/2010-WR dated 15.10.2010. The Terms of Reference of this Working Group are as under:-

- Provide a critical review of the physical and financial performance of the sector during the 11th Plan and suggest strategies, priorities and allocations for the XII Plan
- Suggest a blueprint for reform aimed at improving utilization of existing capacities, irrigation efficiency, cost recovery and improved performance of irrigation departments
- Suggest measures to achieve greater water use efficiency in agriculture
- Suggest reform of the Accelerated Irrigation Benefit Programme to make it more effective, include possible conditionality for release of funds and reintegration of the Accelerated Irrigation benefit Programme and Command Area Development and water Management Programme
- Evaluate performance of PIM initiatives and suggest ways of strengthening the programme
- provide an estimate of the magnitude of the problems of water-logging and salinity in irrigation commands and suggest ways of mitigating their impact and reducing their incidence in future
- Any other issue considered relevant by the Group

The List Of The Members Of The Working Group Is At *Annexure-1.1.* The Working Group Met Five Times In The Pursuit Of Finalizing The Strategies, Priorities And Allocations For The Twelfth Plan. The Summary Record Of The Above Meetings Of The Working Group Is At *Annexures-1.2 To 1.6.*

1.2 Water Availability in India

India receives a total precipitation of about 4000 Billion cubic metres (BCM). However, rainfall in India shows a very high degree of spatial and temporal variability. Nearly 3000 BCM of precipitation occurs during the monsoon months from June till September. The spatial variability is also very conspicuous as it varies between 100 mm in Western Rajasthan and 11000 mm at Cherrapunji in Meghalaya. There are 13 major river basins in the country having a catchment area exceeding 200 sq.Km. The flows in rivers vary significantly. Available water resources have been assessed to be 1869 BCM. However in view of the physiographical and topographical features, the utilizable water is assessed as 1123 BCM comprising of 690

BCM of surface water and 433 BCM of replenishable groundwater.

Considering the high variability in the yield of the rivers both temporally and spatially, conservation of water resources becomes very important. As per available information, a total of about 225 of surface water storage have since been created. Further due emphasis has been laid on water conservation through rainwater harvesting and artificial recharge to the groundwater. However, the per capita storage of about 190 cubic meters in the country is miniscule compared to per capita storages in countries like USA, Australia, Brazil & China which are about 5961, 4717, 3388 and 2486 cubic meters respectively. Due emphasis has to be laid on conservation of water, recycling of water into utilizable water, introducing efficient methods and better management practices. This is more so to meet the increasing demand of water for various purposes in view of growing population, industrialization and urbanization.

1.3 Population Growth & Demographic Changes and their Impact

The total population of the country in 1901 was 238.4 million. After independence, our country witnessed a spurt in population growing at a rate more than 20% per decade. In 1951, it was 361.1 million which increased to 439.2 million in 1961 and then on to 683.3 millions in 1981. The surge was unabated through 1990s. The population of 846.4 millions in 1991 attained 1028.7 million at the turn of the twenty first century i.e in 2001. It is being forecast that the population could be of the order of about 1210 millions by 2011 on the basis of about 17.64% growth rate for the 2001-2011 decade. Of particular interest to development is the changing character of the urban-rural trend.

Table 1.1 Population Growth & Urban-Rural Characteristic Trend

Unit: In Millions

Year	Total Population	%Population Growth	Rural	Urban	% Urban Population
1951	361.1		298.6	62.5	17.31
1961	439.2	21.63	360.3	78.9	17.96
1971	548.2	24.82	439.0	109.2	19.92
1981	683.3	24.64	525.6	157.7	23.08
1991	846.4	23.87	630.6	215.8	25.50
2001	1028.7	21.54	742.6	286.1	27.81
2011*	1210.2	17.64	833.1	377.1	31.16

***provisional**

It is obvious that urban growth trend is progressive while rural growth is regressive as per the emerging results of the Census study. Relatively increased rate of urban population growth would require relatively higher allocation of water for domestic purposes. Further, the industrial growth also calls for more requirement of industrial water supply. Related challenge also comes in the form of pollution of water which needs to be addressed as part of urbanization issues.

1.4 Sectoral Demands on Water

Water requirement for various sectors as assessed by NCIWRD are given in Table here:

Table 1.2 Annual Water Demand

Annual Demand	2025		2050	
	Low	High	Low	High
Irrigation	561	611	628	807
Drinking Water/ Domestic	55	62	90	111
Industry	67	67	81	81
Energy	31	33	63	70
Others	70	70	111	111
Total	**784**	**843**	**973**	**1180**

The High and Low projections in the Table above are based on the upper and lower limit of the population projection for the year. NCIWRD has adopted figures of 1581 million and 1346 million as the high and low projection of population for the year 2050.

a) **Irrigation Requirement**

Irrigation Use is the most critical parameter in water management. NCIWRD estimates that the share of irrigation demand out of the total will decline to 72% by 2025 and to 68% by 2050 as revealed in Table above. The population for 2012 has been projected to be of the order of 1.2 billion by Census study (as given in Section1.3). Hoping that the present decadal growth rate will decline steadily, a population of 1.58 billion, the upper limit adopted by NCIWRD will itself be under-estimation for 2050. Therefore, for analysis, only the higher limit is adopted. Between 2025 and 2050, there is a projected demand gap of nearly 200 BCM. Considering from XII Plan onwards, the demand gap could be of the order of 250 BCM. Even if a fair percentage of this additional demand is borne by groundwater, the extra burden on surface irrigation will be of the order of 150 BCM to achieve self-sufficiency by 2050. The need and urgency about creating more storage through Major & Medium Irrigation sector in the country is apparent.

b) **Non-Irrigation (Domestic, industrial & energy) Requirements**

Due to rapid industrialization and urbanization in a developing country like ours, the demands on domestic, industrial and energy requirements are expected to mount at a rapid rate. NCIWRD has projected for domestic-industrial-energy requirements, an additional demand of 100 BCM for 2050 over that of 2025. Considering from XII Plan onwards, it can be estimated to be of the order of 150 BCM. The extent of this additional demand can be realized from the fact that it is almost equal to the additional live storage capacity envisaged from projects likely to be commissioned in future.

1.5 Impact of Climate Change

With all these challenges notwithstanding, another challenge has emerged - the global threat of climate change. It is understood in common terminology as 'Global Warming'. The effect of climate change could be, as experts attribute, the thinning of ice cover and reduction of its duration and increase in sea level due to increase in temperature. There could be changes in the variability of climate and changes in the frequency and intensity of extreme climatic events. It could be induced through human activities or natural variability. It affects all natural processes thereby influencing agrarian economies considerably. Climate change is not only a major global environmental problem but also an issue of great concern to a developing country like India.

1.5.1 Initiatives Taken By Government Of India / Mowr

With the view to address this challenge, the National Action Plan on Climate Change (NAPCC) has been prepared by the Government of India and released by the Hon'ble Prime Minister on 30th June, 2008. The NAPCC has laid down principles and identified the approach to meet the challenges of impact of climate change through eight National Missions. One among them – National Water Mission identifies the strategies for achieving the goals of (a) Comprehensive water database in public domain and assessment of impact of climate change on water resources (b) promotion of citizen and state actions for water conservation, augmentation & preservation (c) Focused attention to vulnerable over-exploited areas (d) increasing water use efficiency by 20% and (e) promotion of basin-level integrated water resources management.

1.5.2 National Water Mission

The main objective of the National Water Mission is "conservation of water, minimizing wastage and ensuring its more equitable distribution both across and within States through integrated water resources development and management". The Mission Document outlines the goals, strategies, action plan, timelines and assigns nodal responsibility for achieving the identified goals. The five identified goals for National Water Mission are:

- Comprehensive water data base in public domain and assessment of the impact of climate change on water resources;
- Promotion of citizen and state actins for water conservation, augmentation and preservation;
- Focused attention to vulnerable areas including over-exploited areas;
- Increasing water use efficiency by 20%; and
- Promotion of basin level integrated water resources management.

Some of the important quantified targets identified to be achieved under National Water Mission are as follows:

- All data and entire information (except data of sensitive and classified nature) will be placed in the public domain by 2012. First set of data has since been put in the public domain with launching of first phase of "Water Resources Information System" on 7th December 2010.
- The initial projections of the impact of climate change on water resources including the likely changes in the water availability in time and space are targeted by the year 2012.
- Sensitization of all Panchayat members and their functionaries in dark and grey blocks will be completed by 2011-12.
- Comprehensive assessment of ground water in the country will be made by March 2011.
- The revised master plan for artificial recharge to ground water will be in public domain by September 2011 for the entire country.
- All over-exploited areas will be covered by recharge of ground water by the end of XII Five Year Plan.
- The timeline for action will be to increase water use efficiency by 20% by the year 2017.
- The gap of about 15% between the irrigation potential created and the irrigation potential utilized is targeted to be reduced by half by the year 2017.
- Ministry of Water Resources will review the National Water Policy by 2011 to move towards basin development.
- Guidelines for different uses of water will be completed by March 2012.

3. Two very important targets to be undertaken during XII Plan relate to increase in the water use efficiency by 20% and reducing the gap of about 15% between the irrigation potential created and the irrigation potential utilized by half during the XII Plan. It is in this background that the focus of the XII Plan in respect of major and medium irrigation sector should be primarily on bridging the gap between irrigation potential created and utilized and also promoting of measures for increasing water use efficiency. Simultaneously due importance should also be given to the completion of all ongoing projects at the earliest.

4. It may now be emphasized that the objective of bridging the gap between IPC & IPU, and that of increasing the water use efficiency require immediate actions for adoption of better management practices.

CHAPTER-2

A CRITICAL REVIEW OF MMI PROJECTS: 1947-2010

2.1 Water Resources Development – Historical Prospective

The older irrigation works prior to 19th century were mainly confined to construction of ponds to collect excess rainfall, to direct flood flows through inundation channels or canals and simple dug wells, where favourable ground water conditions existed. In the past, several kings took upon themselves the responsibility to create reliable water supply systems in their respective domains. Grand Anicut in the Cauvery river delta was one of the earliest canal systems built as far back as the 2nd Century A.D.Historical evidence points out that Ghiyasuddin Tughlaq (1220-25) was one of the first rulers who took interest in digging canals at the stte's expense. Similarly, Firoz Tughlaq (1351-86), who was inspired by the Central Asian experience, built a number of canals. The Vijayanagar Empire expanded primarily because of large impetus provided to irrigation works in the 15th century in southern India. In the nineteenth century, British rule in India brought about a significant change in water resource development. Some large and extensive works like Upper Ganga Canal, the Upper Bari Doab Canal and the Krishna and Godavari Delta Systems were taken up, which were all river diversion schemes of fairly large size. In 1867, Government adopted the proactive of accepting works which promised a minimum net return. Thereafter, a large number of projects were taken up such as the Sirhind Canal, the Lower Ganga canal, the Agra Canal, the Mutha Canal, Periyar Dam, the Lower Swat Canal, the Lower Soliag Canal, the Lower Chenab and the Sidhnai Canals. Owing to frequent droughts and famines during the second half of the 19th century, irrigation development received special attention. Sme of the protective works constructed during the period were the Betwa Canal, the Nira Left Bank Canal, the Gokak Canal, the Mahaswad Tank and the Rushikulya Canal. The total irrigated area towards the end of the 19th century, both by public and private works, was around 13.2 Mha of which 56 percent constituted the public works. Source wise, canals irrigated 45 percent, wells 35 percent, tanks 15 percent and other sources five percent of the area.

2.1.1 Recommendations of Irrigation Commissions

The first Irrigation Commission was appointed in 1901 to report on irrigation as a 'means of protection against famine in India'. Prior to setting up of this commission, a few Famine Commissions had been set up and those Commissions had also recommended the development of irrigation works to contain the adverse impact of frequent famines. However, it was only after appointment of the First Irrigation Commission that a number of ambitious construction programmes were taken up to fight famine. The Commission in its Report recommended financial yardsticks for taking up famine relief and protective works. It also made a thorough review of irrigation development in the provinces and recommended proposals for new schemes. The more important public works recommended by the Commission included Chankapur storage on river Girna, Maladevi storage on river Pravara, storage works on the rivers Ujjani and Ghataprabha,

improvement of Kurnool-Cuddapah Canal, storage works on rivers Cauvery and Krishna, the Ken Canal, the diversion of Sarada waters into the Ganga above the Narora weir and location of suitable storage sites on the rivers Sabarmati, Mahi and Narmada.

That Commission inter-alia suggested the need for conjunctive use of surface and ground water, preparation of complementary programmes covering engineering works, watershed management and ayacut development and also recommended constitution of seven River Basin Commissions for the whole country to oversee all water resources development. Keeping in view the social urges and the demand for the removal of regional and social disparities, the Commission recommended construction of minor works in a time bound framework in under-developed area. In order that irrigation in India should pay for itself, the Commission recommended that the water rates should be raised to a level sufficient to cover the cost of maintaining and running the works and a reasonable rate of interest on investment. It also advocated the use of computers for the collation of irrigation and agriculture statistics in order to provide the latest information to irrigation planners.

The Irrigation Commission supported the adoption of B: C Ration criteria in sanctioning projects as practiced then. However, it also recommended that the practice of accepting projects with B:C ratio more than 1.5 be relaxed in the case of drought areas with lower limit of 1.0. The Commission also recommended the setting up of a High Level Authority, "The National Water Resources Council", to take policy decisions for the conservation, utilization and inter basin transfers of water; to lay down priorities for the use of water; to keep a continuous watch on the working of the River Basin Commissions and problems of inter-state rivers and to ensure that the formulation and execution of irrigation projects were in accordance with the highest national interest.

The Commission further highlighted the importance of soil conservation in protecting the watershed and, therefore, recommended adoption of such measures as afforestation, pasture development, protection of river fringes, road sides and the shore lines of the reservoir and the control of forest fires. Similarly, the concept of participatory irrigation management by constituting water users' associations was another important recommendation for economical and efficient use of water resources. The Commission also suggested that a special administrative agency for the coordinated and expeditious development of command area under the medium and major projects was necessary and each project should have a separate ayacut development agency. These recommendations were taken into consideration from time to time during the subsequent Plan Periods.

2.1.2 Development of Irrigation under the Plans

In the First Five Year Plan (1951-56), the country launched a major irrigation programme. A number of Multipurpose and Major Projects were taken up, such as Bhakra Nangal, Nagarjunasagar, Kosi, Chambal, Hirakud, Kakrapar and Tungabhadra. Simultaneously, minor irrigation schemes including ground water were given emphasis under the

Agricultural Sector, along with financial assistance from the Centre.

During the periods of Second Five year Plan (1956-61), third Five year Plan (1961-66) and the Three Annual Plans (1966-69), irrigation programmes were being implemented with new starts.

During the Fourth Five Year Plan (1969-74), the emphasis was shifted to the completion of ongoing projects, integrated use of surface and ground water, adoption of efficient management techniques and modernization of existing schemes. The new starts, however, continued.

During the fifth Plan (1974-78), Command Area Development Programme was launched as a Centrally Sponsored Scheme with the objective of reducing the lag between potential created and optimum utilization of available land and water. The programme was conceived as a means of co-ordinating all related activities to meet with these objective under one umbrella. Initially, 60 Major and Medium projects were covered with a CCA of 15 Mha.

During the Annual Plans of 1978-80 and the Sixth five Year Plan (1980-85), 'new starts' continued and at the end of Seventh Plan, there were as many as 182 major and 312 medium ongoing projects requiring an estimated amount of Rs. 39,044 carore at the 1990-91 price level for their completion. 'New starts' were, therefore, restricted considerably and greater emphasis was laid on completion of projects, which were in the advance stages of completion (those with an expenditure of 75 percent or more). This was continued during 1990-91 & 1991-92 Annual Plans, VIII Plan (1992-97) and IX Plan (1997-2002).

For speedy completion of ongoing projects in advance stage of construction Accelerated Irrigation Benefit Programme (AIBP) was launched in 1996-1997. During VIII Plan period irrigation potential of 2.22 mha was created under major and medium sector at an annual rate of 0.44 mha per annum. During IX Plan period this increased to 4.12 mha out of which 1.65 mha (nearly 40%) was through AIBP. Renovation, Modernization and Rehabilitation of old irrigation schemes gained momentum. User's participation in major and medium irrigation schemes received greater attention. Repairs and improvement to the minor irrigation projects, as a part of integrated micro-development, also received encouragement. Similarly, sprinkler and drip irrigation programmes and the conjunctive use of surface and ground water gained momentum.

2.2 Development and Utilization of Irrigation Potential – Trend Analysis

As per the reassessment of the Committee constituted by MoWR in May 1997, the currently accepted figures of Ultimate Irrigation Potential (UIP) under the major and medium projects sector is 58.47 MHa and Potential Created (PC) and utilized up to X Plan are 41.64 Mha and 33.74 respectively. The assessment of Ultimate Irrigation Potential needs to be periodically reviewed to account for revision in scope, technological advancement, inter

basin transfer of water, induced recharging of ground water, etc.

The created irrigation potential in respect of major and medium projects increased from 9.72 mha in preplan period to 46.24 mha (tentative) including 4.60 MHa anticipated to be created in XI plan. In the corresponding period the potential utilization has been from 9.70 mha period during pre plan period to 35.10 mha (including 1.36 Mha anticipated during XI plan). The pattern of irrigation potential creation and its corresponding utilization during the plan period is shown in Figure 2.1 below:

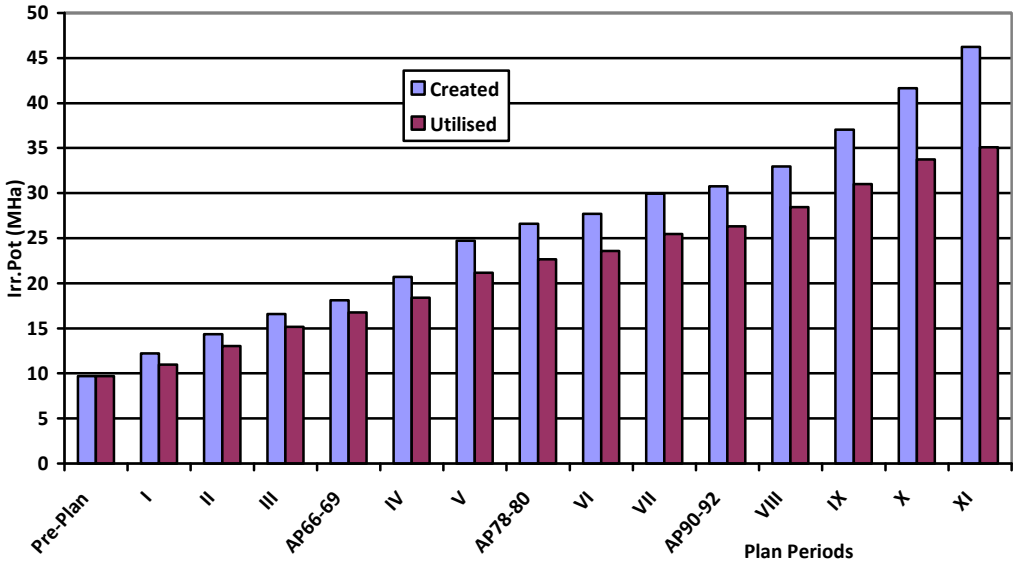


Figure 2.1

Table 2.1: The Plan-Wise Potential Created and Utilization

Plan		Potential created					Potential Utilized				
		Major & Medium	Minor			Total	Major & Medium	Minor			Total
			S.W	G.W	Total			S.W	G.W	Total	
Upto 1951 (Pre-Plan)	Cumulative	9.70	6.40	6.50	12.90	22.6	9.70	6.40	6.50	12.90	22.60
I Plan (1951-56)	During	2.50	0.03	1.13	1.16	3.66	1.28	0.03	1.13	1.16	2.44
	Cumulative	12.20	6.43	7.63	14.06	26.26	10.98	6.43	7.63	14.06	25.04
II Plan (1956-61)	During	2.13	0.02	0.67	0.69	2.82	2.07	0.02	0.67	0.69	2.76
	Cumulative	14.33	6.45	8.30	14.75	29.08	13.05	6.45	8.30	14.75	27.80
III Plan (1961-	During	2.24	0.03	2.22	2.25	4.49	2.12	3.03	2.22	2.25	4.37
	Cumulat	16.57	6.48	10.52	17.00	33.57	15.17	6.48	10.52	17.00	32.17

66)	ive										
Annual Plans (1966-69)	During	1053	0.02	1.98	2.00	3.53	1.58	0.02	1.98	2.00	3.58
	Cumulative	18.10	6.50	12.50	19.00	37.10	16.75	6.50	12.50	19.00	35.75
IV Plan (1969-1974)	During	2.60	0.50	4.00	4.50	7.10	1.64	0.50	4.00	4.50	6.14
	Cumulative	20.70	7.00	16.50	23.50	44.20	18.39	7.00	16.50	23.50	41.89
V Plan (1974-1978)	During	4.02	0.50	3.30	3.80	7.82	2.70	0.50	3.30	3.80	6.50
	Cumulative	24.72	7.50	19.80	27.30	52.02	21.16	7.50	19.80	27.30	48.46
Annual Plans (1978-1980)	During	1.89	0.50	2.20	2.70	1.59	1.48	0.50	2.20	2.70	4.18
	Cumulative	26.61	8.00	22.00	30.00	56.61	22.64	8.00	22.00	30.00	52.64
VI Plan (1980-1985)	During	1.09	1.70	5.82	7.52	8.61	0.93	1.01	4.24	5.25	6.18
	Cumulative	27.70	9.70	27.82	37.52	65.22	23.57	9.01	26.24	35.25	58.82
VII Plan (1985-1990)	During	2.22	1.29	7.80	9.09	11.31	1.90	0.96	6.91	7.87	9.77
	Cumulative	29.92	10.90	35.62	46.52	76.44	25.47	9.97	33.15	43.12	68.59
Annual Plan (1990-1992)	During	0.82	0.47	3.27	3.74	4.56	0.85	0.32	3.10	3.42	4.27
	Cumulative	30.74	11.46	38.89	50.35	81.09	26.31	10.29	36.25	46.54	72.85
VIII Plan (1992-1997)	During	2.21	1.05	1.91	2.96	5.17	2.13	0.78	1.45	2.23	4.36
	Cumulative	32.95	12.51	40.80	53.31	86.26	28.44	11.07	37.7	48.77	77.21
IX Plan (1997-2002)	During	4.10	1.09	2.50	3.59	7.69	2.57	0.37	0.85	1.22	3.79
	Cumulative	37.05	13.60	43.30	56.90	93.95	31.01	11.44	38.55	49.99	81.00
X Plan (2002-2007)	During	4.59	0.71	2.81	3.52	8.82	2.73	0.56	2.26	2.82	6.23
	Cumulative	42.35	14.31	46.11	60.42	102.77	33.74	12.00	40.81	52.81	87.23

2.2.1 Plan-wise expenditure incurred in Irrigation Sector

The Plan-wise expenditure incurred on Irrigation and Flood Control Sectors in shown in Table 2.2 below:

Table 2.2: Plan wise expenditure incurred on Irrigation and Flood Control Sectors

(Rs in Crores)

Sl. No	Plan Period	Major & Medium Irrigation	MI/MI & CAD	Total Irrigation	Flood Control	Total Plan Expenditure All Sectors	Percentage expenditure on Irrigation
1.	First (1951-56)	376.2	65.6	441.8	13.2	1960	22.54
2.	Second (1956-61)	380.0	161.6	541.6	48.1	4672	11.59
3.	Third (1961-66)	576.0	443.1	1019.1	82.1	8577	11.89
4.	Annual (1966-69)	429.8	560.9	990.7	42	6625	15.04
5.	Fourth (1969-74)	1242.3	1173.4	2415.7	162	15779	15.31
6.	Fifth(1974-78	2516.2	1409.6	3925.8	298.6	28653	14.22
7.	Annual (1978-80)	2078.6	1344.9	3423.5	330	22950	14.27
8.	Sixth (1980-85)	7368.8	4159.9	11528.7	787	109292	10.55
9.	Seventh (1985-90)	11107.3	7626.8	18734.1	941.6	218730	8.56
10.	Annual (1990-92)	5459.2	3649.5	9108.7	460.6	123120	7.4
11.	Eighth (1992-97)	21071.9	13885.3	34957.2	1691.7	483060	7.59
12.	IX Plan(1997-02)	49289.0	13760	83049.0	3038	941041	6.7
13.	X Plan (2002-07)	83647.0	16458.9	100105.9	4344.18	1618460	6.19
14	XI Plan (2007-2012) Outlay (Projection)	165350	46350	211700	20100	3644718	5.81

Although plan expenditure on irrigation has increased from Rs. 441.8 crore in the Ist Plan to Rs. 100106 crore in the X Plan, the share in total plan expenditure has decreased from 23% in the Ist Plan to 6 % in the X Plan. The expenditure in respect of major/ medium projects vis-à-vis the overall expenditure on irrigation sector as a whole is indicated in the figure 2.2 below.

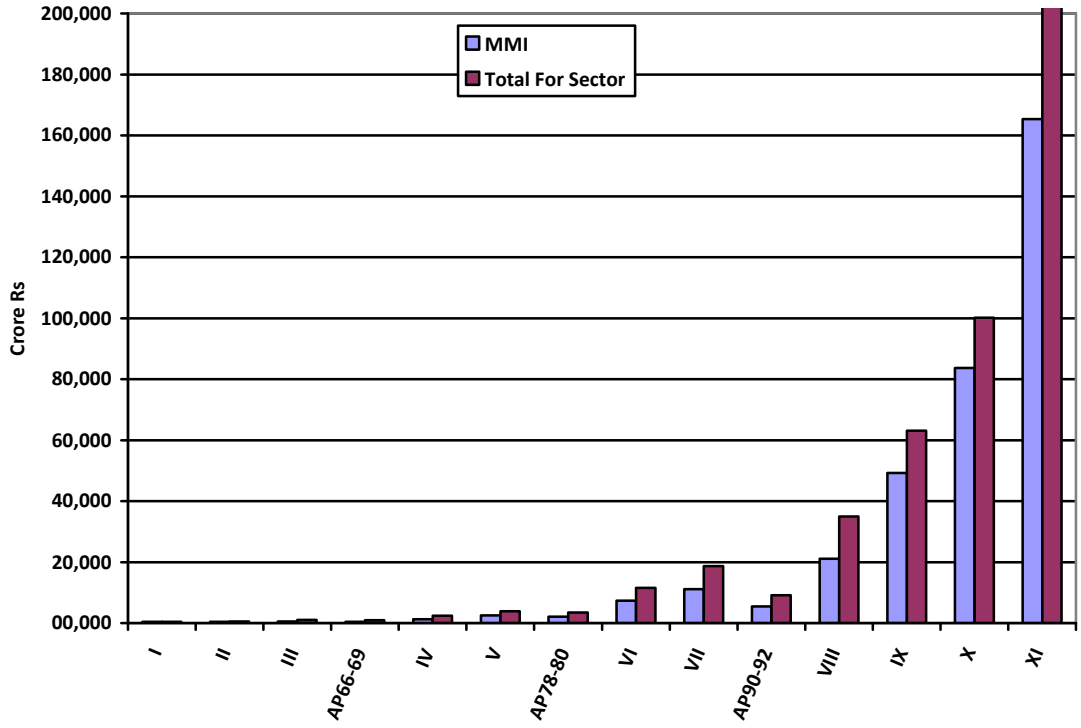


Fig. 2.2

2.3 Irrigation Projects: Time and Cost over runs

The numbers of major & medium projects taken up and completed in different plan periods are given in Table 2.3

Table2.3: Plan-wise proliferation of Schemes in MMI Sector

	Major Projects		Medium Projects		ERM Projects		Total Projects	
	Taken up	Completed	Taken up	Completed	Taken up	Completed	Taken up	Completed
Pre Plan	74	74	143	143	0	0	217	217
I Plan (1951-56)	44	5	165	34	12	3	221	42
II Plan (1956-61)	33	20	102	85	5	5	140	110
III Plan (1961-66)	32	11	44	61	7	7	83	79
AP66-69	11	5	27	43	1	3	39	51
IV Plan (1969-74)	33	15	74	62	7	4	114	81
V Plan	68	6	303	70	20	1	391	77
AP78-80	11	2	55	18	3	2	69	22
VI Plan	31	30	89	138	37	4	157	172

VII Plan	11	14	36	137	24	15	71	166
AP90-92	2	7	0	12	0	8	2	27
VIII Plan	19	9	72	48	30	22	121	79
IX Plan	32	30	38	66	27	13	97	109
Project Shifted from Major to medium	-2				+2			
Project Deferred/ shifted as new	-6		-4		-4			
X Plan	49	32	84	40	46	30	179	102
XI Plan	38	45	50	66	42	5	130	116

The projects being taken up and being completed from time to time have been analysed and the balance projects awaiting completion at the end of each plan period is given in the Fig. 2.3 below:

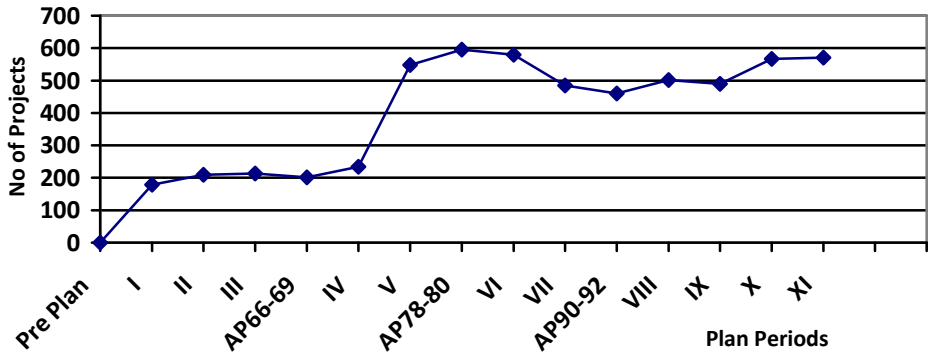


Fig. 2.3

A study of the graph indicates that there has been an increase in the number of projects awaiting completion at the end of IV Plan. However, the backlog has remained between 500 and 600 projects since then. The backlog decreased at the end of VII plan but increased again to the present levels. The present back log is of the order of 571. It is, therefore, necessary that the ongoing projects be given attention for ensuring completion with focused funding under the schemes like AIBP and the implementation of new projects be taken up in case of specific necessity only. Simultaneously, the increase is indicative of a saturation of the capacity of the individual state governments towards physical completion of the projects. While financial capacity building is addressed through schemes like AIBP, it is necessary to address the problem of other measures like capacity building in terms of human resources and other software measures also.

2.3.1 Cost overruns

A study was made in respect of ongoing, major/medium and ERM projects separately by analyzing their latest estimated costs, year of start and total expenditure envisaged against the projects till XII plan by which most of the projects are targeted to complete.
In respect of ERM projects, there were outliers like Choudhary Charan Singh Lalchura project of UP which indicated a cost escalation of the order of 3000% from 1978 onwards. However, the project has not been considered a representative one and ignored in view of the fact that ERM projects are not expected to have such long gestation period and the project is that of involving new construction of dam and reservoir. For rest of the 12 representative projects, there was a maximum escalation of the order of 138 % over the original cost indicating an escalation of 1.38 times the estimated approved cost for one project. Rest of the projects has indicated no significant cost escalation.

In respect of ongoing major projects, out of 151 projects, 24 projects indicated very high cost escalation of the order of 1000% and more. However, these projects have been taken up earlier than 1980 and may have specific problems of implementation. For the rest of the projects, the average escalation is of the order of 200% or less. Most of the projects have the start year later then 1985.

In respect of medium projects, out of 132 projects, 24 projects indicate escalation of 500% or more. The rest are well spread out between no escalations to 500% escalation. The cost escalation does not indicate any relation with the year of start and many recently taken up projects also show the escalation which is a quite substantial.

Overall, it is seen that the escalation Time and cost overruns have been a major cause for worry with MMI projects. Overall, the escalation is influenced strongly by local conditions and cost overruns occur due to time overruns and consequent price escalation over time. Provision of financial resources in a timely fashion with adequate capacity to manage them by the implementing departments is the need of the hour. This indicates that implementation strategies adopted by the individual project authorities need detailed study and specific solutions for prevention of further escalation in the costs. There were no significant regional trends in the escalation value of different types of projects. The study results are given at Annexure 2.1.

2.4 Projects Portfolio for XII Plan

At the end of X plan the exercise was taken up by the then Working Group to identify the projects that will be taken up during XI plan and will be completed in XI plan. At that point of time, the state governments reported that 553 projects will spillover in XI plan. In addition, 309 new projects were likely to be taken up during XI plan.

The Working Group took up the exercise of finding out the progress achieved in XI plan for

completion and progress of the major/ medium and ERM projects during the plan. A dedicated web application was developed and the data was collected from various states. The reporting was desired under three categories:

- All Projects (new or spillover) taken up in XI plan and further spill over to XII plan or new projects likely to be taken up in XII plan.
- Projects completed prior to XI plan.
- CADWM projects

After constant persuasion with the states, the data reported by various states in respect of the above categories of the projects is given as below:

Table 2.4: Data Reported by various states

Name of State	New/Ongoing Projects of XI and XII plan	Projects completed Prior to XI plan	CADWM projects for XI and XII plans
Andaman Nicobar Islands	0	0	0
Andhra Pradesh	72	66	2
Arunachal Pradesh	0	0	0
Assam	4	0	0
Bihar	19	0	7
Chandigarh	0	0	0
Chhattisgarh	17	5	8
Daman, Diu,Dadra Nagar Haveli,	0	0	0
Goa	1	0	1
Gujarat	27	48	0
Haryana	10	20	22
Himachal Pradesh	4	4	19
Jammu And Kashmir	0	0	17
Jharkhand	29	0	2
Karnataka	52	19	9
Kerala	6	0	0
Laxdweep Islands	0	0	0
Madhya Pradesh	84	0	21
Maharashtra	162	5	9
Manipur	7	5	0
Meghalaya	0	0	0
Mizoram	0	0	0
Nagaland	0	0	0
Orissa	60	78	18

Puduchery	0	0	0
Punjab	5	0	0
Rajasthan	13	5	0
Sikkim	0	0	0
Tamil Nadu	0	0	26
Tripura	0	0	0
Uttar Pradesh	11	0	4
Uttrakhand	0	0	0
West Bengal	4	0	4
Total Projects	**587**	**255**	**169**

Note: Value 0 indicates that the data was not supplied by the concerned state/UT

Included in the above 587 projects are 236 major, 265 medium and 65 ERM projects. The rest of the projects are special category projects or other miscellaneous unclassified types.

When the list of projects submitted as a result of this exercise was compared with the list of 553 spillover projects provided at the end of X plan, it was found that 202 projects that were proposed to be taken up at the end of X plan find no mention about their progress during the plan. In order to verify this aspect, the missing projects were searched using the lists of projects completed under AIBP, those reported as complete or deferred till 31-03-2010 by the states to CWC. The list of projects is given at Annexure 2.2. Keeping this in view, the further discussions about the progress of projects in XI plan has been based on the data set reported currently to the Working Group in 2010-11.

Based on the experience gained during this exercise, it is observed that there is a need for systematic data collection continuously during the progress of the plan in respect of the projections made in respect of Major, Medium and ERM projects. Also, the changes affected by the states need be reconciled regularly so that the planning exercise and funds deployment is properly managed.

With the advent of web based technologies for data collection, the application developed as a part of this exercise can be permanently hosted on Ministry of Water Resources or Planning Commission servers and a review of the data may be made a regular part of annual meetings of principal secretaries being convened by the Ministry of Water Resources. The information on the projects reported by the states in the current exercise will be kept alive at the Ministry of Water Resources Server and the states are encouraged to fill up the annual progress on them.

The data regarding performance of the projects as desired for the projects completed prior to XI plan was also hard to come by. For realistically assessing the status of major and medium irrigation projects across the country and to maintain a permanent database of assets created, it is necessary to carry out a census of Major and Medium projects across the country with the help of technical personnel so that the data collected can provide insights to the planners and developers.

2.4.1 Achievement of Irrigation Potential Creation Targets

The working group for formulation of XI Plan recommended an outlay of Rs. 2,31,800 crore for anticipated potential creation of 16.0 mha. The outlay for XI Plan, out of which is of the order of Rs. 1,65,350 crore for MMI sector. In this sector original target to create additional potential kept by Planning Commission was 9.0 mha, which was revised to 5 mha during Mid Term Appraisal. Category-wise likely physical achievement in MMI Sector upto end of XI Plan and State-wise Targets proposed is given at Annexures 2.3(a) and 2.3 (b) respectively.

The performance during the first three years of the X Plan and anticipated performance for remaining two years is given in Table 2.5 below:

Table 2.5: Physical and Financial Performance of MMI Sector during XI Plan

Year	Physical (in mha)		Financial (in Rs. Crore)	
	Potential created	Potential Utilized	Revised Outlay	Expenditure
2007-08	0.818	0.439		29390.64
2008-09	1.276	0.367		32341.80
2009-10	0.686	0.213		34882.26
2010-11*	1.294	0.194		68735.3*
2011-12#	0.530	0.147		
Total	**4.604**	**1.360**	**165350**	

***anticipated #targeted**

At the time of preparation of the report, the expenditure figures for 2010-11 and 2011-12 were not available and the expenditure targeted is assumed as the balance of the outlay after accounting for the actual expenditure for the previous three years.

The Eleventh Plan had established a target of creation of additional irrigation potential of 16 million ha (9 mha through major & medium irrigation and 7 mha through minor irrigation projects). The target has been reduced during mid-term appraisal to 5.0 Mha through major/medium and 4.5 Mha through minor irrigation respectively. Against the anticipated annual rate of creation of irrigation potential of about 1.0 million ha for the major/medium projects, the average rate of creation of irrigation potential during the first three years will be about 0.93 million ha per year. The achievements appear to be commensurate with the revised targets during the first three years of the XI plan (Table 2.4.1). When compared with the achievement of ultimate irrigation potential, the reduction in the target for the XI plan has increased the burden on the subsequent plans to catch up on this aspect.

The poor rate of achievement of target reflects deep seated problems with major and medium irrigation projects. Major irrigation projects normally have a gestation period of 15-20 years while medium projects take 5-10 years for completion. Against these norms, a large number of major as well as medium projects are continuing for 30-40 years or even more. This is due to poor project preparation and implementation as well as thin

spreading of available resources. There is a spillover of 337 projects (155 major, 147 medium and 35 ERM projects) into the Twelfth Plan from previous Plan periods. Around 56 per cent of these 337 projects have not been approved by the Planning Commission and are not eligible for central assistance.

2.4.2 Completion Of Projects

As per the Working Group report of XI Plan, 553 projects spilled into XI Plan from previous plans, and another 179 projects were to be taken up during XI Plan. Besides, it was also anticipated, based on the current financial and physical status of the projects that 103 major, 210 medium and 62 ERM projects could be completed with adequate provision of funds.

The Working Group for major and medium irrigation for XII Plan has now assessed that 130 Projects have been taken up in XI Plan, while 116 projects including 45 major, 66 medium and 5 ERM projects are reportedly completed during XI Plan and 37projects (8 major, 28 medium and 1 ERM projects) having liabilities during XII Plan, list of which is appended as Annexure 2.4(a) & (b). The reasons for non-completion of the projects from the projected level are on the similar line as in the cases of previous plans. Which include inadequate fund revision in the estimated costs, change in scope of the works, unforeseen bottlenecks involving other agencies, opposition by the PAPs etc.

2.4.3 Spillover Projects into XI Plan

In course of analyzing status of the ongoing projects likely to spillover, it is observed that a number of previously unreported projects have now been reported; some of the ongoing projects deferred while some of the projects have been interchanged among the classified heads of major, medium & ERM projects. After accounting for the number of new projects taken up in XI Plan, projects likely to be completed in XI Plan, and other factors inducing changes in the number of projects, the number of spilled over projects into the XII Plan works out to 337 including 155 major, 147 medium and 35 ERM projects. The State-wise break-up of the spillover projects is given at Annexure 2.5 while the status thereof according to plan of start is given in Table 2.6 below.

Table 2.6: Spillover Major, Medium and ERM Projects into XI Plan

Plan of Start	Major	Medium	ERM	Total
I	0	0	0	0
II	0	0	0	0
III	0	0	0	0
1966-69	2	0	0	2
IV	7	2	0	9
V	11	1	1	13
1978-80	10	2	0	12

VI	14	13	0	27
VII	6	9	0	15
1990-92	1	2	0	3
VIII	13	17	0	30
IX	28	28	3	59
X	30	22	1	53
XI	32	52	30	114
Total	154	148	35	337

Out of the above, 74 major, 98 medium and 15 ERM projects are unapproved. Overall, 55.5% projects are unapproved. It is desirable to emphasize the concerned State governments to take up needful steps for their early clearance. Subsequently Central Assistance/Funding can be provided for their early implementation.

2.4.4 Ongoing Project Proposals for XII Plan

Total number of ongoing projects in XI plan is likely to be 583 including 236 Major, 265 Medium and 65 ERM projects and 17 special category projects involving diverse activities like dam safety, special repairs etc. From the present physical and financial status it is, expected that In all, 327 ongoing projects including 154 major, 139 medium and 34 ERM projects will require financial inputs in XII plan for their implementation. Details of ongoing projects are given at Annexure 2.6(a). Keeping in view the time overruns noticed, it is advisable that a systematic monitoring system is evolved for the progress achieved on them and measures needed for restoring their progress. In this context, this aspect may be made a regular feature while allocating plan resources annually for each of the states.

2.4.5 New Projects

There are proposals for 28 major, 32 medium and 25 ERM new projects to be taken up in XII plan. A requirement of Rs 37672 Crores has been estimated for them during XII plan. It is to be noted that cost of as many as 79 projects are yet unapproved and their actual costs may escalate considerably at the time of actual implementation. This aspect may be kept in mind while making allocations for these projects in XII Plan. Some of the major projects are likely to continue in XIII plan also. A breakup of new projects to be taken up by various states is given at Annexure 2.6(b). It is recommended that the emphasis may be kept on the completion of the ongoing projects and the capability to take up new project in the light of the kitty of ongoing project with the state may be assessed before sanctioning a new project for the state.

2.4.6 Overall Financial Requirements for the Major/ Medium projects during XII plan

The overall financial requirement for the major, medium and ERM projects likely to spillover to XII Plan or to be taken up new have been assessed as Rs 1,84,000 Crores. However, these requirements are subject to escalation due to change in the estimated

costs of the projects. There are large numbers of projects, which are unapproved and even in case of approved projects; the approvals are upto 4 years old. On the basis of actual expenditures made as well as projected financial requirement, considerable cost escalation over the original estimated costs may be kept in view.

Since the commencement of the next Plan is imminent, it would be prudent to take up techno-economic approval of all the unapproved projects and as many as possible projects should be re-assessed for their revised costs. This will enable the Planning Commission to provide adequate funds and allocate priorities amongst the projects. As indicated, states have reported 287 projects, which have been completed prior to commencement of XI Plan. In order to improve their performance, it will be necessary to take up ERM works on many of them to restore/ improve their performance parameters. Such projects may be further addition to the projects already identified for taking up in XII Plan. Accordingly, the allocation on ERM has been suitably enhanced. Abstract of State-wise and category-wise financial requirement during XII Plan is given at Annexure-2.7.

2.4.7 A Review of Performance Reported for Completed Projects

As a part of the data collection exercise, the information about the projects completed before XI Plan (completed upto 2006-07) was also sought. As shown above at Para 2.4, a total of 285 projects were reported under this category. The data has some shortfalls as very large sized projects like Bhakra Nangal project have not been reported by the concerned States. Hence, these data cannot be considered as comprehensive. However, the projects reported have been analyzed from the point of view of the utilization of the potential created under them. Considering the available data as random sample data, the analysis has been made. Out of the data made available, a total of 26 projects fall in the category of pre-plan completed projects and 258 projects have been shown as having completed between 1950 and 2006 (upto end of X plan). In a number of cases for the plan period completed projects, the utilization figures have not been given or are obviously an error. State- wise break-up of number of total projects completed upto X Plan and The information collected as sample data for ascertaining average of maximum utilization achieved in them are given at Annexure -2.8 and Annexure-2.9 respectively.

2.5 Command Area Development and Water Management

2.5.1 Objective

The Centrally Sponsored Command Area Development (CAD) Programme was launched in 1974-75 for development of adequate delivery system of irrigation water up to farmers' field with an objective to bridge the gap between potential created and utilised and to enhance water use efficiency and production and productivity of crops per unit of land and water for improving socio-economic condition of farmers. The programme envisages integration of all activities relating to irrigated agriculture in a coordinated manner with multi-disciplinary team under a Command Area Development Authority.

2.5.2 Coverage

Initially, 60 major and medium irrigation projects were taken up under the CAD Programme, covering a Culturable Command Area (CCA) of about 15.00 million hectare. From 1974-75 till now, 314 projects with a CCA of 28.95 Million ha have been included under the programme. After inclusion of new projects, deletion of completed projects and clubbing of some projects, there are now 144 projects under implementation. The programme was restructured and renamed as Command Area Development and Water Management (CADWM) Programme w.e.f. 1-4-2004. Now the scheme is being implemented as a State Sector Scheme during the XIth Five Year Plan (2008-09 to 2011-12).

2.5.3 Programme Components

The components of the CADWM Programme are as follows:

a) Survey, planning and designing of on-Farm Developments (OFD) works;
b) On Farm Development (OFD) works comprising construction of field channels and also land levelling and shaping and realignment of field boundaries, wherever necessary with a minimum 10% beneficiary contribution.

   To promote water use efficiency in irrigation, financial assistance is provided to the states for development of infrastructure to facilitate use of sprinkler/ drip irrigation system as an alternative to construction of field channels. The assistance under this item will not be admissible for sprinkler and drip irrigation systems but will be limited to construction of stilling tank, pump house and laying conveyance pipes upto farmers' fields. The cost norms as applicable for On-Farm Development (OFD) works will also be applicable for such works.

c) Construction of field, intermediate and link drains for letting out surplus water;
d) Correction of system deficiencies above the outlet up to distributaries of 150 Cusec(4.25 cumec) capacity;
e) Reclamation of water logged area with a minimum 10% beneficiary contribution including use of location specific bio-drainage techniques to supplement conventional techniques for reclamation of water logged area;
f) Trainings/adaptive trials/demonstrations through Water and Land Management Institutes (WALMI) and other Central/State institutions and monitoring & evaluation of the programme with 75% funding from Government of India;
g) Warabandi [with requisite funds for hardware activities under item(c) and software activities under item (f)]
h) One time functional Grants to Water Users' Associations; and
i) Establishment cost: 20% of the expenditure on items(b),(c),(d) and (e)

The following provision for inclusion of project has been made in the programme during XI th Five Year Plan:

(i) Any new project is included under the Programme only in lieu of completion/deletion of an on-going project in a particular State except for the projects included in the Prime Minister's package for agrarian distress districts, projects benefiting the drought prone areas, tribal areas, projects in the States having irrigation development below the national average and projects located in special category States/areas, namely, NE States, Uttrakhand, Himachal Pradesh, Jammu and Kashmir and Kalahandi-Bolangir-Koraput (KBK) districts of Orissa.

The funding pattern for all the Programme components is on 50:50 sharing basis between the Centre and the State/farmers for all the components except for State sponsored software components such as training of farmers and field functionaries and officials, adaptive trials and demonstrations, seminars/conferences/ workshops, monitoring & evaluation of the programme etc. for which the funding pattern is 75:25 basis between the Centre and the States.

2.5.4 Outlay

The approved outlay for the Command Area Development and Water Management Programme during the XI Five Year Plan (2008-09 to 2011-12) is Rs.1600 crore.

2.5.5 Financial Achievements

An amount of Rs.3528.09 crore has been released to States as Central Assistance under the CAD Programme since its inception in 1974-75 upto March, 2008. The continuation of CADWM scheme has been approved as State Sector scheme with effect from the year 2008-09. During the year 2010-11, an amount of Rs.456.40 crore was released to States against an outlay of Rs.499 crore. Total state sector (2008-09 to 2010-11) release is Rs. 1194.39 crore. The details of central assistance released during IX, X and XI plan (2007-08, 2008-09, 2009-10 and 2010-11) are shown in Table 2.7 below.

Table 2.7: Central Assistance released under CADWM Programme

(Rs. Crore)

Period	Outlay approved by Planning Commission	BE Allocation	Release	% Release w.r.t. BE Allocation
IX Plan	1000	825.72	751.66	91.03
X Plan	1208	969.80	818.57	82.12
XI Plan				
2007-08	300	300.00	277.14	92.38
2008-09	350	350.00	324.29	92.68

2009-10	400	400.00	413.70	103.4
2010-11	499	499.00	456.40	91.5

2.5.6 Physical Achievements

The core components of physical works are construction of field channels, implementation of warabandi (rotational water supply) and field drains. The cumulative progress of works on these components is given in table 2.8 below

Table 2.8: Cumulative progress of works of field channels and drains

(Million Hectare)

Item of work	**Cumulative achievement since 1974-75 to 1996-97**	**Achievement during**					
		IX Plan	**X Plan**	**2007-08**	**2008-09**	**2009-10***	**2010-11***
Field Channel	13.95	1.80	2.31	0.394	0.429	0.384	0.413
Field Drains	0.77	0.35	0.64	0.069	0.13	0.094	0.058

***Provisional**

2.5.7 Reclamation of Water Logged Areas

Although development of irrigation has increased agriculture production, it has also caused adverse effect in the form of water logging and associated problem of soil salinity/alkalinity in many irrigation commands. The problem of water logging can be mitigated to a large extent by efficient water management and by adopting suitable preventive measures. However, in spite of best efforts, the problem of water logging has surfaced in many irrigation commands and thus it is essential to reclaim such areas so as to have optimum agricultural production from them. The Ministry of Water Resources introduced a component of Reclamation of Water logged Areas under the Centrally Sponsored Command Area Development Programme w.e.f. 1.4.1996. So far 579 schemes of 9 states, namely, Bihar, Gujarat, Madhya Pradesh, Jammu & Kashmir, Karnataka, Kerala, Maharashtra, Orissa and Uttar Pradesh have been approved for reclamation of 78.81 th. ha. water logged area. Out of this, an area of 52.11 th. ha. has been reported to be reclaimed by these States.

This component alone is not able to redress problems of water logging in the country. As such, there is a need to launch a generic scheme on reclamation of waterlogged areas to address this problem at national level.

2.5.8 Participatory Irrigation Management (PIM)

The National Water Policy (2002) has emphasized the need for participatory approach to water resources management, which says that “Management of the water resources for diverse uses should incorporate a participatory approach: by involving not only the various governmental agencies but also the users’ and other stakeholders, in an effective

and decisive manner, in various aspects of planning, design, development and management of the water resources schemes. Necessary legal and institutional changes should be made at various levels for the purpose. Participatory approach provides for increased reliability and equity of water distribution, reduction in disputes, better and timely maintenance of the system, increased crop yields and income from agriculture, increased recovery of water charges and increase in local employment in agriculture.

Recognizing the need for a sound legal framework for PIM in the country, the Ministry of Water Resources brought out a model act to be adopted by the State Legislatures for enacting new Acts/ amending the existing irrigation Acts for facilitating the PIM. Despite repeated emphasis by Government of India so far, only 15 States namely Andhra Pradesh, Assam, Bihar, Chhatisgarh, Goa, Gujarat, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Orissa, Rajasthan, Sikkim, Tamil Nadu and Uttar Pradesh have enacted PIM Acts/ amended the existing irrigation Acts. Although a large number of Associations are reported have been formed in various States, only a limited number have actually been handed over the system. Successful functioning of WUAs is reported to be only in a limited number of projects in the States like Maharashtra, Gujarat and Andhra Pradesh and Orissa. There is therefore, urgent need to streamline the functioning of WUAs so that they can play expected role in the management of irrigation systems.

The participation of farmers in the management of irrigation would include transfer responsibility for operation & maintenance and also collection of water charges to the Water Users' Association in their respective jurisdiction. With effect from 2008-09, one time functional grant @Rs.1000/- per ha. to be shared by the Centre, State and farmers @ Rs.450 : 450 : 100 respectively is being paid to outlet level Water Users Associations' as incentive, the interest from which is to be used for maintenance. So far 63167 Water Users' Associations have been formed in various States covering an area of 14.623 M.ha. under various commands of irrigation projects.

Under the programme, formation of Water Users' Associations (WUAs) at minor or in specified area of a canal is mandatory for implementing the CADWM Programme. Apart from this, farmers will have to contribute 10% cost of the works in the form of cash/ labour in the construction of OFD works and reclamation of water logged areas.

WUAs formed are not very active and effective due to different reasons. Lack of administrative will to share responsibilities and work together with farmers, lack of political will to fix water charges to cover at least operation and maintenance cost, enabling legal framework, lack of bulk volumetric supply of water to farmers and mutually accountable partnership are some issues which come in the way of forming efficient and effective WUAs. In addition, there are reasons like enforcement of discipline in water use among water users, abuse of positions by WUA leaders, politicization of WUAs, heterogeneous groups and lack of cooperation, grievance redressal and conflict management which speak volumes about the unawareness of WUAs members about their role and responsibility. They are to be suitably empowered through adequate capacity building exercises. Financial sustainability of WUAs are also

to be ensured.

Ideally the legal framework for Participatory Irrigation Management should provide for creation of farmers organisations at different levels of irrigation systems as under:

(i) Water Users' Associations (WUAs) for a group of outlets or minors
(ii) Distributory Committee for a distributory to be elected by the Presidents of all the Water Users' Associations of the minors of the particular distributory concerned.
(iii) Project Committee for the irrigation system as a whole to be elected by the Presidents of the distributory Committees in the project area.

The Association, at different levels are expected to be actively involved in: (i) Operation and maintenance of irrigation system in their area of operation; (ii) Equitable distribution of irrigation water to the beneficiary farmers as per the warabandi schedule; (iii) collection of water charges and depositing 50% or as agreed to as per MoU, to the department; (iv) resolve disputes among the members and WUA.

For financial sustainability, the WUAs need to generate sufficient revenue to be able to operate and maintain the irrigation system in their jurisdiction as well as cover the costs of their office and emergency expenses that might be required. Some States have authorized WUAs to retain 50% of the revenue for O&M of the systems. However, this has widely varied from States to States. Minimum retention should be 50%. Other factors to provide sustainability to WUAs are assured supply of irrigation water upto the tail ends of canals and adequate capacity building activities prior and after implementation. Systems should be rehabilitated before handing over. The motivator should try to institutionalize WUAs and develop local leadership to be able to take over different functions.

2.5.9 Correction of System Deficiencies

A number of irrigation projects in the country have been operating much below their potential due to shortage of funds for O&M related activities such as cleaning of the channels by de-silting and weeding, raising earthwork in embankments or dressing and bed and side-slopes to the design standard and removing undercuts in hard strata, strengthening of banks in filling sections, restoring bed gradients, replacing and painting metal parts in gates and hoists, making control and measuring devices fully functional etc. This has been by and large responsible for unreliability in availability of irrigation water at farm level and consequently the reduced irrigation efficiency. The scope of the CADWM Programme has, therefore, been expanded to take care of system deficiencies occurring above the outlet (on distributaries of capacity up to 4.2 cusec) through proper rehabilitation. This would eventually improve the output of the activities below the outlet as well. A cost norm of Rs. 6000/- per ha. has been kept for this activity. The State Governments are required to ensure that distributary Committees are formed, which can take over these distributaries for operation and maintenance, after these have been

rehabilitated. The financing pattern for this component is 50: 50 between the Centre and States.

2.5.10 Micro Irrigation

Surface / gravity irrigation needs more water in compared to micro irrigation and leads to water accumulation of excess water in absence of proper drainage arrangement. Yields of crop are better in micro irrigation in addition to the saving of water. Water saving in various crops from sprinkler irrigation ranges from 16% to 69% over the traditional method and increase in crop yield from 3% to 57% whereas in drip water saving range is 5% to 68% and yield increase in crop is 10% to 50% (Report of Sub-Group II on "Efficient Utilization of Existing Irrigation Facilities",MOWR, December, 2008). Although, it involves more O&M cost for energy charges as compared to surface irrigation, micro irrigation is more efficient system to increase water use efficiency. Irrigation efficiency in drip irrigation is about 90% as compared to about 65% in the case of sprinkler irrigation and about 35-50% in case of lined distribution of conventional method of irrigation as per the CWC studies, 1991. In addition to water saving, micro irrigation results in enhanced growth & yield, saving labour & energy, flexibility in operation etc.

Micro Irrigation is being implemented through drip or sprinkler irrigation systems depending upon the crop and agro climatic conditions. In Sprinkler Irrigation, water is discharged under pressure in the air through a set of nozzles attached to a network of high density polyethylene (HDP) pipes, simulating rainfall. These systems are suitable for irrigating crops where the plant density is very high. Sprinkler Irrigation Systems may be portable, semi-permanent and large volume sprinkler.

Drip Irrigation involves technology for irrigating plants at the root zone through emitters fitted on a network of pipes (mains, sub-mains and laterals). The emitting devices could be drippers, micro sprinklers, mini-sprinklers, micro-jets, misters, fan jets, micro-sprayers, foggers etc. which are designed to discharge water at prescribed rates.
At present, central assistance is being provided under CADWM Programme for development of infrastructure to facilitate use of sprinkler/drip irrigation systems as an alternative to construction of field channels. The assistance under this item will be limited to construction of stilling tank, pump house and laying of conveyance pipes up to farmers' fields. The cost norms as applicable for OFD works will also be applicable for such works.

To address the judicious and improved methods/technologies for harnessing maximum benefits from available water resources to enhance productivity without affecting soil health, a scheme on Micro Irrigation was launched during the year 2005-06 and has been up scaled to be implemented as National Mission on Micro Irrigation (NMMI) during XI Plan. NMMI is being implemented by the Ministry of Agriculture and Micro Irrigation Technologies are being promoted for agriculture/horticulture development. As per recommendation of the Task Force constituted by Ministry of Agriculture, there is a potential of 69 Mha. (27 Mha under drip and 42 Mha under sprinkler) to be achieved

under Micro Irrigation. During XI plan, an area of 22.77 lakh hectare has been covered during XI plan till March, 2011 under this scheme and an amount of B 2756.43 crore has been released to the States. An area of about 12.40 lakh hectare (46.45%) and 13.96 lakh hectare (53.55%) have been covered under drip and sprinkler irrigation during the period from 2055 to 2011.

Micro-irrigation needs to be included in CADWM programme as a basic component so as to put all measures related with ensuring water use efficiencies in irrigation projects together.

2.5.11 Constraints & Suggestions

1. Modernisation of State Irrigation Departments

All state sector schemes are being implemented by the State Water Resources (WR)/ Irrigation/ Agriculture Departments. These Departments have to be business -like service providers, fully accountable to the people. Most of these state departments have not been able to technically upgrade. Also, these departments are mostly construction-centric and usually lack man-power and expertise to integrate social engineering in their activities. Some long terms measures are required to enable them to integrate these activities to accrue desired results in irrigation sector.

2. Different approach for implementation of CADWM and non-uniform response to the direction of Government of India by States

The State governments are also not taking up the guidelines uniformly. Some respond quickly and some take their own time in meeting the requirement. The Model Participatory Irrigation Management (PIM) Act which was circulated by the Ministry during 1997-98 has not been enacted by 13 States. So far, only 15 States have enacted PIM Act. As such, there is practical difficulty in implementing the guidelines uniformly by all the states for the desired results.

3. **Exclusive set up in states for implementation of CADWM Programme**

Some states are not able to provide due priority to CADWM programme and implement it in various projects without creating a CAD Authority. In those states, the programme is implemented without a multi-disciplinary team and is not able to accrue commensurate benefits. Such states are to create exclusive set up for implementation of the programme and attach due priority to maintenance of created irrigation infrastructure.

4. Inability of states to provide matching share of 50%

Some states are not able to provide adequate fund and matching share of 50% and are not able to take optimum advantage of the programme. The states should enhance the budget allocation in this regard and expedite more and more coverage of area.

5. Lack of integrated and coordinated approach

Irrigated agriculture is a multi-disciplinary activity with high investment and high risk. Provisions of timely assured supply of water, sound agronomical/plant protection practices, availability of inputs like HYV seed, fertilizers, credit, pesticides/insecticides and remunerative prices of produce are all necessary for its sustainability. When CADWM programme was launched, the state governments were requested to identify 2-3 projects and integrated and coordinated efforts of all state departments related with irrigated agriculture were required to be directed to achieve the optimum benefits. Subsequently, CAD authorities were to be constituted where the officers/ staff from the relevant departments like Engineering, Agronomy, Extension, Credit, Cooperation and other agriculture input departments were to be posted so as to optimize return on investment. Even the town planning and roads were included initially as components of CADWM Programme. However, subsequently, the CAD Authority does not constitute the multi disciplinary team and lack of coordination among the related state departments is also apparent. As such, the optimum benefits from the programme are not derived. It is necessary that the approach as envisaged initially should be put in place to have integrated and coordinated approach for optimum benefits.

6. Lack of holistic implementation of Programme

In many states, the Programme is implemented by constructing only the field channels so much so that the construction of field channel only is construed as CADWM programme. Naturally, the optimum benefits are not available. The programme is needed to be implemented with its entire component for optimum benefits.

7. Beneficiary contribution of 10%

Many states and farmers have been putting this provision as a constraint of the Programme. State like Himachal Pradesh and others have not been able to claim central assistance only because of this component .States like Gujarat and Rajasthan have also remained unable at times to submit proposal for release of central assistance due to their inability to collect farmers' contribution in time. However, this is also a fact that farmers always wait for government help and there is a lack of local investment in irrigation sector. This contribution of 10% stimulates local investment amongst farmers. It is often advocated that any assistance provided to famers should not be in the form of charity, rather it should always be attached with some strings so as to stimulate local investment. This component is necessary to ensure a sense of belongings in the farmers, to have their involvement, to put in place need based expenditure and to stimulate local investment and as such, may continue.

8. Realistic cost norms linked to schedule of rates and inflation / escalation

The state Governments have been demanding that the prescribed norms do not conform to the actual cost of OFD works. They have suggested from time to time to enhance the

cost norm and to link the prevailing cost norm with schedule of rates in the state and also, the cost norm should have suitable provision for escalation. The state governments have also indicated about the inadequacy in percentage of central share. They want it to enhance from present 50% only to 75% for general category state and to 90% for special category states.

9. Release of central assistance directly to the project authorities

Often the project authorities have been intimating the delay in actual release of central assistance to them. The state governments have sometimes been utilizing this fund for other purposes. As such, it would be appropriate that the release of Central assistance is directly made to the concerned project authority.

10. Formation of WUAs to be taken up in mission mode

Many of the bottlenecks discussed above are not easy to address. It is also not easily possible to remove non-uniform approach and response by states. For optimum results, soft components of the programme like training, demonstration, monitoring and evaluation etc will need to be put as central component. Formations of effective and vibrant WUAs in each on-going project may be taken up in the mission mode. WALMIS(after due strengthening)/PSUs/Private sector/ NGOs may be involved in undertaking formation of WUAs along with their various capacity building activities.

11. Generic Scheme for Reclamation of Water logged areas

The existing small component under CADWM Programme is applicable for CADWM Projects only and is not able to take care of the need at national level. As such, there is a need of launching generic scheme on “Reclamation of Water logging.”

12. A separate component of micro-irrigation in CADWM Programme

Presently, there is a provision of creating infrastructure under CADWM programme. This provision has not been appropriately utilized by the states. As such, there is a need of putting all measures related with ensuring water use efficiencies in irrigation projects together and thus, micro-irrigation may be included as a separate component under CADWM Programme. Where micro-irrigation or pipe distribution is provided, smart card may be used in priced distribution of water to bring optimum efficiency.

13. Extension, Renovation and Modernisation (ERM) of CADWM Project

Centrally sponsored CAD Programme was launched during 1974-75 and the initial guidelines on participatory irrigation management (PIM) circulated during 1987. During this period and subsequentlyalso, CADWM works executed could not be handed over to WUAs for MOM. As such, ERM of old CADWM projects also need to be introduced for proper use of created infrastructure.

14. Conceptual integration but separate implementation with AIBP

The dovetailing of CADWM programme with AIBP is advocated as far as their conceptual integration is concerned. The merger of the programme with AIBP is likely to result in subsuming of CADWM programme by AIBP as under AIBP the construction centric approach is adopted to construct dam, head works and canal networks. However, under CADWM Programme, a lot of emphasis is laid on the soft component which have not been paid due attention by the states. Also, many states have created independent infrastructure/ CAD Authority with multi-disciplinary team of officers for implementation of CADWM programme. This set up may not be suitably utilized in case of merger of the two programmes. It is also not appropriate to remove construction of field channel from CADWM Programme and put it under AIBP, as construction of field channel is an activity which directly affects and concerns farmers and provides them a reason to associate and participate during its construction. Also, the created infrastructure are required to be operated and maintained (O&M) properly so that they accrue commenssurate benefits sustainably. For this, formation of effective and active water users associations (WUAs) and its involvement right from planning stage is a pre requisite. It is necessary that created irrigation infrastructures are handed over to WUAs and they are competent enough to take up their management, operation and maintenance (MOM). As such, the CADWM programme is implemented separately in all those projects funded by the AIBP pari-passu with construction of canal networks. The CADWM programme in such integration is required to have its own separate identity with its own separate guidelines, budget, implementation schedule and progress monitoring. As such, implementation of CADWM Programme in both sets of on-going projects of XI plan and integrated CADWM and AIBP projects will be under one guideline and with separate identity, as above.

A tabular compilation has also been made to show resource requirement for dovetailing of programme with AIBP and its implementation in all irrigation projects. For implementation of programme with AIBP, an amount of Rs.9093 crore is required whereas for its implementation in all irrigation projects, an amount of Rs.22450 crore is needed .If the central share is enhanced to 75%, as recommended by the Working Group for 11 th Plan, then the corresponding central share would be Rs. 13640 crore for AIBP and Rs.33675 crore. The availability of infrastructure may also have to be considered for setting the physical target. The states have been able to cover on an average area of 3.5 lakh ha/ year. As such, tagetting to cover more than 25 lakh ha in XII Plan will be optimistic.

Table 2.9: Estimated Cost of Implementation of CADWM works
(Unit cost of implementation of CADWM work assumed as Rs 23,000/Ha)

A) All Major and Medium Projects

Sl. No.	Details of Projects	Total No Completed	No. of projects for CAD implementation	CCA (000 ha)	Estimated cost (@Rs 23,000/- per Hectare) (Lakh Rs)	Central Share (Rs. Lakh)
1	Completed Major Projects Upto IX plan	154	86	4250	977500	488750.0
2	Completed Medium Projects Upto IX plan	774	695	1633	375590	187795.0
3	Major/Medium Projects Completed (anticipated) During X Plan	72	52	1355	311650	155825.0
4	Major Projects completed during pre plan period	74	46	2122.62	488202.6	244101.3
5	Medium Projects completed during pre plan period	143	141	280.13	64429.9	32215.0
6	On Going Major and medium Projects	455	410	9881.38	2272717.4	1136358.7
	Grand Total	**1672**	**1430**	**19522.13**	**4490089.9**	**2245045.0**

(B) AIBP Projects

Sl. No.	Details of Projects	No of projects for CADWM implementation	CCA (000ha)	Estimated cost (Rs. Lakh)
1.	**Estimated cost of implementation of cadwm works in all AIBP projects.** **(**Total No. of AIBP Project = 268, and CAD works are completed in 23 project and ongoing in 27 projects ,Total 50 projects)	**218**	**7907.369**	**1818694.87**

2.6 Efficiency of Water Use

2.6.1 Goals Set In National Water Mission for Increasing Water Use Efficiency

The Government of India has recently approved National Water Mission with its main objective being conservation of water, minimizing wastage and ensuring its more

equitable distribution across the whole country through integrated water resources development and management. National Water Mission has set the following five goals:

(i) Comprehensive water data base in public domain and assessment of impact of climate change on water resources;
(ii) Promotion of citizen and state action for water conservation, augmentation and preservation;
(iii) Focused attention to over-exploited areas;
(iv) Increasing water use efficiency by 20%; and
(v) Promotion of basin level integrated water resources management.

One of the important goals of Nation Water Mission is to increase water use efficiency by 20%. Considering the fact that Irrigation sector is the biggest consumer of water, the increase in water use efficiency of Irrigation projects by 20% is going to have a major impact on the overall availability of water not only for agriculture sector but also for other sectors of economy.

2.6.2 Water Use Efficiency Studies of Completed Major/Medium Irrigation Projects

To make a realistic assessment of water use efficiency and performance of completed irrigation projects, the studies in respect of a few completed Major/Medium Irrigation Projects were taken up by Government of India by actual field measurements of discharges and losses in canal & distribution system. The scope of studies was evaluation of following efficiencies and aspects of completed Irrigation Projects:

- Storage Efficiency;
- Conveyance Efficiency;
- On Farm application Efficiency;
- Drainage Efficiency;
- Irrigation Potential created and utilized.
- The selected projects are located in various agro climatic zones and thus are representative of major regions of India.

To have a realistic assessment of Water Use Efficiency of Completed Major/Medium Irrigation Projects in the country, the studies of a few projects on pilot basis were taken up in 2006 by Central Water Commission under the Plan Scheme of Ministry of Water Resources – 'R&D in Water Sector'. The studies of 30 projects have been completed so far.

2.6.3 Present Status of Water Use Efficiency of Irrigation Projects In India Based On Studies Carried Out

The result of studies are summarized and given in Table-2.10 The table gives the name of

the project, type of the project and its culturable command area, conveyance efficiency, on-farm application efficiency and overall water use efficiency of the project.

Table-2.10: Water Use Efficiency of Completed Major/Medium Irrigation Projects based on Field Measurements of Losses

Sl. No.	Name of Project	Culturable Command Area (Hectare)	Conveyance Efficiency (%)	On Farm Application Efficiency (%)	Overall Project Water Use Efficiency (%)
(1)	(2)	(3)	(4)	(5)	(6)
1.	Bhairavanithippa Project	4,856	86	67	58
2.	Gajuladinne (Sanjeevaiah Sagar Project)	10,300	57	45	26
3.	Gandipalem Project	6,478	73	38	28
4.	Godavari Delta System (Sir Arthur Cotton Barrage)	4,10,108	83	54	45
5.	Kurnool –Cuddapah Canal System	65,465	62	45	28
6.	Kaddam Project	27,519	51	36	18
7.	Koil Sagar Project	11,700	83	75	62
8.	Krishna Delta System (Prakasam Barrage)	5,29,000	87	46	40
9.	Nagarjuna Sagar Project	8,89,000	56	39	22
10.	Narayanapuram Project	15,855	47	32	15
11.	Nizamsagar Project	93,659	87	45	39
12.	Srisailam Project	59,900	50	34	17
13.	Rajolibanda Diversion Scheme	35,410	82	51	42
14.	Somasila Project	54,650	56	32	18
15.	Sri Ram Sagar Project	3,71,054	78	57	45
16.	Tungabhadra High Level Canal	45,800	81	58	47
17.	Tungabhadra Low Level Canal	61,163	72	45	32
18.	Vamsadhara Project	82,087	91	58	53

Sl. No.	Name of Project	Culturable Command Area (Hectare)	Conveyance Efficiency (%)	On Farm Application Efficiency (%)	Overall Project Water Use Efficiency (%)
(1)	(2)	(3)	(4)	(5)	(6)
19.	Yeleru Project	27,240	50	28	14
20.	Augmentation Canal Project	85,443	79	72	57
21.	Dholabaha Dam Project	2,600	74	71	53
22.	Ranjit Sagar Dam Project	3,00,000	51	65	33
23.	Ahraura Dam Irrigation Project	14,964	70	70	49
24.	Matatila Dam Project	1,79,880	68	80	54
25.	Naugarh Dam Irrigation Project	64,221	71	70	50
26.	Pili Dam Project	4,044	58	65	38
27.	Walmiki Sarovar Project	6,271	62	62	38
28.	East Baigul Reservoir Project	16,605	64	65	42
Average			**69**	**52**	**38**

Based on these limited studies, it may be concluded that water use efficiency of Irrigation Projects in India is quite low and there is a huge scope to increase the same.

2.6.4 Major Findings and Recommendations of Studies

A. Water Use Efficiency

- Wide variation in the water use efficiency of projects.
- Varies from as low as 14% to high up to 62%.
- Average values of efficiencies:
  - Conveyance: about 70 %;
  - On farm application: about 50 %;
  - Overall project efficiency: about 35 %
- 'On-Farm application Efficiency' is relatively less in comparison to conveyance efficiency.

B. Major Findings for Low Water Use Efficiency

- Poor or non-maintenance of canal and distribution network resulting in:

- Growth of weed & vegetation;
- Siltation of canals;
- Damages in lining in lined canals;
- Distortion of canal sections due to siltation or collapse of slopes;
- Leakages in gates and shutters;

- Non provision of lining in canals, field channels & water courses passing through permeable soil strata and thus having high seepage losses;
- No regulation gates on head regulators of minors causing uneven distribution of water;
- Over irrigation due to non-availability of control structures in distribution system;
- Poor management practices;
- Lack of awareness among farmers

2.6.5 Measures recommended for increasing Water Use Efficiency

A. Structural Measures

- Regular/periodic maintenance of canals by clearing off weed/ vegetation growth etc.;
- Restoration of sections of all channels to their designed sections;
- Repair of damaged lining in canals and regular maintenance of lining so that progressive damage to lining could be avoided;
- Selective lining of canals in reaches passing through permeable soil strata;
- Lining of field channel/water courses having high losses;
- Regular maintenance of gates and shutters so as to eliminate losses on account of leakages.
- Repair / Replacement of damaged gates and shutters;
- Improve control in distribution networks by providing appropriate control structures in canals and distribution system;
- Installation of water meters for ensuring volumetric supply of irrigation water to farmers;
- Rehabilitation & Restoration of Structures.

B. Non-structural Measures

- Involvement of farmers in the management of Irrigation Systems for ensuring equitable distribution and efficient use of irrigation water;

- Formation of Water Users Associations in the command area and giving them the responsibility of distribution of irrigation water and maintenance of Irrigation system progressively starting from field channels;
- Adopting Participatory Irrigation Management practices.
- Training of farmers so as to educate them on various issues related to correct agricultural practices and the advantage of optimal irrigation and harms of over Irrigation.
- Providing agricultural extension facilities in the command of each Project.
- Appropriate pricing policy for irrigation water to avoid wastages and over irrigation.

2.6.6 Actions Being Taken For Enhancing Water Use Efficiency Of Irrigation Projects And Role Of Farmers

Government of India has taken many steps for enhancing the water use efficiency of existing Irrigation Project, Projects under execution and projects contemplated for execution in future:

(i) A National Water Mission has been set up and one of its goals is to increase the water use efficiency by 20%.

(ii) Lack of data is a serious constraint to improving water use efficiency in irrigation.

(iii) Encouraging and popularizing water saving technologies for irrigation like sprinkle and drip irrigation especially in water deficit areas.

(iv) Low 'On-farm application efficiency' is the main culprit for having low water use efficiency of Irrigation Projects. One of the reasons for low on farm application efficiency has been non-existence of water channels and water sources at the field level in many projects due to non development of command area. Pari passu development of command is being insisted upon in all ongoing irrigation projects so that irrigation potential created could be utilized concurrently and irrigation water is utilized efficiently.

(v) Invariably, the farmers at head reaches draw more water and farmers in the middle and tail reaches receive less water or no water at all, resulting in low water use efficiency of irrigation projects. This problem can be resolved only by involvement of beneficiaries i.e. farmers in the distribution of irrigation water at field level and in the management of irrigation systems. Accordingly, the formation of Water User Associations in the command area of Irrigation Projects is being encouraged and insisted upon so as to evolve farmers in the distribution and management of irrigation projects.

(vi) Participatory Irrigation Management practices and Farmer's cooperatives are being promoted by Government of India.

CHAPTER-3
INSTITUTIONAL REFORMS

3.1 Introduction

The implementation and sustained operation of major and medium irrigation projects is a prime necessity for efficiently delivering the water resources to the beneficiaries in an optimal manner. The development and implementation of major and medium irrigation projects has a long gestation period. Also, the project is required to last "forever" as the benefits accruing from the project assume ever increasing economic significance. The irrigation project, therefore, faces a changed environment in terms of technological, social and financial aspects over its operational period. The ever changing scenario is to be responded to by the institution in-charge of implementing the projects so that the solutions given by them are appropriate and as per the needs of the field.

In this context, the Working Group also examined the institutional set up prevailing at various levels in the country and context in which these institutions are required to perform. It has been realized early on that there is a need for institutional reforms for delivering the MMI Projects as well as operating them for future. The aspects were examined in great deal by National Commission on Integrated Water Resources development in 1999 and extensive suggestions were made to this end. Based on the previous works, recommendations in these areas, as well as considering the current socio economical and technological set up, the Working Group has come up with the following analysis.

3.2 Need for Reforms

Looking at the MMI Sector the following three aspects have to be dealt with by the institutions:

(i) Planning and construction aspects

(ii) Field level implementation for delivery

(iii) Operation and management of macro infrastructure

(iv) Management and continued sustenance of beneficiary institutions.

During the early development periods the emphasis was on creation of assets in form of MMI Projects comprising of head works and canal networks. This phase has reached an advance stage, though still considerable work is yet to be done. Simultaneously, sustained activities of planning and implementation have brought about sizable assset base which need to be managed efficiently to allow it to continue providing benefits at its original designed level. Therefore, it is necessary to pay attention to these aspects also.

In respect of the existing institutions in form of water resources development at State Government level and relevant Central Government departments, more than 50 years of

developmental activities have brought about a sound technological base. MMI Projects are heavily dependent upon topographical, geotechnical set up and hydrology for the implementation. It is not possible to continue to find easy sites in terms of the above aspects and increasing demands of water has to be necessarily met by exploiting fresh sites. For this purpose there is a need for continued technological upgradation of the institutions for meeting these challenges.

With growing awareness about the finiteness of water resources as well as pressure to produce more for each unit of water. The last mile networks and social aspects of optimal distribution of available water in equitable manner need multifunctional agencies to achieve the objectives of integrated development. It has been learnt from experience that Governments cannot do everything and a top down management approach fails quite often to achieve the objectives at the point of contact with the people unless there is motivated involvement and initiative of the people themselves.

Working Group feels that with about 583 MMI projects in various stages of development and an asset base of about 1200 MMI projects, both the above aspects need to be reflected in the institutional reform recommendations.

3.3 Field level Reforms

Field level reforms largely address the irrigation delivery net work below the outlet of a minor canal. For this purpose, command area development activities have been found to be the key to success. A number of States as well as Central Government have taken up command area development activities either through the irrigation development or through a separate department/authority. Sponsoring of these activities from a central level has been in place since 1974-75 but the progress has not kept face with the increase in irrigation potential in the country. The detailed account of activities in this regard has already been provided at para 2.5 of Chapter-2 and is not repeated here. Reforms of the institution involved are required is follows:

(i) Development of a multi-disciplinary approach for establishing the desired cropping pattern in step with development of physical net work and increased availability of irrigation water. The implementing agencies have to have a fairly large number of grass root level workers in the agricultural extension services area who can hand-hold the farmers while they make change from traditional rain-fed agriculture pattern to economically viable and sustainable irrigated agriculture pattern. The present strength and capacity of Irrigation and Command Area Departments are not adequate to meet these demands.

(ii) A strong social component has to be brought in terms of establishing participatory irrigation management practice culminating in establishment of Water User Association (WUA). A strong component of social mobilization is involved here which has to overcome various socio-political hurdles. Necessary legal mechanism in form of irrigation acts or PIM acts have to be put in place. While passing an act does provide an enabling work, its acceptance and wide spread implementation remains in the realm of

social organization. Development of synergies between the line department and independent workers/NGOs in the field needs to be introduced as a wide ranging measure through institutional mechanism between the department and the independent entities.

Financial sustainability of the field level works has been a major cause of worry. Reforms for collection of irrigation service fees and its rational distribution to maintain the project as well as field level activities like WUA need be promoted. A number of suggestions have been made regarding the revenue sharing between WUA and the government department. Recommendations reflect these approaches.

3.4 Management Level Reforms

The overall management tier is formed by the Water Resources Departments in the states who have the necessary technological and financial wherewithal to manage the large structure and networks associated with the MMI projects in the state. The departments are also assisted at the central level by the Central Water Commission. As has been elucidated earlier, there are a sizeable number of projects in the country which are already in operation for the last 25 years or more. It has been observed that with the change in demands and developments in the command areas, the delivery needs of the projects have also changed. The departments are therefore, being called upon to not only create new assets but also to maintain and manage the old existing assets. Thus, the challenges of technological nature as well as social and financial nature have to be addressed.

The Working Group has laid special emphasis on the Extension, Renovation and Modernisation of the existing projects (ERM projects) before setting up the grass root level mechanisms for on farm management and improvement of the water use efficiency. For this purpose, specific challenges have to be addressed in the areas of construction planning and techniques to be adopted. Also, for improvement in the operational area, new technologies like automation techniques will also have to be integrated in the institutional experience base.

On the other hand, it has been observed that the recruitment policy of the government has resulted in erosion of the working strength of the technical personnel and adequate attention has not been paid to the continued skill development of the personnel.

With the focus on the timely and equitable delivery of the water, the social and agricultural aspects of on farm management of the irrigated agriculture need be addressed by the higher management in charge of the system management. For this purpose, the multi-disciplinary approach has to be brought about by having a team of experts and workers of the associated disciplines into the working strength of the departments. Similarly, the other related departments also need to have access to the core level expertise and information related to Major and Medium projects management from technological and hydrological angles. At present, there is a very little lateral exchange of personnel by way of deputation in the related departments. It is necessary that the lateral movements are encouraged as a part of

the cross institution building efforts.

Even though the MMI projects are treated as a prime responsibility of the Water Resources Departments, the role of the associated departments like agriculture, social welfare, Cooperative affairs and economics and statistics is equally important to necessitate reforms commensurate with the needs of the individual departments. The role of Agriculture Extension services in the field works has been decreasing over the years due to lack of manpower and other factors. It is necessary that the agriculture extension services are introduced in a mission mode into the management of the MMI projects.

Focussed research and analysis of the status of irrigation projects is also needed for meeting the goal of improved management of the available projects as well in the planning of new projects. The research institutions like WALMI need a re-look and additional resources so that the desired informed decisions can be supported by the applied research through these institutions. Additionally, studies by expert institutions are also required for addressing macro level problems. Supporting such institutions for well directed research and development is also needed. Adequate financial resources need be allocated through which the in-house expertise in these institutions is also built up.

MMI projects implementation suffers delays largely due to problems of land acquisition and resistance due to insufficient consultations with the beneficiaries/ affected personnel. Most of these areas are in purview of a multitude of departments at the state government level. It is necessary to establish suitable working mechanisms which can cross the departmental boundaries with minimum delay.

Thus, it is recommended that the higher level management of the MMI projects need be more inter-disciplinary nature with establishment of a collective decision and policy making process.

It is further recommended by the working group that the capacity building of the water resources departments in terms of manpower as well as skill sets is the need of the hour and adequate resources may be provided for this purpose.

3.5 Necessity of PIM

A major factor leading to the inefficient operation and management of canal irrigation systems is the lack of involvement of farmers or water users in the management of irrigation services. Unless there is a paradigm shift in the prevailing style of management, there would be no improvement in the performance of the services and consequently in the productivity of the irrigation lands. Involving or promoting participation of users in decisions regarding distribution and use of available water, fostering in them the concept of ownership of the system and also entrusting them with the day to day responsibilities of operation and maintenance, and to pay for the improved services are some of the essential steps towards achieving this paradigm shift. This demands a balance amongst the resources available to meet the ever growing food requirement of the populace at an economical cost. The PIM is needed for the following purposes:

a) **Need of increase in agricultural production**
b) **Problem of fiscal availability**
c) **O&M cost and recovery of irrigation charges**
d) **Other compulsions:** Besides above aspects, there are other compulsions like non-availability of water when it is needed, taking immediate problems like leakages, adopting flexibility in water distribution and taking many more initiatives by farmers' group to make their farm economy a sustainable proposition.

PIM appears extremely necessary and worthwhile.

3.6 Capacity building of farmers and functionaries

After sustained efforts, the PIM initiatives have taken root in a few states only and a large amount of Irrigated areas are yet to establish these initiatives. In order to set up these initiatives in new areas and make them sustain against all odds, the capacity-building of farmers / functionaries have to be taken up in three different ways:

(i) Periodical training on water and crop management etc.;
(ii) Day-to-day information on input availability and market rates of production;
(iii) Adaptive trials of laboratory tested technology and demonstration of best practices / latest technology in the field.

The training of farmers can be imparted by WALMIS and other national and regional institutes established for the purpose. All 14 WALMIS / IMTIs need strengthening before they are expected to take up works like these. The day-to-day information can be made available to farmers either through e-Kiosks or e- chopals and/or through mobiles. This aspect is also very important which are needed to be seriously considered by States. The first and third issues are already covered under existing CADWM Programme and the second issue needs to be exclusively provided under the programme in the project.

3.6.1 Strengthening of Water and Land Management Institutes (WALMIs)

During eighties it was realised to have the multi-disciplinary training organisations for in-service officials related with irrigated agriculture with focus on efficient and sustainable management of Water & Land Resources. Accordingly, 14 Water & Land Management Institutes (WALMIs) / Irrigation Management Training Institutes (IMTIs) were set up under USAID assisted Water Resources Management and Training (WRM&T) Project to provide need based trainings with objectives viz. to promote advancement of science and acquisition of scientific knowledge, to provide in-service training of multi disciplinary nature to officers and staff engaged in irrigation management and training to farmers, to undertake action research / adaptive research on water & land management related aspects, to undertake activities that will promote optimal use of water and land

resources, to conduct workshops, seminars, farmers' meets and publication of magazines, periodicals etc. and to provide consultancy services in water management and land development for irrigated agriculture.

The role set for WALMIs / IMTIs are quite comprehensive and would have served the intended purpose. However, WALMIs have not been able to function as per assigned objective due to various constraints viz. lack of eminent, experienced and willing officers on full time basis to lead the Institutions, frequent transfers of Directors and faculty members, Governing body not consisting of requisite professional members of related discipline, not able to pay due attention and not meeting regularly as stipulated, key posts remain vacant for a long time, inadequate financial support from State Governments to run these Institutions and absence of an umbrella organisation at the national level so as to coordinate various activities of national and international importance.

A Task Group was constituted by the Ministry of Water Resources under the Chairmanship of Additional Secretary (Water Resources) to assess the functioning of the WALMIs. A proforma was prepared and circulated to all the WALMIs so that the information received from the institutes could be compiled. Based on the information received from the various WALMIs / IMTIs, an assessment is made by the Task Group with regard to existing infrastructural facilities and faculty composition of the WALMIs / IMTIs. The Task Group has recommended to provide need based - one time financial assistance for modernization of existing infrastructure/and creation of additional infrastructure to those Institutes who carry reform measures, sign MoU between States, Institutes and Government of India. The Ministry will formulate policy / scheme to provide financial assistance to each WALMI/IMTI but the initiative to avail it has to come from WALMIs / IMTIs and fund in installments will directly be provided to the institutes. Each installment will be linked with deliverable outputs. The implementation of the Scheme will be monitored by MoWR.

For providing one-time financial assistance, the State Governments / WALMIs were requested to submit proposals indicating minimum requirement of central fund required to upgrade and to strengthen the WALMIs / IMTIs in their States. They were requested to make the proposal as per the stipulations mentioned in the Task Group report on "Strengthening of WALMIs / IMTIs" already circulated to the State Governments and WALMIs. The proposals amounting to about Rs.100.00 crore have been submitted by WALMIs/IMTIs.

WALMIs can play an effective role in implementation of CADWM Programme in context of formation of Water Users' Association (WUA)s and capacity building in improved water and crop management at micro-level. It can also play positive roles in facilitating institutional strengthening of Water Users' Associations in each State, act as Nodal Institute for Information, education and communication (IEC) and demonstrations on optimal use of Land and Water, in promotion of Mass Awareness on Water related issues, for Performance Evaluation and Benchmarking of completed Irrigation Projects and filling

gap in the area of Research in Water Sector.

Ministry of Water Resources has no existing scheme to support WALMIs/IMTIs as recommended by Task Group. A new scheme is required to be formulated to strengthen these Institutes.

3.7 Use of Technology and Management Tools in Programme Implementation

3.7.1 Technology

Enough advances have been made in the telecommunication, computer and other sectors of science. This is required to be suitably incorporated in the old programme like CADWM which is still , more or less , implemented without using these tools and techniques. As various posts remain vacant for long and do not get easily filled up, the deficiencies are required to be made up by resorting to modern tools and technique.

i. Empowerment of farmers

E-kisok or e-chopals or information- sharing through mobile may be established at suitable places. This will also provide a platform for interaction/ networking of farmers and equip them with updated information/knowledge/ technology on availability of inputs and market information.

ii. The monitoring of the programme may use the work track system using mobile phones and geographic information system (GIS) software to identify the location of different work sites for their close monitoring.

3.7.2 Bench marking

Benchmarking may be defined as, `A systematic process for securing continual improvement through comparison with relevant and achievable internal or external norms and standards`. Benchmarking is a management tool of measuring one's own performance and practices against the best competitors and is a sequential exercise of learning from others experiences of similarly placed organisations and functions. Internally, comparison will be with previous performance against desired target.

The interest in benchmarking is driven by the objective of the organization or it may be responding to a variety of drivers. In the irrigation sector, the drivers mainly includes increasing competition for water by different sector, increasing demand of irrigation to produce more food for ever growing populations, increasing interest on production and efficient use of water resources.

The scope of benchmarking activity is determined by the objectives and scale pursued in finding the best management practices. In any systems, the major items for benchmarking would be (1) inputs; (2) processes; (3) outputs; and (4) impacts.

In measuring performance the interest would be in the efficiency inputs are converted to outputs, efficiency with which the processes converts inputs to outputs and the impacts of the inputs and output to the environment

The three domains that are of interest in the irrigation sector are:-

1. Service delivery - It covers adequacy of irrigation delivery system and efficient use of resources (Finance) to provide this service.

2. Productive efficiency - measures the efficiency with which irrigated agriculture uses water resources in the production of crops.

3. Environmental performance- measures the impacts of irrigated agriculture on land and water resources.

Benchmarking, if done properly and correctly, will bring improvement in the level of performance of irrigation projects. By using appropriate performance indicators (about 20) of benchmarking, it is possible not only to improve the water use efficiency and financial viability of the system but also ensure adoption of best management practices in the environmental sustainability and the irrigated agriculture system. Benchmarking would ultimately help appropriate intervention and in formulation and implementation of policies for improvement of projects. With little restructuring/ reorientation of organization and data collection/ processing exercise and without involving any additional resource, it should be possible to include benchmarking as a regular future activities of irrigation project.

3.7.3 Water Audit

Improving the performance of an irrigation system could result in improved agricultural productivity for meeting the demand of the growing population of the country. It is also useful to determine causes of low performance so that further deterioration of existing systems and improvements in future design of new systems could be suitably addressed. Water audit is the most effective tool for water management. Through audit, steps needed to be taken to identify, quantify and reduce water use and losses due to theft, unauthorized or illegal withdrawals from the systems and the cost of such losses to the utility. Water audits trace water use from its point of entry into the facility/system to its discharge into the confluence point. The audit also identifies and quantifies unaccountable water losses, leaks at each point of use within and around the facility. Comprehensive water audit gives a detailed profile of the distribution system and water users, thereby facilitating easier and effective management of the resources with improved reliability. It helps in correct diagnosis of the problems faced in order to suggest optimum solutions. It is also an effective tool for realistic understanding and assessment of the present performance level and efficiency of the service and the adaptability of the system for future expansion & rectification of faults during modernization. Elements of water audit include a record of the amount of water

produced (total water supply), water delivered to metered users, water delivered to unmetered users, water loss and suggested measures to address water loss (through leakages and other unaccounted for water losses). Water audit may be introduced as a regular activity in the irrigation projects for

3.8 Suggestions for Private Sector/NGOs

The suggestions of NGOs for implementing PIM are as follows:-

i) **Centrality of community based organization** – the farmers' organization should be at the centre of planning budgeting, implementation and management of canal transfer to them. A portion of the water charges collected varying between 20% and 50% needs to be retained by them for efficient management and maintenance of the system.

ii) **Equity** - it is of critical significant at all stages and suitable mechanism/safeguards need to be incorporated in the management of farmers organizations so as to ensure participation of the disadvantage users i.e. tail enders. This principle has to be built in the training and monitoring evaluation of the performance of the organizations.

iii) **Decentralization** – for efficient functioning of PIM there is a need of decentralization of the authority so that farmers' organization could exercise powers of canal officers in removing encroachment, stopping water supply to defaulters, sanction estimate of repair works etc.

iv) **Facilitating Agencies** – they have crucial role in mediating between the farmers organizations and Government officials to improve the prevalent practices. NGOs can play an important role.

v) **Monitoring and evaluation** – a participatory, outcome/impact oriented and user focused, monitoring and evaluation system for concurrent feedback and also to undertake mid-course corrections.

vi) **Training and software support** – training and software is an important aspect and State Government have to develop strategy to ensure that competent training organization provide training to key functionaries in the farmers organization and Irrigation Department in each phase of PIM implementation.

vii) **Organizational restructuring of Government agencies** – there is a need for setting up of a national council of PIM with Secretary (WR) as chairman and reputed and highly respected leaders well versed in the requirement of promoting PIM to work as Vice-Chairman, besides representation of senior officers of State Government who have

demonstrated their commitment to PIM. WALMIs/IMTIs etc. can take a lead role in this direction.

Capability building for efficient functioning of the institutions command area/water resources department and WUAs at various levels will require extensive training and expert guidelines from time to time. The institutions will have to have the personnel manning these institutions will have to have on-call approach to such facilities. For these purpose academic research intuition will have to be roped in and focused institutions created since the numbers of WUA's and departmental personnel will be large even for a relatively medium size irrigation project of say 4,000 hectares command.

There are good amount of international experience in this area which need to be studied and tailored to local conditions while bearing in mind that the units are to function as a part of the overall basin management.

3.9 Conclusion

Almost each of the major irrigation projects comes with its own set of unique conditions. While the above recommendations are general in nature, specific solutions will have to evolve in each command which will require a specific approach. The States need to take up such studies and come up with viable proposals, for which adequate amount have to be provided. Since financing such efforts may be beyond individual capability of the local communities of the States, appropriate recommendations of achievable physical and financial targets have been made in the Chapters 6 & 7.

CHAPTER-4
ASSESSMENT OF AIBP IMPACTS AND A PROPOSAL FOR CHANGE

4.1 Evolution of Central Funding of Projects through AIBP and Its present form

The AIBP was conceived in the year 1996 in order to provide financial assistance to States to complete various ongoing projects in the country so that envisaged irrigation potential of the project could be created and thereby extend irrigation to more areas. Since its formulation the terms of the programme have been widened and liberalized over time.

4.1.1 Inclusion criteria for the projects under AIBP

In 1996, irrigation and multipurpose projects costing more than Rs 1000 Crores in which 'substantial progress' had been made and other major and medium irrigation projects 'in the advanced stage' which could be completed in 4 working seasons were considered eligible for the support under the programme. The terms 'substantial progress' and 'advanced stage' have not been explicitly defined. In 1997, the Rs 1000 crore specification was reduced to Rs 500 Crore. In 1999-2000 minor irrigation projects based on surface water sources in the Special category states were also included. The inclusion of such Minor irrigation projects was extended to drought prone and tribal areas in all the states as well. In 2005, Extension Renovation and Modernisation (ERM) projects completed upto Fifth Plan period were made eligible for assistance. However, specific conditions about reforms to be initiated in the states for inclusion of and ERM project were introduced.

In order to avoid thin spreading of resources, Ministry of Water Resources has been applying a condition that a new project could be included only when an existing project under the programme has been completed. However, this criterion has been relaxed for projects/ portions of the projects benefitting Drought prone/ flood prone or tribal areas. The criterion is also relaxed for the states having development of irrigation potential below national average.

4.1.2 Time for completion of the projects

From February 2002, a distinction was drawn between those projects which could be completed in less than 2 seasons (which were called fast track projects) and those which would require 4 seasons to be completed. In January 2004, the period of completion of fast track projects was extended to 3 working seasons and that of non-fast track projects was extended to 6 to 8 working seasons. Further, the season's concept was changed to financial year. Since 2006, the concept of categorizing projects as fast track has been abandoned and all major and medium projects included in the programme are expected to be completed in four financial years subsequent to the year of inclusion. Minor irrigation projects are expected to be completed in two years subsequent to the year of

inclusion.

4.1.3 Highlights of the present guidelines

a) Major/medium projects including Extension Renovation & Modernization projects benefiting drought prone/tribal areas and flood prone areas are eligible for 90% grant assistance.
b) Major/medium projects in the Special Category States and projects in undivided Koraput, Bolangir and Kalahandi districts of Orissa are also eligible for 90% grant assistance.
c) Other major/medium projects are eligible for 25% grant assistance under AIBP.
d) Surface MI schemes fulfilling criteria specified in the guidelines of the Special Category States are eligible for 90% grant assistance and surface MI schemes of the non special category states fulfilling eligibility criteria and benefiting drought prone/tribal areas are also eligible for 90% grant assistance.
e) Maximum time allowed for completion of major/medium projects under AIBP is 4 years excluding the year of inclusion of the project under AIBP.
f) The maximum time allowed for completion of surface MI schemes under AIBP is 2 years excluding the year of inclusion of the scheme under AIBP.
g) The state governments are required to enter into an MOU with the Ministry of Water Resources for timely completion of the project specifying year wise targets of potential creation under AIBP.
h) A new major/medium project may be included in AIBP only on completion of an ongoing project under AIBP on one to one basis. However, projects benefiting drought prone/tribal areas, projects in the states having irrigation development below national average and projects included in the Prime Minister's package for agrarian distressed districts of the Andhra Pradesh, Karnataka, Kerala and Maharashtra may be included in AIBP in relaxation to one to one criterion.

4.1.4 National Projects

The scheme of the National projects was approved by the Union Cabinet in its meeting held on 7th February 2008. Subsequently, with the concurrence of the Planning Commission and Ministry of Finance, guidelines for implementation of the scheme of the National projects were issued by the Ministry of Water Resources in February 2009. Under the scheme of National projects, 90% grant assistance of the eligible project cost is to be provided by the Government of India. The time allowed for completion of national projects is generally in accordance with the time period approved for completion of the project by the Technical Advisory Committee of Ministry of Water Resources while according techno-economic clearance to the project.

The Union Cabinet also approved a list of the 14 projects as National projects and a new project apart from 14 projects declared as national projects could be included in the list of the national projects only with the approval of the Union Cabinet. 14 projects declared as national projects will be eligible for funding under the scheme only after all necessary

approvals are obtained for the project including approval of the Technical Advisory Committee of the Ministry of Water Resources and investment clearance from the Planning Commission. However, 3 projects in the above stated list namely Gosikhurd Project of Maharashtra, Shahpur Kandi project of Punjab and Teesta Barrage project of West Bengal were already approved projects and were being provided with central assistance under AIBP.

4.1.5 Eligibility criteria for inclusion as national project

As per guidelines of the scheme of National Projects, the criteria for selection of National Project will be as under:

(a) International projects where usage of water in India is required by a treaty or where planning and early completion of the project is necessary in the interest of the country.

(b) Inter-State projects which are dragging on due to non-resolution of Inter-State issues relating to sharing of costs, rehabilitation, aspects of power production etc., including river interlinking projects.

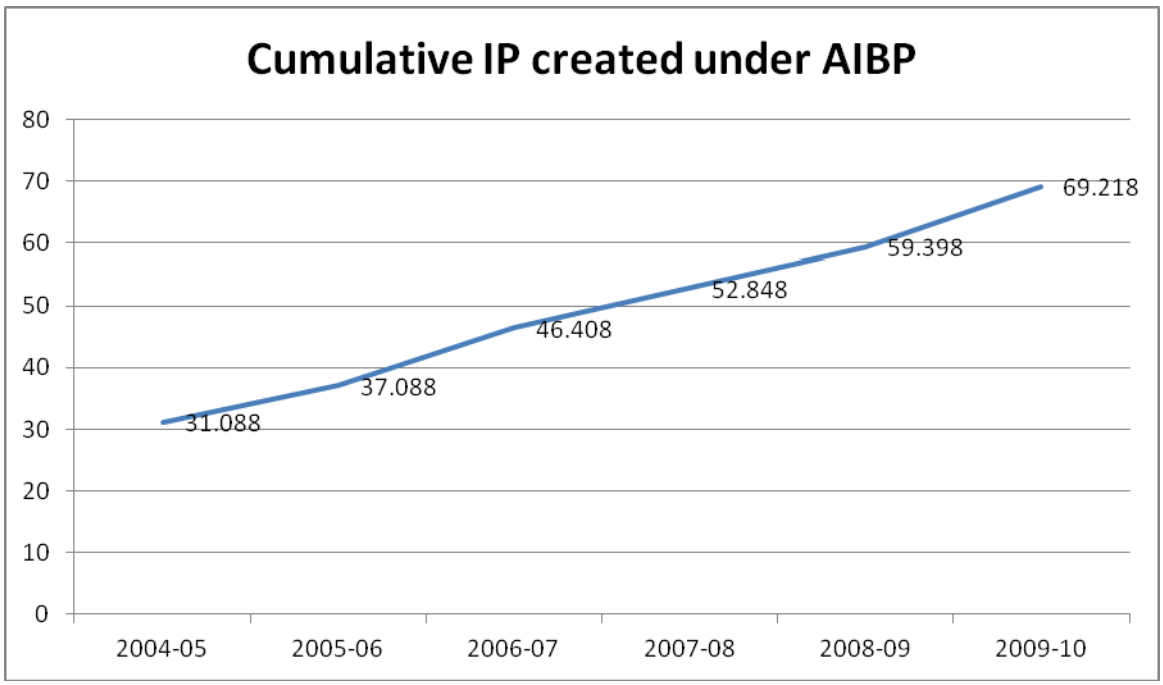
(c) Intra-State projects with additional potential of more than 2,00,000 hectare (ha) and with no dispute regarding sharing of water and where hydrology is established.

4.2 Overview of the performance of AIBP

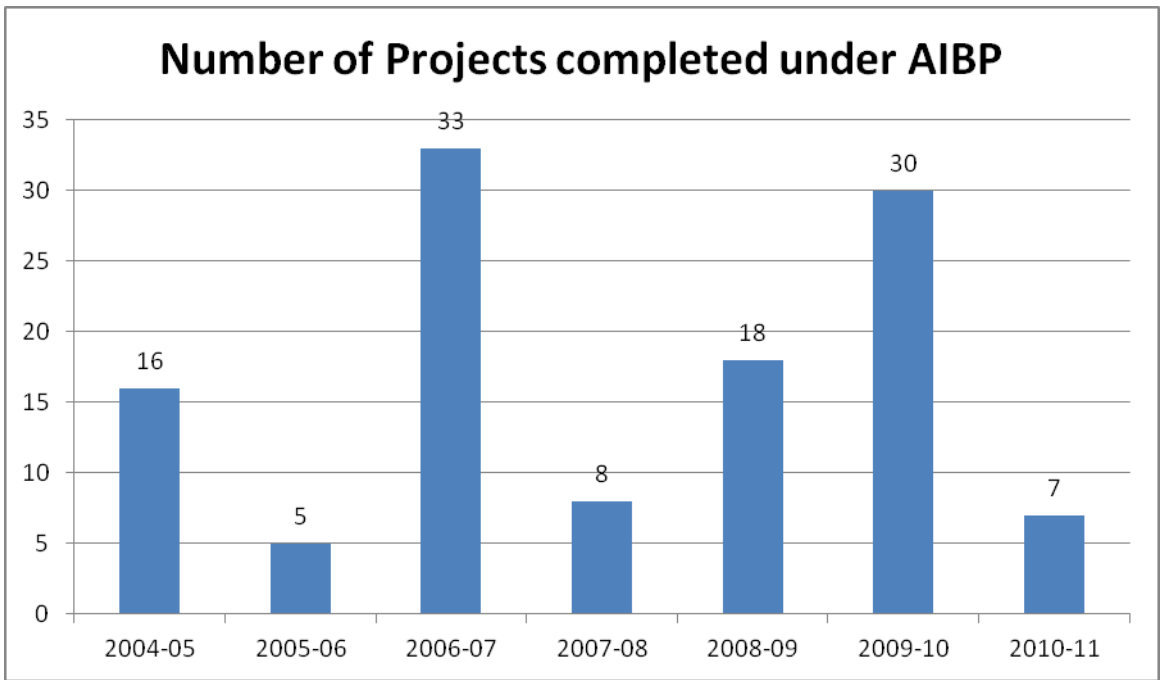
AIBP has been a very successful programme in enhancing irrigation potential in the country is evident from the fact that the irrigation development in major/ medium sector which was about 2.2 Mha per plan till VIII plan increased to 4.10 Mha per plan during IX plan subsequent to introduction of AIBP as a support mechanism and has further increased to 5.3 Mha in X plan.

4.2.1 Completion and creation of Irrigation Potential

So far, 287 major/ medium irrigation projects have been included under AIBP out of which, 134 projects have been completed. Irrigation potential created from Major/medium projects up to March 2010 is about 62 lakh ha. So far, 12,670 Surface Water minor irrigation schemes have been included in the AIBP of which, 8699 schemes have been reported as completed. The ultimate irrigation potential of minor irrigation schemes included in AIBP is 16.58 lakh ha of which irrigation potential of 8.578 lakh ha has been created so far. The performance of completion has been quite satisfactory in respect of AIBP assisted minor irrigation schemes as these are having low gestation period. Year wise cumulative irrigation potential created under AIBP since 2004-05 (year since grant component was introduced in the AIBP) up to 2008-09 is presented in the following Chart:



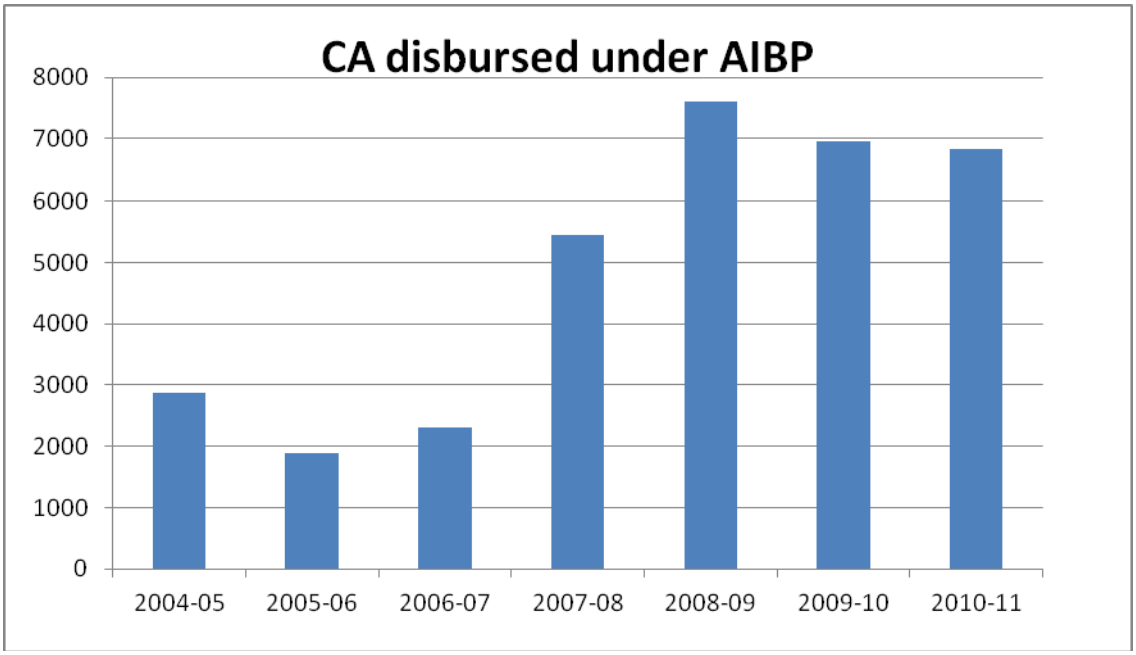
State wise and project wise list of the completed major/medium projects under AIBP is given in Annexure 4.1 and state wise and year wise details of the surface MI schemes included under AIBP and those completed under AIBP are given in Annexure 4.2. A Bar Chart indicating year wise number of major/medium projects completed under AIBP since 2004-05 is given below:



4.2.2 Financial Assistance provided and achievements under XI Plan

Under AIBP, central assistance amounting to Rs. 48,747.806 crore has been provided to

the States so far. The State wise details of the central assistance released so far under AIBP are given in the Annexure 4.3. Bar chart indicating central assistance released under AIBP since 2004-05 up to 2010-11 is given below:



4.2.3 Prime Minister's Package for Agrarian Distressed Districts

Prime Minister's package for agrarian distressed districts of the Andhra Pradesh, Karnataka, Kerala and Maharashtra States includes 65 major/medium projects to be provided with grant assistance under the AIBP. Of the total 65 projects, so far AIBP release proposals have been received in respect of 38 major/medium projects. Since 2006-07 till date, grant amounting to Rs. 5494.68 crore has been released in respect of 40 projects of the package.

Proposals in respect of remaining projects are awaited from the State Governments.

4.2.4 Proposals for AIBP in XI Plan and achievements

For XI Plan, total allocation proposed for AIBP is of Rs.43,710 crore for targeted creation of irrigation potential of 58.46 lakh ha. Allocation proposed for National projects is Rs. 7000 crore. The Planning Commission has concurred for allocation of Rs.39,850 crore during the plan period. The year wise details of the allocation proposed, allocation actually made available, physical target of potential creation and potential actually created are given in the following table:

(Rs. In Crore and potential in Lakh Ha.)

	2007-08	**2008-09**	**2009-10**	**2010-11**	**2011-12**	**Total**
Allocation proposed for AIBP	8140	10200	12285	7800	5285	43710
Allocation provided	3080	6600	8000(1800)*	9200(2200)*	9750(1450)*	36630

Actual releases under AIBP	5445.7	7598.2213	6945.59	6837.203		
Potential target under AIBP	15.00	11.96	10.50	10.50	10.50	58.46
Potential achieved under AIBP	6.44	6.55	9.82	Under Assessment	Under Assessment	

*** Figures in brackets indicate allocation provided to scheme of National Projects out of the total allocation mentioned for AIBP for the year.**

4.3 Present concerns of the Beneficiaries and Managing Ministries

Various recommendations received from different agencies are:

i. The Ministry must institute a system to collect authentic and validated data of not only creation, but also utilization of IP for AIBP projects in the major/medium/ERM and MI Sector at least for a period of five years after the completion of the projects.

ii. The role of AIBP in funding a large number of individual MI Projects with miniscule IP needs to be re-examined, particularly in view of the lack of monitoring and data collection by both the Ministry and CWC.

iii. MoWR must analyze all cases of incomplete/ non-commissioned projects reported as complete to ensure that there is no diversion or misuse of funds released for these projects. There should be a disincentive for the authorities issuing such completion certificates.

iv. The one of the major reasons for non-completion of major/medium/ERM projects include non-acquisition of land; While it is appreciated that acquisition of land is a complex and sensitive process, GOI funds should be released only after the State Government certifies that the major portion of the land required for the project (not just for the dam/headworks but also for the canals) has already been acquired. Further, future releases should be linked to progress in land acquisition.

v. MoWR do not agrees fully with suggestion relating to land acquisition as It will not be practical to acquire major part of land required for dam and canal in advance due to various reasons such as possibility of encroachment of acquired land, demand for higher compensation by the farmers at a later date etc. since the entire land is also not required in bulk right at the start of the project as in case of a thermal powerhouse or such other infrastructural projects, there has to be a systematic land acquisition plan in place to be executed in stages.

vi. Ministry is, therefore, proposing that central assistance for the next year will be released only when state government certifies that land required for the works of next year is in possession of the State Government. The decision will be implemented with effect from

1.4.2012 in order to provide sufficient time to State for preparation. Necessary directions in this regard have been issued to CWC and all the State Governments.

vii. The other major reasons for non-completion of major/medium/ERM projects include (a) delays in construction of railway/highway crossings; (b) improper synchronization of project components and (c) delayed tendering and contract management.

viii. In case of irrigation projects which have been split into two or more AIBP projects or which have been separated in to AIBP and non-AIBP components, MoWR should ensure that linked components of AIBP projects are completed so as to ensure the creation of targeted IP under AIBP, and commissioning/ utilization thereof.

ix. To tackle the problem of incorrect phasing of project implementation e.g. dam section incomplete, but main and branch canals completed or nearly complete; main/ branch canals completed, but work of distributaries/water courses not taken up or at a very preliminary stage; main/branch canals constructed in patches, with gaps (particularly in the initial stages), creation of irrigation potential should be recognized by MOWR/CWC only where (a) there are no gaps in the main/branch canals, and water is capable of flowing right through the sections recognized for creation of IP; and (b) not just the main/branch canals, but also all associated minors and distributaries have been completed. For this purpose, MoWR has taken up analysis of continuity of the network through remote sensing based studies and keeping the limitations of expert manpower and analysis resources in view, plans to cover the major projects in a gradual manner. Already, 53 completed projects have been analysed and further 50 projects are being analysed through this tool. In addition, MoSPI also analyses the performance of AIBP independently.

x. In order to ensure that funds provided under AIBP do not go waste due to poor maintenance of assets created under AIBP, MOWR may ensure that before approving a project for AIBP funding, the State Government provides a formal undertaking to ensure adequate resources for its maintenance for the next ten years. Further, MOWR/CWC may consider instituting a system to assess the actual quality of maintenance of Major/ Medium AIBP projects post-completion.

xi. The required undertaking for providing necessary funds for maintenance of AIBP assisted projects will be obtained from the State Government with effect from 1.4.2011. As stated earlier, the Ministry will be obtaining data from the state governments regarding utilization of the created irrigation potential of AIBP assisted projects which will give idea of quality of maintenance being carried out by the State Governments. The CWC also carries out performance appraisal of the completed irrigation projects and therefore, if required, the same may be carried out for completed AIBP projects.

xii. The Ministry/CWC should ensure that the stipulated monitoring visits twice a year to all major and medium projects are carried out without fail. As regards minor irrigation projects, a reasonable sample of projects should be inspected by the Ministry/CWC; if CWC is unable to carry out such inspections, the Ministry may consider hiring its own consultants for such inspections. While the coverage of major and medium projects is

adequate, the covering a very large number of minor irrigation projects proves difficult through the departmental manpower resources. The monitoring of minor projects is being implemented through outsourcing to the independent technically qualified personnel.

xiii. The classification of advanced stage of construction needs relaxation as the medium irrigation projects tend to get completed faster than the large major projects and generally receive much less effective assistance.

xiv. For minor irrigation projects, there is a need to adjust the eligible cost with respect to the current price levels rather than a fixed norm of Rs 2.0 lakh per hectare. This will avoid frequent revisions and will allow more projects to be taken up in hilly regions.

4.4 Reforming the Programme to better suit the priorities of development strategies

Reforms in the programme has been a continuing process as is evident from para 1 and 2 above. Systematic attempts have been made by Planning Commission, MoSPI and CAG to find the issues affecting the progress under the programme and have made extensive suggestions. Planning Commission constituted a Task Force in 2008 to suggest modifications to the programme keeping in view the aspirations of the states and concerns of the implementing agencies. The recommendations of the task force are given at Annexure 4.4.
In addition, the Ministry of water Resources conducts an annual conference of the Principal Secretaries of Water Resources departments of all the states as well as other senior officers from the departments. A number of suggestions are received on the funding patterns of AIBP and constraints faced by them.
The following paragraphs indicate some areas where such reforms are proposed.

4.4.1 A pre-review of all on-going Major/Medium Projects before their continuation in XII Plan under AIBP.

- Review of bottlenecks encountered so far (policy level).
- Preparedness of the implementing agency to meet the bottlenecks (policy level).
- Detailed enumeration of components to be taken up in each year of the scheme and this list to be attached in the proposal with a reference to it in the Mou.
- Possible bottlenecks that may exist in implementing the programme and inputs required from different departments for overcoming the bottlenecks.
- Enumeration of rail/road/other utility crossings and third party permissions required for carrying out the works and their status/plan of action to meet the targets.
- Number of contract packages to be implemented during the course of the project. Status of awards and works in hand in year wise fashion.
- Funds flow projection based on latest costs including state share and commitment to provide the same year on year.
- Quality control and assurance mechanisms in place.
- Litigations status including PILs and representations from the public regarding planning/implementation at local level.

- Willingness of state machinery and beneficiaries to undertake CAD works in parallel with the execution of minor level distributaries networks.
- Due diligence of the project to be carried out by a professionally competent consultant under supervision of concerned Chief engineer of CWC and report to be approved by Member(WP&P).
- Tentative funding proposals for all 4 years to be submitted assuming that the targets in each year will be met.

4.4.2 Integration with Command Area Development Programme

Of late, there has been increased attention towards down stream areas of Command Area Development and utilization of the assets created. In a number of instances, it is observed that AIBP is held responsible for non-utilisation of created potential. While it is nobody's case that the assistance created should not be left unutilized holding a programme responsible for such an outcome where it neither has jurisdiction nor is capable of providing inputs is to deny the programme is due credit. There are two aspects of creating and managing irrigation infrastructure systems. The first aspect has to cater to creation of new potential and manage the engineering and maintenance demands of the infrastructure created, the other aspect involves utilization of the resources made available at the door step of the beneficiaries. This second aspect is covered under the Command Area Development and Water Management Programme which is a separate plan scheme. However, in order to link the development and utilization in a close relationship, it is necessary to create linkages between the two programmes in such a way that CAD activities follow AIBP inputs as a necessary corollary. For this purpose, the following suggestions are made.

- State Govt. should make matching budget allocation for CAD activities in the AIBP proposals for purpose of simultaneous implementation on a yearly basis. This will help the CAD works to go pari-passu alongwith the AIBP works.
- The funding to CAD works may also be relased in step with the releases of AIBP.
- A project taken up under AIBP will be treated as complete only when the corresponding CAD works are also certified as complete and a new project will not be allowed to be taken up till such certification is made available.
- Financial provisions for the CADWM programme should be made in step with that of AIBP.
- Provisions for funding for CADWM should be made for all the projects already completed under AIBP as per the needs assessed.

4.4.3 Avoiding rush of funding requests at the year end

- Setting up of an empowered committee to pre evaluates each project discussion of getting funding in the year. The committee to review in June of any F.Y and proposals to be given in October meeting all comments made in June. Review and correction in the already submitted proposals for the year only to be taken up. In case of shortfall of>40% in the previous year, the project will get a funding holiday for the year.

- Projects proposed to be included can be given an advance @ 20% of their assessed eligibility in June for commencing the works after the withdrawal of monsoon/post harvesting period.

- Proposals to be examined strictly as per the commitments made in June meeting and release to be made by last quarter of financial year.
- Working season for the projects may be generally counted between October of FY to June of next FY and progress as per targets to be mentioned in this time slot.

4.4.4 Assessment of physical/financial achievements

Each outlet to be constructed in a year to be given a unique number and verification made by the concerned engineers on this basis while reporting progress.

- CWC officers to personally visit at least 10% of the outlets on a random basis and the verification of the rest can be outsourced to technical support personnel drawn from academies (including 3rd and final year students of engineering colleges or retired local personnel.
- NRSC study using Cartosat-2 images to be compulsorily made and results evaluated before release of 4th and/or final installment of Central assistance to any project with CCA>10,000ha.
- All major structures to be visited by CWC personnel.
- Review of quality control and planning issues raised by TPQA or members of public/department. Assistance in resolving by support of design/placing unit of CWC as required.
- Report on CAD works activities initiated in parallel.
- Personnel position for implementation to be reported and recommendation for manpower to be made.
- Status of disbursements to the project by state finance and cash flow position of the project implementing agencies.
- Payments made and those under disputes and status of resolution of finance related disputes at macro level.
- Areas where cost escalation is likely to happen and its possible impact on overall project costs.

4.4.5 Funding criteria

- Normal area funding may be increased to 50% from 25%. This to act as incentive for additional diligence and enforcement of discipline.
- Areas under Desert Development Plan (DDP) and flood prone areas to be brought under 90% funding category.
- Project areas providing sprinkler/ drip irrigation systems as primary method of water application may be provided with 90% Central Assistance.
- Arrears payments to be considered for faster progress and additional expenditure incurred in the first year of inclusion over and above the projection in MOU (to be reimbursed in the next year).
- One time arrear payment for works left out at the end of last FY but completed within next available working season outside the eligibility period.
- For long time languishing projects, one time grant for ERM of components created earlier than 5 years may be considered so that the health and functionality status of entire project is at the same level.
- ERM projects to be granted for all the states for projects older 10 years post completion.
- Soft loan component can be introduced for O&M of the projects with loan servicing by the beneficiaries for DISNET. Head works O&M component loan to be serviced by the State.

4.4.6 Web based work flow process

- A web based work flow process application to be implemented. All submissions to primarily take place on the web with suitable reference made in paper form of the proposals.
- All projects to establish their web presence in the portal and nominate authorized person for updating and submitting the information as well as responding to the queries made from time to time.
- Projects to submit detailed network diagrams indicating each minor and outlets and reporting progress in graphical form.
- All projects with balance potential of more than 50,000 Ha. to provide a GIS model of the entire network with project components upto and indicating minor level canals duly marked with other thematic information like administrative boundaries, road and rail network and land use and topography.

4.4.7 Strengthening of Institutional Infrastructure at monitoring level

- Specialised training to be introduced as pre-requisite for all field personnel in various aspects of programme and each new incumbent go through the same at the time of

joining on promotion/transfer. Automated training modules can be developed which can be run on local computers for making them wide spread and easily available.

- Training module on Project management and construction techniques as well as contract management areas to be developed by NICMAR or similar expert agencies and be made available to all involved personnel.
- Training modules for state personnel for formulation of AIBP proposals and for programme implementation strategy from individual project angle.
- Training modules on land acquisition process and R&R process to be prepared and made available to field monitoring personnel of CWC.
- Training and establishment of a dedicated centre for providing larger coverage by the remote sensing evaluation of I.P created and utilized. Projects can also be given to regional Remote Sensing Centers on a sponsorship basis.
- Additional funding to be made available to needy States for improving their quality of project planning, design and implementation process.
- For projects above 50,000 ha. of Command area, hiring of a suitably sized Project Management Consultant with special assistance not exceeding 1% of the cost of balance works may be given for special category and other new States.
- One time grants for improvement of implementing infrastructure can be considered for special category states.

4.5 AIBP as Accelerated Development and Reforms programme

The AIBP was conceived as a facilitating programme for speeding up the implementation of large irrigation projects which were considered to be primarily lagging on account of lack of funds on the parts of the state governments. The focus of the programme is, therefore, on the implementation aspects of the project infrastructure comprising of canal networks and the head works. However, of late, there are demands on the part of associated workers to generate inputs for reforming the utilization aspects of the infrastructure created. Needless to mention that these aspects have already been addressed under the Command Area Development and Water Management Programme. At present, both the programmes function independently and have no direct connection with each other for provision of funding and monitoring the progress. Hence, the logical choice is to integrate the implementation of the two programmes with each other to ensure that desired outcomes in the sector are achieved. This aspect will necessitate change in the guidelines of both the programmes. While formulating the proposals for the programme, the aspect can be taken care of by the Ministry of Water Resources.

There are a large number of areas where the water resources sector need reforms, which have a direct bearing on planning, implementation and operation of major and medium projects, like

a) Planning of the water resources in an integrated manner.

b) Optimizing the utilization of the resources so generated by the beneficiaries in a sustainable and equitable way.

c) Asset management and assuring continued performance of the projects over long periods of time.

The unit of development in respect of water resources sector is a project. All the subsequent developments take place around implementation and operation of the projects in a basin or a sub-basin and state. Whereas the implementation aspects require heavy dose of funds, the other aspects require more of the soft skills in the inter-disciplinary aspects of social mobilization, agriculture science and capacity building measures. Asset management aspects require efficient data management of the portfolio of project components, constant surveillance for the problems that may come up from time to time and finding their solutions. Out of all these aspects, the AIBP addresses only the funding aspects of the implementation phase of the project. The planning is a fait accompli as the project is taken up when it is already in "advanced" stages of construction and the financial linkages are severed once the project is completed. Thus, to expect the AIBP to handle the entire reform process on its shoulders is to put a very heavy burden on the programme and perhaps make it unwieldy to operate.

As an alternative, a basket of programmes need be designed with a strong linkage with the AIBP so that for a project, the obligatory reform aspects are incorporated at the time of inclusion of the project. The other associated programmes like CADWM and other specially designed reforms programmes can then take over the implementation of these aspects falling within their purview. Each of the programme can independently monitor and implement the works in its own respective area, but the project is treated as complete under AIBP only when all the aspects are covered under the associate prorgammes. A number of such programmes that can be framed in addition to the already existing CADWM programme are:

i. Establishment of Water Regulatory Authorities in the state

ii. Capacity building of the state irrigation department and project engineers

iii. Establishment of integrated planning and management setup for the project and state as a whole

iv. Taking up of regular modernization programmes for improvement of efficiency by implementing moden technologies of operation and maintenance.

v. Taking up a continuous programme of agricultural science where the outputs from the water are optimized in terms of economic returns and food security angles.

Such programmes pertaining to the Major, Medium and CADWM sector are identified in the subsequent chapter 6 on targets and achievements. It is recommended that the reforms internal to AIBP are taken up as suggested in para 4.0 above and the linkages as suggested in this para are established amongst the associated programmes in chapter 6.

CHAPTER-5
MAJOR AND MEDIUM IRRIGATION PROJECTS: STRATEGY FOR THE 12TH FIVE YEAR PLAN

5.1 Introduction

At the time of Independence, India inherited the world's largest MMI infrastructure. Since then, Government of India and various state governments have maintained the investment tempo in the MMI sector. By the end of 11th Five Year Plan, the country will have invested over Rs 300,000 crore at 2000-1 prices in new MMI projects as well as in a clutch of ERM projects. These massive investments have helped the country to expand the MMI potential created from 12.20 million ha at the beginning of the first Five year Plan to 37.05 million ha at the close of the ninth Five Year Plan.

Table 5.1: MMI achievements during successive plans

Period	Outlay/ Expenditure (Rs. Crores)	Cumulative Expenditure (Rs. Crore)	Potential created (m.ha.)		Potential Utilized (m.ha)
			During	*Cumulative*	
Pre-plan period	-		9.70	9.70	9.70
I Plan (1951-56	376	376.24	2.50	12.20	12.98
II Plan (1956-61)	380	756.24	2.13	14.33	13.05
III Plan (1961-66)	576	1332.24	2.24	16.57	15.77
Annual Plan (1966-69)	430	1762.05	1.53	18.10	16.75
IV Plan (1969-74)	1242	3005.3	2.60	20.70	18.69
V Plan (1974-78)	2516	5521.5	4.02	24.72	21.16
Annual Plans (1978-80)	2079	7600.10	1.89	26.61	22.62
VI Plan (1980-85)	7369	14968.9	1.09	27.70	23.57
VII Plan (1985-90)	11107	26576.2	2.22	29.92	25.47
Annual Plans (1990-92)	5459	31534.19	0.82	30.74	26.32
VIII Plan (1992-97)	21,072	52606.29	2.22	32.96	28.44
IX Plan (1997-2002)	48259	101896.29	4.09	37.05	31.03
X Plan (2002-2007)	70862*		9.93*	46.98*	

Despite these impressive achievements, there have emerged new concerns and challenges facing the MMI sector since the beginning of the 1990's that the country needs to respond to.

5.2 Problem Areas

5.2.1 IPC-IPU Gap

One of the most important challenges facing the MMI sector is the growing gap between irrigation potential created (IPC) and irrigation potential utilized (IPU). As table 1 show, until the end of the III plan, IPU closely trailed IPC. Since then, the gap between IPC and IPU has steadily grown from less than 1 million ha during the mid-1960 to over 6 million ha around 2002 according to the CWC figures. Examining the incremental IPC-IPU gap suggests that during recent plans, the capital investment required to add a hectare under MMI is twice the level assumed at the time of planning.

5.2.2 Lack of Information

What is even more worrying than this problem is the lack of credible information needed to understand the true picture of the IPC-IPU gap and its causes. The information generated by the Agriculture Department of the Government suggests that the acrage actually wetted by MMI projects is around 50-55 percent (16 -18 million ha) of the CWC figures. MoA figures also show that since 1991, despite massive investments in new MMI and ERM projects, the area served by MMI projects has declined by 2.5 to 3 million ha. There is widespread apprehension that MoA figures on net area irrigated by MMI are gross underestimates. This may be true. However, other indirect sources of data suggest that areas directly served by MMI canals are either stagnating or negative. The 3rd Minor Irrigation Census for 2001 suggests that the area served by MMI projects is closer to MoA estimates than CWC figures. Large-scale surveys by the NSSO in 2003 also show that, despite massive public investments in MMI projects, irrigators depended on wells and tubewells for 76% of irrigated area in kharif and 86% of the area irrigated in rabi (NSSO 56th Round). Independent studies by research institutes and NGOs too suggest that MMI projects serve much smaller areas and much fewer farmers than they were supposed to serve at the time of their planning (Development Support Center 2005). Unless we have accurate, reliable and realtime information on the impact of MMI projects, it is impossible to even begin thinking about improving their management.

5.2.3 Command Area Development

Many explanations have been offered to explain the widening gap between IPC and IPU. These may all be valid. Many MMI projects have increasingly been used to provide urban and rural drinking water supplies, leaving less for irrigation. Farmers use canal water but fail to report it to avoid paying ISF. But a far more important reason is the slow pace of command area development works. Long after the reservoir and main canal system are ready, water does not reach the farmers' field due to the absence of a distribution system, incomplete on-farm works, etc. Various factors responsible for slow pace of CAD have been discussed in an earlier chapter. CAD works need a special thrust if the IPC-IPU gap is to be closed.

5.2.4 Deferred Maintenance

Another major area of concern is poor upkeep and maintenance of MMI systems that

explain the growing gap between IPC and IPU. Around 100 years ago, India was known around the world for its expertise in constructing and managing MMIs in a commercially viable manner. Indeed, until 1945, MMI projects earned the government a 12 percent return on capital investment. However, the country has surrendered this advantage after Independence. Table 2 compares key financial ratios for the Indian MMI sector in 1901[1] with 2001. In 1901, the MMI sector levied and collected substantial Irrigtion Service Fees (ISF) (including betterment and other levies)—equal to 10 percent of capital investment, 11 percent of value of crops irrigated, and 280 percent of the Working Expenses incurred for Operation and Maintenance of MMI systems. Because it generated substantial ISF, governments also spent 2.6 percent of the capital investment in regular upkeep and maintenance of MMI systems. Today, this financial picture stands reversed: the ISF collected by MMI sector in 2006-7 was just 1.2 percent of the value of crops they irrigate, and less than 8 percent of O&M expenses. As a result, the annual maintenance expenditure on MMI systems is far less than 1 percent of their capital cost.

Table5.2: Deteriorating Finances of Indian canal irrigation: AD 1900 compared with AD 2000

	Source	Major and Medium systems in British India, 1902-3	Major, Medium and Multi-purpose Irrigation Projects in India		Major and Medium Irrigation Systems in India, 2001
			1977-78	1986-87	
		Burton Buckley 1903	Vaidyanathan Committee report (GoI 1992)		CWC 2006
1	Capital investment in major and medium projects (nominal)	£ 30 million	Rs 3004 crore	Rs 26014 crore[2]	Rs 295,000 crore
2	Area irrigated by all government schemes (m ha)	7.4	18.75	25.33[3]	18
3	Water fees collected as % of capital investment	10%	1.43%	0.3[4]	0.2%
4	Value of crops irrigated as % of capital investment	87%	Na	Na	18.3%[5]
5	Water fees collected as % of value of crops irrigated	11%	Na	2%[6]	1.2%
6	Water fee collected as % of Working Expenses	280%	45%	20% [7]	7.9%
7	Maintenance expenditure as % of working expenditure	53%	42%	38%	34%
8	Maintenance expenditure as % of capital investment	2.6%	Na	Na	0.95%

[1] 1901 figures from Buckley, R.B. 1905. The Irrigation Works of India. London, E. & F.N. Spon Ltd..
[2] GoI 1992, Annexure 1.5
[3] GoI 1992, Annexure 1.7-A
[4] Computed using irrigation charges collected as in Table 2.6 in GoI 1992 as % of capital investment in row 3.
[5] Assuming 18 million ha of canal irrigated area growing crops worth Rs 30,000/ha at 2000-1 prices.
[6] GoI, 1992, 2.25 "The Irrigation Commission had suggested that water rates should be fixed at around 5 percent of gross income for food crops and 12 percent for cash crops. At present, the actual gross receipts per ha of area irrigated by major and medium projects is barely 2 percent of the estimated gross output per ha of irrigated area, and less than 4 percent of the difference between output per ha of irrigated and unirrigated areas."
[7] Computed from table 2.6 in GoI 1992

5.2.5 Irrigation Service Fee (ISF) fixation and recovery

Most states, bar perhaps Maharashtra and Gujarat during recent years have fixed very low ISF which have not been revised for years. What is worse, the recovery factor of ISF assessed too is extremely low. In states with rapidly growing industrial economy, Irrigation Departments are able to generate substantial revenue by selling a small portion of reservoir storage to industries and municipalities. This is often used to justify low ISFs and their low recovery. This logic overlooks the linkage of ISF fixation and collection with the accountability of MMI system managers for service provision. Canal administration in Colonial India was obliged to provide irrigation to farmers so that it could recover ISF. Several court cases filed by farmers against the government for levying ISF without providing commensurate service suggested that ISF established an accountability mechanism that obliged MMI managers to provide irrigation service. Today, this mechanism stands much weakened. Fixing the ISF at a reasonable level and ensuring its collection establishes a critical accountability loop that generates pressure on the MMI system managers to improve service quality and ensure equitable distribution of canal supplies between head, middle and tail reach farmers. Moreover, ISF collection figures are also a robust indicator of the area benefitted. MMI managers cannot keep demanding from farmers ISF without having actually provided them the irrigation service.

5.2.6 MMI Management Capacity Building

Finally, for a bureaucracy that is expected to manage a Rs 300,000 crore infrastructural asset, the MMI sector does little to continually build and renew broad-based management capacities in their staff. Construction continues to remain coveted posting; and there is little interest among MMI officials in managing systems. One possible reason is the alignment of incentives in favour of construction. But an equally important reason is that a young person who joins an irrigation department as an engineer never gets exposed to the challenges of *managing* an MMI system. An added challenge is of depleting staff: many state governments have stopped hiring new irrigation professionals 20-25 years ago. In states like Gujarat, the last irrigation engineer will retire around 2015.

Many of these are states that are investing large sums in constructing new irrigation systems. It is a moot question who will manage these systems when commissioned.

5.2.7 Participatory Irrigation Management (PIM)

For a long time, we have experimented with Water User Associations (WUAs) to take the burden of irrigation management at local level off the shoulders of the MMI managers through PIM processes. Over 55000 WUAs have been registered in the country; and over 5 million ha of command areas are supposed to be under WUA management. Deeper examination however suggests that a vast majority of WUAs are 'paper WUAs'; and PIM in a true sense operates only in some NGO-supported PIM projects such as in Dharoi command in Gujarat and in some systems in Andhra Pradesh. Sustainable PIM under government management has shown evidence of some success only under exceptionally enlightened and forward looking leadership of irrigation departments as during recent years in Andhra Pradesh, Gujarat and Maharashtra. This patchy evidence suggests the huge potential of PIM that can be unravelled by reforming the MMI management agencies and making them more supportive. What if often overlooked is the fact that the key to successful PIM is not in the hands of farmers or their leaders but in the hands of the MMI engineers and managers.

5.3 Strategic Analysis of the MMI Sector

Ever since Independence, our MMI planning and policy have concentrated squarely on construction and on creating new irrigation potential. These have neglected effective management and O& M of MMI systems. Now that we have already created a large potential, India's MMI sector can contribute a great deal more to the country's food security and agricultural growth by shifting the resources and energies away from construction to improving the management and impacts of MMI systems. In devising the approach to do this, the Working Group suggests keeping in mind the strengths and weaknesses of the MMI sector and the opportunities and threats facing it.

India's MMI sector has much **strength** we can build upon. The country has an established institutional structure for MMI planning and management, with a strong engineering capacity. Moreover, we already have 215 BCM of storage and a canal network capable of spreading surface water over 30-35 million ha. The depletion of irrigation departments can be viewed as a hidden strength, providing avenue to rebuild MMI management organization with new skill mixes, attitudes, ethos and outlook that are more suited to the management role than was required at the construction stage.

The **weaknesses** the country needs to overcome in the MMI sector include problems with the infrastructure creation. While reservoirs and main canal systems are ready, the command area development work in most MMI systems is far from complete. As a result, MMI projects deliver far less benefit compared to their potential. There are major weaknesses in the irrigation institutions resulting in the absence of management focus and accountability mechanisms at the MMI system level. Existing institutions for capacity building in irrigation

institutions (such as WALMIs) are neither designed nor able to overcome this limitation. Irrigation managers are more familiar with construction rather than management. Irrigation departments are unidisciplinary, with engineers accounting for all professional staff to the exclusion of social science and extension expertise. Irrigation institutions are also fragmented with little collaboration among irrigation, agriculture, groundwater and related departments. The most important weakness that needs urgent correction is the weak accountability mechanisms at the level of MMI managers, absence of performance pressures as well as performance support, and lack of systematic information needed for performance monitoring and benchmarking.

These weaknesses prevent the MMI sector from making most of the new **opportunities** it has to enhance MMI impact. Given that closing the IPC-ICU gap is a question of expediting CAD and tightening main system management, the MMI sector can add 10-15 million ha of canal-supported irrigated areas in quick time and with little incremental capital investment. Another big opportunity is conjunctive management of surface and groundwater to curtail energy use in irrigation and to overcome aquifer depletion. Elsewhere in the world, preparing a command area for such conjunctive management often requires huge public investments in drainage and groundwater pumping plants. Fortunately, with a boom in private tubewells in canal commands, most of our MMI systems have developed into intensive systems for conjunctive use of ground and surface water. We already have some 15 million private groundwater structures existing within and in the peripheries of MMI canal commands which can provide tremendous leverage to MMI systems. This leverage remains unexplored. Improving MMI system management can expand planned conjunctive management of ground and surface water within existing commands and their peripheries. The same can also reduce areas under water logging and groundwater depletion through equitable distribution of water between head and tail-end areas. Improving MMI management can provide a big answer to groundwater depletion in western and southern India.

Failure to effectively deal with these weaknesses of MMI sectoral institutional structure will intensify several **threats** posed to the sector. There are many signs since 1990 that MMI systems are facing stagnation and many are actually declining. Many MMI systems operate in a 'build-neglect-rebuild' syndrome needing frequent investments in repair and rehabilitation. They are caught in the vortex of a downward spiral of poor service-declining ISF collection-reduced resources for O&M-increase in IPC-IPU gap. Unless the planning process wakes up to these new challenges, the MMI sector may end up stuck in the business-as-usual mode. This will imply, among other things, that [1] Governments at central and state governments will continue to construct MMI projects despite their poor track record of performance and without understanding how to improve their performance; [2] similarly, multi-lateral lenders (like World Bank and Asian Development Bank) will continue to fund new irrigation projects as well as rehabilitation/ modernization projects that are attractive for making large loans that governments are happy to receive regardless of the past experience with the performance of such loans or future prospects; [3] poor performance of irrigation systems will continue to be blamed on the lack of farmer participation and co-operation; and despite lack of evidence of large-scale success, PIM/IMT will continue to be peddled as blanket

solutions to improving MMI system performance; [4] Since best sites are already used up, new projects will be increasingly costly and unviable; [5] to justify unviable projects, planners will continue to over-estimate the command area[1], prescribe unrealistic cropping pattern, and assume unrealistic irrigation duty; once commissioned, the head reach farmers will make a habit of irrigating water loving crops ensuring that the actual area commanded is a half or a third of the original plan; [6] the country will keep initiating and constructing grandiose projects, without paying much attention to the stringent institutional and management requirements to achieve the performance goals of these systems; [7] Irrigation departments will continue to remain construction-oriented with engineers having little interest or incentive or capacity in efficient management of systems so that they achieve their full performance potential; [8] Even if bureaucracies were motivated and capacitated, MMI performance and impact are difficult to measure and monitor when land revenue and ISF collection have been abolished or trivialized; [9] in some states, irrigation departments will continue to stagnate or even shrink in size; this will leave little organization to manage these large irrigation capital assets; [10] where irrigation departments are growing, with rising government salaries and stagnant ISF collection, establishment costs will increase as the share of working expenses with little left to repair and maintain the systems; [11] in overall terms, the low-level equilibrium in which India's MMI sector is comfortably ensconced today will continue; central and state governments as well as multi-lateral lenders will keep investing in unviable construction and ERM projects; and overall, more and more money invested will keep giving India less and less canal irrigation as has happened since 1991; [12] The key socio-economic benefits of such projects—often more than gravity fed irrigated areas-- will be in terms of recharging the aquifers in the areas where they can reach water by gravity flow and feeding urban water supply schemes.

5.4 Strategy for MMI States

To overcome this threat and exploit the new opportunities facing the MMI sector, the Working Group is of the view that the 12th Five Year Plan should fundamentally change the objective and role of Central assistance to state governments in the MMI sector. MMI development in the country has so far been concentrated in 14 states identified in table 3, referred to henceforth as "the 14 MMI states". These account for 97 percent of India's ultimate MMI potential; these have 88 percent of the country's major, medium and ERM projects either completed or under implementation; these have 94 percent of the country's irrigation potential created as well as utilized by CWC figures as well as by MoA figures. These are the states where the bulk of the 'construction work' is over or under way. These are the states where all the problems of the MMI sector discussed by the Working Group are in full play.

[1] For example, the Sardar Sarovar Project is planned to irrigate 1.8 million ha on the assumption that the proect will ration canal water at a delta of 53 cm/year. If we take the total water circulating in Indian canal systems a 300 BCM and divide it by the 17 m ha this irrigates, the storage per net ha irrigated comes to 17640 m^3. As a project representative of Indian canal irrigation sector, then SSP cannot command more than 0.55 million ha.

Table 5.3: India's "14 MMI States"

Sl. No.	State	Ultimate irrigation potential by MMI	No. of projects (Major, Medium and ERM) completed and ongoing as of 2004			MMI potential utilized	MMI potential created	LUS data net area irrigated by canals (2001)	LUS data on Gross irrigated area by all sources 2000-01
		'000 ha	Major	Medium	ERM	'000 ha	'000 ha	'000 ha	'000ha
1	Andhra Pradesh	5000	31	123	8	3052	3303	1649	5549
2	Bihar	6500	25	22	6	1715	2680	1136	4539
3	Gujarat	3000	8	132	24	1301	1430	492	3572
4	Haryana	3000	9	0	11	1850	2099	1476	5311
5	Karnataka	2500	24	58	5	1845	2121	966	3089
6	Kerala	1000	14	11	3	559	609	105	432
7	Madhya Pradesh	6000	27	106	5	876	1387	808	4899
8	Maharashtra	4100	77	282	6	2147	3239	1047	3938
9	Orissa	3600	19	50	14	1794	1827	878	2546
10	Punjab	3000	9	2	14	2486	2452	676	7710
11	Rajasthan	2750	10	101	10	2314	2482	1354	6744
12	Tamil Nadu	1500	22	48	12	1549	1549	833	3412
13	Uttar Pradesh	12500	66	40	25	6334	7910	3091	17713
14	West Bengal	2300	8	25	6	1523	1683	261	3661
	Total	**56750 (97%)**	**349 (88%)**	**1000 (88%)**	**149 (88%)**	**29345 (95%)**	**34771 (94%)**	**14772 (92%)**	**73115 (96%)**
	Other states	**1715**	**48**	**136**	**21**	**1665**	**2275**	**1217**	**3328**
	Total	**58465**	**397**	**1136**	**170**	**31010**	**37046**	**15989**	**76443**

The Working Group is of the view that:

A. The focus of the 12th Five Year Plan for the MMI sector should be to use central support to incentivize and encourage states to adopt and implement an aggressive MMI management reform agenda and action plan.

B. The central government should selectively support states other than the "14 MMI states" listed in table 3 which have a very small share in MMI potential development so far. States like Jharkhand, Chhatisgarh, Uttaranchal, North-eastern region began late in developing their MMI potential. These should be actively supported to develop their MMI potential with central assistance.

C. The central government should minimize support to new Major or Medium projects in the "14 MMI states" in table 3 where almost all available identified MMI potential has been already developed. Most opportunities for developing MMI potential in a techno-economically viable manner are exhausted in these states. The 12th Five Year Plan should be used to complete the 500 or so projects whose completion has been delayed for one reason or another in these states.

D. Many MMI systems in the "14 MMI states" are decades old. Most are in a state of 'deferred maintenance'. The central government should consider support to ERM projects on specific systems on a case by case basis based on detailed techno-economic feasibility studies provided the states also adopt the management reform agenda of the central government outlined below.

E. Without ruling out central support to construction on a selective and case-bu-case basis, the Working Group is of the view that the 12th FYP should provide a bold signal to put central resources in support of a 'management improvement agenda'. The Mid-term Review of the 11th Plan on the MMI sector hit the nail on its head when it said that "The challenge, therefore, is to define an agenda of reforms that can improve the performance of canal irrigation in India." (MTR, 11th FYP, p 433). In the 14 MMI states, the 12th Five Year Plan should aim at meeting this challenge headlong. To this end, the Central government should create a non-lapsable fund to incentivize and support state governments to: [i] establish minimum Irrigation Service Fee (ISF) at a reasonable level, as prescribed by the 13th Finance Commission; [ii] promote Participatory Irrigation Management through WUAs at outlet and distributary level; [iii] maximize the collection of ISF from users through WUAs, among other things, by allowing WUAs to retain at least 50 percent of ISF collected for maintenance of the distribution system; [iv] undertake, in a campaign mode, a program to close the gap between IPC and IPU through farmer-participatory CAD works; [v] generate real time information on areas served and level of irrigation service received by users; [vi] create performance benchmarks to monitor and improve the performance of MMI systems as a whole as well as at branch and distributary levels; [vii] enhance the resources available to the MMI departments for improving O&M of irrigation systems through technological improvements such as automation and use of ITES; [viii] broaden the disciplinary skill-set available with irrigation departments to include social science and irrigation extension skills; [ix] substantially improve the amount and quality of training and capacity building opportunities for MMI staff at all levels.

F. Until now, all central support to state governments for MMI development has been input-driven without much regard to outputs and outcomes. However, the present

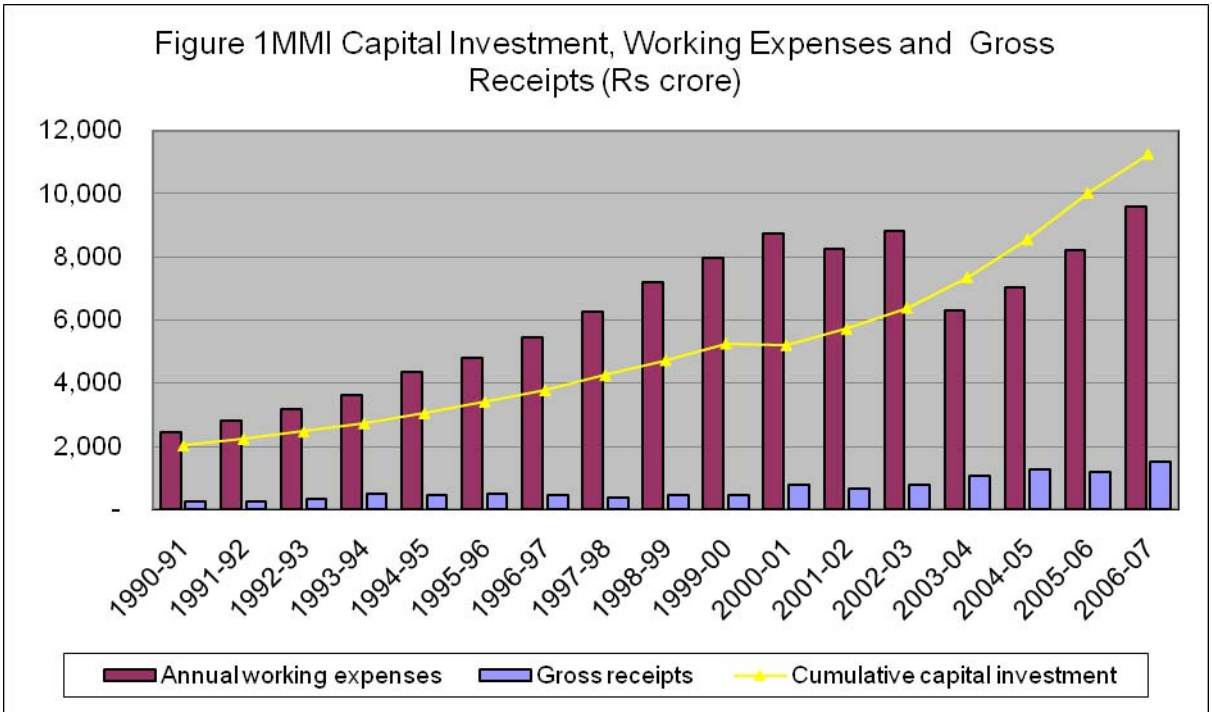
government at the center has been striving to make a transition to outcome-budgeting. The 13th Finance Commission too has been emphasizing this aspect. Its Terms of Reference (ToR) reflect "the emerging need for India to respond transformationally, rather than incrementally, to national and global imperatives that are causing fundamental changes to the national development agenda." (13th Finance Commission Report, p 254). The Commission has identified all the problems of the MMI sector that we have: such as "poor maintenance of irrigation networks, poor recovery of user charges from farmers which then feeds back into poor maintenance, and overstaffed irrigation administration departments such that expenditure on irrigation does not deliver commensurate benefits in terms of services delivered." However, the Finance Commission has assumed that these problems can be resolved by incentivizing states to establish statutary water sector regulatory authorities and by providing incentives linked to irrigation potential utilized and to recovering at least 50 percent of the ISF recommended by the Commission or the state water regulatory authority. To this end, the Commission has made available an incentive grant of Rs 5000 crore over the 2011-12/2014-5 period.

G. Our Working Group is in agreement with the general line of argument taken by the 13th Finance Commission. However, we believe the Commission's approach too rewards inputs rather than outcomes. We believe that mere establishment of a water regulatory agency may not produce the necessary performance pressures and performance support. Several states, including Uttar Pradesh, Andhra Pradesh and others, besides Maharashtra, have established water authorities that are 'paper authorities'. Recently, the Maharashtra Authority's ambit of influence too has been curtailed by the state government, suggesting that there is no guarantee that a statutary authority will necessarily be effective. On the other hand, there are interesting reform experiments in progress in states like Gujarat and Andhra Pradesh without the presence of a genuine water authority. The Working Group is not against 'water authorities'; we are merely saying that central assistance should be linked to outcomes in terms of MMI performance and impacts.

H. The Working Group is also of the view that the incentive grant of Rs 5000 crore over 4 years provided by the 13th Finance Commission is too small to nudge states in taking up an aggressive reform agenda. Moreover, its formula of allocating this incentive grants in proportion to Gross Receipts recovered and IPU of different states at the end of 10th Five Year Plan is not designed to reward improved outcomes. The Working Group recommends a much stronger incentive for improving MMI performance outcomes, and believes that there is a strong case for it. The MMI water productivity in agriculture today is around Rs 2/m3[2] which can be easily raised to Rs 4-5/m3 simply by all-round improvement in the management of MMI systems as they exist. For the country as a

[2] Assuming a productivity increase of Rs 20,000 /ha/year on canal irrigated land relative to rainfed areas, and the use of 10,000 m3 of water/ha in the reservoir.

whole, this can mean a gain of Rs 50,000 crore/year[3]. There is a strong case for investing more in realizing the reform agenda.



I. The Working Group is of the view that the Central Government should provide Rs 50,000 crore towards the MMI sector during the 12th Five Year Plan. Of this, Rs 20,000 crore should be used for supporting new MMI projects in states other than the 14 listed in table 3, as well as for ERM projects in all states. The balance of Rs 30,000 crore should be applied towards realising the management reform agenda by incentivizing state governments to achieve key performance outcomes based mostly on non-discretionary criteria/formula linking central assistance to specific output/outcome targets. The Working Group's suggestion is as follows:

[1] Provide a 100 percent matching grant to states for increase in ISF collection from farmers (excluding water fees recovered from industries, municipalities and other users) over 2011-12, provided the state raises the ISF to the minimal level prescribed by the 13h Finance Commission and the central grant is added to the O&M budget of the Irrigation Departments. In 2006-7, total working expenses incurred by all states in running MMI systems was Rs 9604 crore of which less than 10 percent was spent on maintenance of MMI systems. Against this, gross receipts from ISF, water sales to industries and municipalities, and other sources were only 1505 crores[4] (CWC 2011, Appendix III, table

[3] Assuming that 200 BCM are released from headworks into canals for irrigation in an year.

[4] These gross receipt figures are no indication of the ISF collected since they include water charges levied on industrial and municipal users as well. In case of Chhatisgarh, Gujarat, Maharashtra and such other states, non-agricultural receipts are a large part of gross receipts.

A1). Our surmise is that the actual ISF collection is around or less than Rs 750 crore/year where as at Rs 1350/ha recommended by the 13th Finance Commission, the ISF collection for 20 million ha under MMI command should be around Rs 2700 crore/year. On MMI infrastructural assets that required a capital investment of Rs 156490[5] crores until 2006, we spent just 0.6 percent on maintenance. Experts generally take 3% of capital cost as routine maintenance budget. In 2005, the World Bank estimated that to minimize deferred maintenance on Indian MMI systems, our annual maintenance spend should be Rs 19,000 crore, which is nearly 20 times more than what states actually spend. The Working Group is of the view that incentivizing state governments to raise ISF and improve collection will make more resources available for maintaining MMI systems. The Working Group also believes that collecting reasonable ISF from farmers will also strengthen the accountability of MMI managers and inculcate among them a service orientation. If all states use this incentive to the maximum and collect ISF as Rs 1350/ha for their entire irrigation potential created, their total collection will be Rs 5000 crore/year. The central support will in that case be Rs 5000 crore less actual ISF collections in 2010-11.

Table 5.4: Gap between actual and potential Gross Receipts

Sl. No.	State	MMI potential created	Potential ISF collection at Rs 1350/ha (Rs crore/ year)	Gross receipts (including from non-irrigation users) 2006-7 (Rs crore)
1	Andhra Pradesh	3303	445.9	68.8
2	Bihar	2680	361.8	12.9
3	Gujarat	1430	193.1	330.6
4	Haryana	2099	283.4	87.2
5	Karnataka	2121	286.3	21.5
6	Kerala	609	82.2	4.9
7	Madhya Pradesh	1387	187.2	29.8
8	Maharashtra	3239	437.3	444.9
9	Orissa	1827	246.6	49.8
10	Punjab	2452	331.0	49.8
11	Rajasthan	2482	335.1	20.1
12	Tamil Nadu	1549	209.1	28.5
13	Uttar Pradesh	7910	1067.9	148.6
14	West Bengal	1683	227.2	69.5
	Total	34771 (94%)	4694.1	1366.9
	Other states	2275	307.1	137.6
	Total	37046	5001.2	1504.5

[5] Nominal figure unadjusted for inflation.

[II] In addition, the Working Group recommends that the Center should provide a 20 percent PIM bonus on all ISF collected through WUAs provided: states allow primary WUAs to keep at least 50% of the ISF collected for O&M of the distribution system below the outlet; and allow distributary level Water User Federations to retain at least 20 percent of the ISF collected. This would mean that Central Assistance will make more resources available to Irrigation Departments for improving the O&M of the main system, as well as undertaking technological upgradation.

[III] Provide a one-time grant of Rs 1000/ha to states to rehabilitate minors/sub-minors/distributaries of old MMI systems before they are turned over to newly formed WUAs;

[IV] Provide each of the 14 WALMI's grant-in-aid of Rs 5 crore over the five year period to strengthen their training, research and extension work provided: [a] they induct trainers in social science, extension, agriculture, environment and other disciplines; [b] undertake regular evaluation of their training programs; [c] offer a certain minimum number of training programs for farmers and irrigation staff every year; and [d] submit an independent, third party evaluation report of their work at the end of every year.

[V] Provide core grant of Rs 20 crore each to five national institutes of eminence—such as IITs, IIMs, ISB, etc. to establish centres of excellence in irrigation management to undertake research, education and training for senior MMI managers.

[VI] The Working Group recommends that specific provision of funds is made to involve leading ITES players to work with state governments to develop management information systems for MMI schemes with specific purpose of generating realtime information on the working and performance of these systems to enable their benchmarking.

MEMBER SECRETARY'S NOTE

There were comments on the observations contained in the initial draft of this chapter which have a strong bearing on appreciation of the relevance and contribution of Major Medium Projects towards Irrigation development in the country. These comments are, to some extent, taken into consideration while finalizing the Chapter. However, full facts are not reflected. Therefore, the comments given by Member (WP&P), CWC in this regard are appended in the succeeding pages.

Observations on Chapter – 5
Major and Medium Irrigation Projects – Strategy for XII Plan

The draft Chapter – V has been gone through. It is observed that the Chapter presents a very detailed analysis of the existing status and particularly the challenges being faced by the major and medium irrigation projects in the country. Strategies for XII Plan are also suggested. It is observed that some of the information / data do not present the factual position and some of the conclusions need to be reviewed. Para wise observations are as under.

a. Under the sub-section “IPC-IPU Gap” of Section on “Problem Areas” it is stated that “Examining the incremental IPC-IPU gap suggests that during recent plans, the capital investment required to add a hectare under MMI is twice the level assumed at the time of planning.”

First of all, it is stated that as such there is no linkage between increase in the cost of creation of irrigation potential and the IPC-IPU gap. In this regard, it is stated that an analysis of the reasons for increase in the cost of the project is necessary. Apart from the increase in the cost due to inflation and technical problems encountered during the implementation, one of the major reasons is inadequate allocation of funds for completing the projects as per the implementation schedule envisaged at the time of planning. Further, the extent of increase in the cost varies from project to project. It is suggested that the above mentioned statement may be re-drafted as under.

“It is observed that during recent plans, the capital investment required to add a hectare under MMI is relatively much larger than the level assumed at the time of planning which is primarily due to time and cost overruns”.

b. Under the sub-section “Lack of Information” of Section on “Problem Areas”, following has been stated.

“The information generated by the Agriculture Department of the Government suggests that the acrage actually wetted by MMI projects is around 50-55 percent (16 -18 million ha) of the CWC figures. MoA figures also show that since 1991, despite massive investments in new MMI and ERM projects, the area served by MMI projects has declined by 2.5 to 3 million ha. There is widespread apprehension that MoA figures on net area irrigated by MMI are gross underestimates. This may be true.”

It appears that the assessment of 50-55% has been made on the basis of comparison of 16-18 million hectare (mha) of net irrigated area reported by MoA with the figure of 31 mha of irrigation potential created which has been reported by the State Governments to the Planning Commission. **In this regard, it is to state that comparison of net irrigated area with created irrigation potential or utilized irrigated potential is not appropriate.**

Regarding the issue of reported decline in the irrigated area through canals, the Ministry of Water Resources has carried out detailed review of the position and the observations were conveyed to the Planning Commission during the

exercise of Mid-Term Review of XI Plan as under which are self explanatory.

"The issue of decline in the area irrigated by canals has been raised from time to time and in this regard, the data reported by the Economics and Statistics Directorate of Ministry of Agriculture (MoA) as available on the website of MoA is generally quoted. The detailed District- wise data available on the website has been analyzed in MoWR and it has been found that there are considerable numbers of States and Districts from where the requisite data are either "not reported" or "not available" for most of the years. Since any conclusion based on such deficient data would not represent realistic picture, the matter was taken up with the MoA. MoA has observed as under.

"….from 2004-05 onwards, information from some States / Districts were not received resulting in a gap in the assessment of data due to missing or unreported information. In the analysis of net irrigated area and gross irrigated area at national level, for the un-reported districts / States, the information of 2002-03 has been repeated. In case of remaining districts against which information has not been received for a long period, the data of Agriculture Census 2000-01 has been utilized in arriving at national level irrigated area (gross / net)."

MoA has further observed as under.

"As per the data of Directorate of Economics and Statistics, it may be seen that there has been a substantial increase in the net irrigated area and gross irrigated area during the period 1990-91 to 2006-07. The net irrigated area has increased from 48.02 m.ha. to 60.86 m. ha. and in case of gross irrigated area, it has increased from 63.2 m.ha. to 85.78 m. ha. The irrigated area includes irrigation from both surface and ground water resources. The increase in the net irrigated area is a contribution to the efforts towards irrigation development. Surface water sources including canal irrigation and sub-surface water are complimentary to each other since both are components of same hydrological cycle. ***Considering the scientific inter-linkage between the surface and ground water at the river basin level, it is difficult to segregate them. Surface water and ground water should, therefore, be considered as a combined resource for irrigation created due to interventions in either case."***

Further, Central water Commission (CWC) has also ascertained the position in respect of decline in the irrigated area through canals from the Water Resources Departments of the State Governments and many States have categorically indicated that there has not been any decline in the irrigated area through canals.

In view of above position, the reporting of such data and the conclusions that "the area irrigated by canals and tanks has actually undergone a decline in absolute terms since the 1990s" in the MTA Document, which is a very important document of the Government of India, may not be appropriate.

It is suggested that either the factual position should be appropriately reflected

in the MTA chapter or the specific conclusion which is based on inadequate data should not be included in the MTA Chapter on Water Resources till the position is verified from all the States."

The extent of inadequacy of data which is the basis of their report is further explained from the following.

The website of the Ministry of Agriculture provides a Summary in respect of net irrigated area as well as gross irrigated area for the period from 1950-51 to 2006-07 for the country as a whole. Further, the State-wise and district-wise data are available for the period from 1998-99 to 2006-07. The State-wise and district wise data has been examined in the Ministry of Water Resources and it is observed that there are many missing or unreported data. It is observed that "--" has been shown against the data in the data sheet in respect of many States / districts and it has been indicated that in such cases the data "not reported / not available or reported zero". There are considerable number of States and districts with "not reported / not available" data. A summary in respect of only five years is presented for illustration in Table-1.

Table-1: Information about "data not reported / not available"

Year	Number of States / UTs for which data are not reported	Number of districts for which data are not reported out of States/UTs where data is reported
1	2	2
1998-99	19	42
2000-01	16	48
2002-03	17	57
2004-05	18	38
2006-07	25	14

It has also been observed that in some of the years, the data of States with relatively larger created irrigation potential have also not been reported. For example no data has been reported in respect of (a) Orissa, West Bengal and Chhattisgarh in 1998-99, (b) Orissa and West Bengal in 2000-01, (c) Orissa and West Bengal in 2002-03, (d) Maharashtra, Bihar, Orissa, West Bengal and Gujarat in 2004-05, and (e) Uttar Pradesh, Maharashtra, Bihar, Punjab, Rajasthan, Karnataka, Orissa, West Bengal and Gujarat in 2006-07. In addition, there are many districts with missing data even in the States for which data are reported. Numbers of such districts are shown in column 3 of the Table-1.

In view of above, it is suggested that the factual position should be appropriately reflected in the draft Chapter.

c. Under the sub-section “Lack of Information” of Section on “Problem Areas”, it has also been stated that “the 3rd Minor Irrigation Census for 2001 suggests that the area served by MMI projects is closer to MoA estimates than CWC figures.”

Regarding the above statement, it is to clarify that the Minor Irrigation (MI) Census is restricted to the information related to minor irrigation projects – both surface water and ground water. Information about major and medium irrigation projects are not collected during the MI Census.

It is, therefore suggested that the above statement of the Draft Chapter – V may be corrected.

d. Under the sub-section “Lack of Information” of Section on “Problem Areas” it is also stated that “unless we have accurate, reliable and realtime information on the impact of MMI projects, it is impossible to even begin thinking about improving their management”

In this regard, it is to state that the Ministry of Water Resources has taken a serious note of the considerable gap between the irrigation potential created and the irrigation potential utilized. Realizing the importance and the need for taking appropriate measures for optimally utilizing the created facilities for irrigation, the Ministry of Water Resources awarded studies to Indian Institutes of Management (IIMs) Ahmadabad, Bangalore, Kolkata and Lucknow for ascertaining the possible reasons for the gap between irrigation potential created and irrigation potential utilized and identifying the measures for ensuring optimal utilization. In the reports submitted by IIMs several reasons have been identified for the gap between irrigation potential created and irrigation potential utilized and some of the important reasons found to contribute considerably to the gap are as under.

i. Lack of proper operation and maintenance
ii. Incomplete distribution systems
iii. Non-completion of command area development works
iv. Changes from the initially designed cropping pattern
v. Diversion of irrigable land for other purposes

The reports of the studies carried out by IIMs were circulated to all the State Governments and other stakeholders. With a view to further deliberate on the findings of the studies and recommendations made by IIMs and the suggestions received from the State Governments and other stakeholders, a workshop was organized by Ministry of Water Resources on 17th March 2009

at Delhi. The findings of the studies and the important points which emerged during the deliberations at the workshop have been forwarded to the State Governments for necessary actions.

It is suggested that this information may also be appropriate reflected in the draft Chapter – V.

e. Under the sub-section “Command Area Development” of Section on “Problem Areas”, it has also been stated that “various factors responsible for slow pace of CAD have been discussed in an earlier chapter. CAD works need a special thrust if the IPC-IPU gap is to be closed.”

The recommendation regarding special thrust on CAD works is, undoubtedly, very important. However, it may be mentioned that there are many other factors leading to gap between IPC and IPU as highlighted in the report of the Indian Institute of Management (IIM), Ahmadabad, Bangalore, Kolkata & Lucknow. With a view to encourage States to fully utilize the created irrigation potential, Ministry of Water Resources provides necessary assistance to the States for undertaking command area development under the scheme “Command Area Development and Water Management”. Ministry of Water Resources also provides assistance to States for extension, renovation and modernization (ERM) of major and medium irrigation projects under Accelerated Irrigation Benefits Programme (AIBP) as per approved guidelines. Further, scheme for “Repair, Renovation and Restoration of Water Bodies” has also been approved by Government of India under which assistance is provided to States for restoration of water bodies as per the approved guidelines.

It is proposed that the initiative taken by the State Governments as well as Central Government in respect of reducing IPC-IPU gap may also be appropriately reflected in the report of the Working Group.

f. Under the sub-section “Irrigation Service Fee (ISF) fixation and recovery” of Section on “Problem Areas”, it has also been stated that “several court cases filed by farmers against the government for levying ISF without providing commensurate service suggested that ISF established an accountability mechanism that obliged MMI managers to provide irrigation service”.

Details of the court cases and the orders of the Hon’ble Courts in the matter are not indicated. The details are considered very important and may be considered for inclusion. This is more so because orders of the Hon’ble Courts are to be kept in view while making recommendations on specific issues.

g. Under the sub-section “Participatory Irrigation Management” of Section on “Problem Areas”, it has also been stated that “what is often overlooked is the fact that the key to successful PIM is not in the hands of farmers or their leaders but in the hands of the MMI engineers and managers”.

The statement is rather misleading. I am of the view that the farmers and water resources professional along with social workers have to join hands to make PIM a success. The success as also the failure cannot be attributed to one section of the

society or a specific group. I suggest that the above statement may be revised as under.

“What is often overlooked is the fact that the key to successful PIM is not in the hands of farmers or their leaders alone. MMI professionals and managers have also to play a very important role. As a matter fact, the farmers and water resources professional along with social workers have to join hands to make PIM a success.”

h. In the second para of the Section on “Strategic Analysis of the MMI Sector”, the storage capacity has been shown as 215 BCM.

The total surface water storage created in the country has been assessed to be about 225 BCM. It is suggested that necessary correction may be made.

i. In the second para of the Section on “Strategic Analysis of the MMI Sector”, it has also been stated that “the depletion of irrigation departments can be viewed as a hidden strength, providing avenue to rebuild MMI management organization with new skill mixes, attitudes, ethos and outlook that are more suited to the management role than was required at the construction stage”.

The importance and urgent need for putting in place multi-disciplinary team of professionals for irrigation management is duly recognised. However, the above statement in the draft Chapter – V could be misunderstood that the re-building of the irrigation management organization would be at the cost of existing water resources professionals associated with the Water Resources Department or Irrigation Department. Therefore, I suggest that the above statement may be replaced by the following.

“In view of increasing complexities in management of water resource systems, it is necessary to not only strengthen the existing setup of the Water Resources Department but also to include professionals of other related streams to create and develop multi-disciplinary team of professionals to efficiently address the issues.”

j. The third para of the Section on “Strategic Analysis of the MMI Sector” reads as under.

“Existing institutions for capacity building in irrigation institutions (such as WALMIs) are neither designed nor able to overcome this limitation. Irrigation managers are more familiar with construction rather than management. Irrigation departments are unidisciplinary, with engineers accounting for all professional staff to the exclusion of social science and extension expertise. Irrigation institutions are also fragmented with little collaboration among irrigation, agriculture, groundwater and related departments”.

In this regard, it is to state that the Irrigation Departments are, generally, dominated by officers with civil engineering background. However, the irrigation planning is based on necessary inputs provided by the Department of Agriculture and all other such Departments. The Department of Agriculture and other related Departments

have adequately trained professionals to address the issues related to irrigation. Further, WALMIs have multidisciplinary teams representing the faculty members from almost all disciplines. The WALMIs generally comprise of Faculties of Engineering, Agriculture, Sciences, Social Sciences, Watershed Development and Management etc.

It is suggested that the statement regarding WALMIs in the draft Chapter – V may be appropriately corrected.

k. The fourth para of the Section on “Strategic Analysis of the MMI Sector” includes the following.

“Another big opportunity is conjunctive management of surface and groundwater to curtail energy use in irrigation and to overcome aquifer depletion. Fortunately, with a boom in private tubewells in canal commands, most of MMI systems have developed into intensive systems for conjunctive use of ground and surface water. We already have some 15 million private groundwater structures existing within and in the peripheries of MMI canal commands which can provide tremendous leverage to MMI systems. This leverage remains unexplored. Improving MMI system management can expand planned conjunctive management of ground and surface water within existing commands and their peripheries.”

There appears to be contradiction in the statements in the above para. The planning for conjunctive use of surface and ground water is appreciated. However, it is not clear as to what precisely the statement “Fortunately, with a boom in private tubewells in canal commands, most of MMI systems have developed into intensive systems for conjunctive use of ground and surface water” means. I feel that use of canal irrigation system for recharging the ground water and then using the ground water so recharged, for irrigation through pumps cannot fall in the category of “plan for conjunctive use”. The sinking of private tubewells in the canal command should not be seen as one of the option of better management of water resources. It is a fact that there are reports of numerous ground water structures in the canal command and perhaps due to poor management of canal systems. There is definitely an urgent need for adoption of better management practices in such command. However, “boom in private tubewells in canal command” cannot and should not be seen as an opportunity.

In my opinion, the above statement in the draft Chapter – V needs to be thoroughly revised.

l. The fifth para of the Section on “Strategic Analysis of the MMI Sector” pinpoints the root cause of the problems of MMI sector as poor service-declining ISF collection-reduced resources for O&M-increase in IPC-IPU gap. It further mentions that “unless the planning process wakes up to these new challenges, the MMI sector may end up stuck in business as usual mode”. Thereafter, a number of presumptive statements have been made as under.

[1] Governments at central and state governments will continue to construct MMI projects despite their poor track record of performance and without understanding how to improve their performance

[2] similarly, multi-lateral lenders (like World Bank and Asian Development Bank) will continue to fund new irrigation projects as well as rehabilitation/ modernization projects that are attractive for making large loans that governments are happy to receive regardless of the past experience with the performance of such loans or future prospects
[3] poor performance of irrigation systems will continue to be blamed on the lack of farmer participation and co-operation; and despite lack of evidence of large-scale success, PIM/IMT will continue to be peddled as blanket solutions to improving MMI system performance
[4] Since best sites are already used up, new projects will be increasingly costly and unviable
[5] to justify unviable projects, planners will continue to over-estimate the command area, prescribe unrealistic cropping pattern, and assume unrealistic irrigation duty; once commissioned, the head reach farmers will make a habit of irrigating water loving crops ensuring that the actual area commanded is a half or a third of the original plan
[6] the country will keep initiating and constructing grandiose projects, without paying much attention to the stringent institutional and management requirements to achieve the performance goals of these systems
[7] Irrigation departments will continue to remain construction-oriented with engineers having little interest or incentive or capacity in efficient management of systems so that they achieve their full performance potential
[8] Even if bureaucracies were motivated and capacitated, MMI performance and impact are difficult to measure and monitor when land revenue and ISF collection have been abolished or trivialized
[9] in some states, irrigation departments will continue to stagnate or even shrink in size; this will leave little organization to manage these large irrigation capital assets
[10] where irrigation departments are growing, with rising government salaries and stagnant ISF collection, establishment costs will increase as the share of working expenses with little left to repair and maintain the systems
[11] in overall terms, the low-level equilibrium in which India's MMI sector is comfortably ensconced today will continue; central and state governments as well as multi-lateral lenders will keep investing in unviable construction and ERM projects; and overall, more and more money invested will keep giving India less and less canal irrigation as has happened since 1991
[12] The key socio-economic benefits of such projects—often more than gravity fed irrigated areas-- will be in terms of recharging the aquifers in the areas where they can reach water by gravity flow and feeding urban water supply schemes.

Some of the above statements appear to have been made without appreciating the initiatives made by the State Governments as well Central Government towards reforms in irrigation sector. Such statements are neither based on facts nor desirable. Regarding statement at [1] above, it is to state that MMI projects are planned after detailed investigation and techno-economic evaluations which inter-alia includes evaluation of projects from environmental and social aspects. A general statement about poor track record of MMI project is not appropriate. Despite a lot of room for further improvements, the MMI projects have proved to be boon in respect of increasing the agriculture productivity and bringing about the self sufficiency in food production. These facts cannot be ignored. The presumptive statement at [2] is not appropriate. Loans from external and multi-lateral agencies are utilized after

examining all aspects. The statement at [3] above is not clear. The efficacy and importance of PIM is duly established and serious efforts are being made by the State Governments to make PIM a success. The statement at [4] above has been made without understanding the process of project preparation and evaluation. As mentioned above, all MMI projects are planned after detailed investigation and in-depth evaluation for technical feasibility and economic viability. It remains a fact that the best options for water resources development have already been planned and future sites would be more challenging and relatively costly. However, there is no question of undertaking the development of unviable projects. Regarding the statement at [5], it is to state that the cropping pattern for planning a project is adopted in consultation with the Agriculture Department of the respective States and the same is duly examined by the Union Ministry of Agriculture during the course of evaluation. Statements at [6], [7], [8], [9], [10], and [11] are based on certain assumptions and hence I have no comment to offer. However, it appears that most of the assumptions have emerged out of a biased view. It appears that the statement at [12] has been made without realizing the limitations of the recharge capacity of soil. The idea of using the MMI project only for recharging the ground water and for meeting the urban water supply is ridiculous and must be frowned upon as implementation of such ideas would add to the serious challenge of food crisis in coming times. In addition, we must not lose sight of the adverse impact of the over pumping of the ground water as a result of boom in tubewells which are well known, particularly in the some parts of northern and southern parts of the country. Incidentally, the problem of rapid decline in ground water table is most serious in regions which have well developed canal irrigation systems.

m. The Section on “Strategy for MMI States” begins with the following statement.

“To overcome this threat and exploit the new opportunities facing the MMI sector, the Working Group is of the view that the 12th Five Year Plan should fundamentally change the objective and role of Central assistance to state governments in the MMI sector. MMI development in the country has so far been concentrated in 14 states identified in table 3, referred to henceforth as “the 14 MMI states”. These account for 97 percent of India’s ultimate MMI potential; these have 88 percent of the country’s major, medium and ERM projects either completed or under implementation; these have 94 percent of the country’s irrigation potential created as well as utilized by CWC figures as well as by MoA figures. These are the states where the bulk of the ‘construction work’ is over or under way. These are the states where all the problems of the MMI sector discussed by the Working Group are in full play.”

In this regard, it is stated that the title of the Section does not appear to be proper. There is nothing like “MMI States”. It is stated that the planning for major and medium irrigation projects is primarily governed by the hydrological and topographical features of the river basin or sub-basin which very often do not respect the State boundaries. Therefore the comparison between States on the basis of number of MMI projects or the investment made on MMI projects is meaningless. Having said that the use of term “the 14 MMI States” is not at all appropriate, it is to state that following important facts have been ignored while drawing some of the conclusions under this Section.

- Ultimate irrigation potential in so called “14 MMI States” is about 56.75 mha which is about 97% of the total ultimate irrigation potential from MMI project in the country.
- Only 34.77 mha i.e. about 61% of the ultimate irrigation potential of the so called “14 MMI States” have ben created.
- On the other hand the ultimate irrigation potential in the remaining States is only about 1.71 mha i.e., about 3% of the ultimate irrigation potential from MMI project in the country.
- The irrigation potential already created through major and medium irrigation projects in the remaining States is about 2.28 mha which is about 130% of the assessed ultimate irrigation poteial of 1.71 mha.

In view of above, there appears to be no justification for restricting the AIBP assistance only for the MMI projects in the States other than so called “MMI States” and not considering any projects of the so called “MMI States”. Obviously, many of the recommendations related to “MMI States” in the draft Chapter – V do not hold ground.

A. The central government should selectively support states other than the “14 MMI states” listed in table 3 which have a very small share in MMI potential development so far. States like Jharkhand, Chhatisgarh, Uttaranchal, North-eastern region began late in developing their MMI potential. These should be actively supported to develop their MMI potential with central assistance.

B. The central government should minimize support to new Major or Medium projects in the “14 MMI states” in table 3 where almost all available identified MMI potential has been already developed. Most opportunities for developing MMI potential in a techno-economically viable manner are exhausted in these states. The 12th Five Year Plan should be used to complete the 500 or so projects whose completion has been delayed for one reason or another in these states.

n. The para (E) of the Section on “Strategy for MMI States” states as under.

E. Without ruling out central support to construction on a selective and case-by-case basis, the Working Group is of the view that the 12th FYP should provide a bold signal to put central resources in support of a ‘management improvement agenda’. The Mid-term Review of the 11th Plan on the MMI sector hit the nail on its head when it said that “The challenge, therefore, is to define an agenda of reforms that can improve the performance of canal irrigation in India.” (MTR, 11th FYP, p 433). In the 14 MMI states, the 12th Five Year Plan should aim at meeting this challenge headlong. To this end, the Central government should create a non-lapsable fund to incentivize and support state governments to: [i] establish minimum Irrigation Service Fee (ISF) at a reasonable level, as prescribed by the 13th Finance Commission; [ii] promote Participatory Irrigation Management through WUAs at outlet and distributary level; [iii] maximize the collection of ISF from users through WUAs, among other things, by allowing WUAs to retain at least 50 percent of ISF collected for maintenance of the

distribution system; [iv] undertake, in a campaign mode, a program to close the gap between IPC and IPU through farmer-participatory CAD works; [v] generate real time information on areas served and level of irrigation service received by users; [vi] create performance benchmarks to monitor and improve the performance of MMI systems as a whole as well as at branch and distributary levels; [vii] enhance the resources available to the MMI departments for improving O&M of irrigation systems through technological improvements such as automation and use of ITES; [viii] broaden the disciplinary skill-set available with irrigation departments to include social science and irrigation extension skills; [ix] substantially improve the amount and quality of training and capacity building opportunities for MMI staff at all levels.

The recommendation related to providing a bold signal to put central resources in support of a 'management improvement agenda' is definitely most welcome and highly appreciable. However, specific mention about "14 MMI States" need not be made in view of earlier discussions. Management improvement agenda is required to be implemented for all MMI projects in every State.

o. The para (I) of the Section on "Strategy for MMI States" need to be revised with reference to the agreed outlays and related recommendations of the Working Group under Chapter – V on Recommendations.

CHAPTER – 6

TARGETS AND PROPOSED OUTLAYS

As discussed in the earlier chapters of the Report, the focus of the strategies for the XII Plan has to be on: (a) full utilization of the created facilities; (b) improving water use efficiencies; and (c) completion of ongoing projects in a time bound manner. However, for meeting the specific need of the society, particularly that for the tribal and difficult areas, it is also proposed to take up new projects. With a view to encourage the completion of the ongoing projects so that the people are benefitted from the project at the earliest and the investments made on such projects are gainfully utilized, it is proposed to prioritize the ongoing projects and ensure adequate allocation of fund for completion of the project in time bound manner. Adequate outlays are proposed for promotion and implementation of reform measures to achieve the objective of (a) full utilization of the created facilities, (b) improvement in the water use efficiencies, and (c) physical and financial sustainability of the created facilities.

Accordingly, there is increased emphasis on:

a. Command area development by incentivizing the completion of such activities in time bound manners – for ensuring full utilization of created facilities;
b. Extension, Renovation and modernization of major and medium irrigation project and Improved management practices such automated regulation of canals – for improving water use efficiencies; and
c. Making the central assistance conditional in respect of (i) rationalization of charges for water related services for ensuring financial sustainability and improved services, (ii) ensuring recoveries of water charges, (iii) establishment of mechanism for integrated planning and regulation of water resources projects including establishment of appropriate regulatory mechanism, (iv) comprehensive training of personnel responsible for project management (particularly those associated with O&M of the project), (v) adoption of modern management tools including water audit, benchmarking, assets management, systematic documentation and critical review of past performance , collection of all relevant data, particularly the data for water utilization in a systematic manner and contributing to WRIS etc. – for improving system efficiency and for ensuring optimal water utilization

6.1 Identified Activities and Well Defined Targets

Well defined targets are considered necessary for each of the activity proposed to be funded during XII Five Year Plan. Some of the specific targets for close monitoring have been identified as under.

a. A target for reducing the gap between the created irrigation potential and the irrigation potential utilized through command area development etc.
b. Target for restoration of lost potential through ERM projects
c. A rational target for creation of additional irrigation potential through ongoing projects (new project to be taken up only in exceptional circumstances to address the specific regional issues)
d. A target of improving water use efficiency
e. A well defined action plan for implementation of modern management tools

Attempts have been made to fix realistic targets after critical review of the performances during previous Plan period, the projections made by the States, capability of the implementation agencies etc.

In addition to creation of irrigation potential through completion of ongoing projects (and taking up of limited number of new projects in special circumstances), utilization of the created potential by implementing command area development and efficient water management practices, and improving the efficiency of the existing facilities, it is proposed to take up following activities during XII Plan through suitable schemes – both new schemes and re-structured ongoing schemes.

a. Accelerated programme for research and development to effectively address the challenges in all important aspects of water resources management in the country with active participation of various institutions at National and State level and also for creating Centre of Excellence wherever considered necessary
b. Re-structuring of institutional mechanism and capacity building
c. Scheme for promotion of automation of canal regulation (at least one pilot scheme in each of the State to be made fully operational)
d. Promotion of community management in respect of conjunctive use of surface and ground water

6.2 Targets for Various Activities and Outlays

The targets and proposed outlays for creation of facilities for providing more and more irrigation and ensuring the utilization of the created facilities through infrastructure development proposed during the XII Plan are in Table 6.1.

Table 6.1: Outlays and Targets in respect of Infrastructure Development

Sl. No.	Activity	Physical Target	Proposed Outlay (Rs in crores)		Remarks
			State Plan	Central Plan	
1.	Completion of ongoing Major and Medium Irrigation Project	Irrigation			Central assistance to be provided

	through liberal support for prioritized projects • 154 Major irrigation project • 139 Medium irrigation project	potential creation of: 6.6 mha 0.6 mha	1,34,000 11,000	67,000 5,500	under State Sector Scheme “AIBP”
2.	Extension, Renovation and Modernization (ERM) of Major and Medium Irrigation Project	Restoration of irrigation potential of about 2.2 mha	10,000	7,000	Central assistance to be provided under State Sector Scheme “AIBP”
3.	Taking up new Major and Medium Irrigation Projects • 28 Major irrigation project • 32 Medium irrigation project	Irrigation potential creation of: 0.5 mha 0.2 mha	32,000 4,000	5,500 700	Central assistance to be provided under State Sector Scheme “AIBP”
4.	Command Area Development and Water Management	Utilization of additional irrigation potential of 10 mha	10,000	20,000	Central assistance to be provided under State Sector Scheme “AIBP”
Sub-Total			2,01,000	1,05,700	

A very important target for XII Plan is to improve the efficiency of the irrigation project by at least 20%. The present level of efficiency of major and medium irrigation project has been assessed to be about 30% and it is planned to improve the existing level of efficiency of major and medium irrigation projects by 20% (from present level of about 30% to targeted 36%). Various strategy and action points through improvement of the structures as well as adoption of better management practices have been identified to improve the present level of efficiency at least up to 36% and the same are presented in Table 6.2.

Table6. 2: Outlays and Targets in respect of Activities Related to Improvement in Efficiency of Created Facilities and Reform Measures

Sl. No.	**Activity**	**Proposed Outlay (Rs in crores)**		**Remarks**
		State	**Central**	

		Plan	Plan	
1.	Adoption of Better Management Practices • Creation of Water Regulatory Authorities in States for ensuring better management practices, particularly (a) promoting rationalization of charges for water related services for ensuring financial sustainability and improved services, and (b) encouraging recoveries of water charges • Establishment of National Bureau of Water Use Efficiency • Establishment of mechanism for integrated planning and regulation of water resources projects including establishment of appropriate regulatory mechanism for Inter-State Projects • Comprehensive training of personnel responsible for project management (particularly those associated with O&M of the project) • Adoption of modern management tools including (a) water audit, (b) benchmarking, (c) assets management, (d) systematic documentation and critical review of past performance etc., (e) collection of all relevant data, particularly the data for water utilization in a systematic manner and contributing to WRIS	900	1900	To be supported through the Central Sector Scheme "National Water Mission(NWM)"
2.	Physical Measures in terms of (a) ERM of Major and Medium Irrigation Project, and (b) Command Area Development	- -	- -	Physical targets and financial outlays indicated at Sl. No. 2 and 4 of Table-1.
3.	Dam Safety and Rehabilitation for better performance	2,000	200	To be supported through Central Sector Scheme "Dam Rehabilitation and Improvement Project (DRIP)"
4.	Irrigation management programme (IMP)	-	10,000	

5.	Implementation of about five pilot schemes in different regions (covering a moderate sized command of a project or a canal) for complete renovation and setting up fully automated distribution system - Benchmarking the process of improving the efficiency of a project	1,000	9,000	To be supported through the scheme "National Water Mission(NWM)"
Sub-Total		3,900	21,100	

The Working Group is of the firm view that there is urgent need for capacity building of the professional associated with development and management of water resources systems and the training of the functionaries at all level to ensure efficient management. At the same time mass awareness programmes are required to be taken up in a big way. Further, the research and in-depth studies on all aspects of water related issues are required to be undertaken in a systematic manner on top priority. Identified activities and outlays proposed in this regard are in Table 6.3.

Table6.3: Outlays and Targets in respect of Activities Related to Education and Capacity Building

Sl. No.	Activity	Proposed Outlay (Rs in crores)		Remarks
		State Plan	Central Plan	
1.	Mass Awareness Programme	300	200	To be supported through the Central Sector Scheme "Information, Education and Communication (IEC)"
2.	Promote Course on Water Resources – Both Long Term and Short Term Courses	-	200	To be supported through the Central Sector Scheme "National Water Academy (NWA)"and HRD & Capacity Building (HRD&CB)
3.	Promotion of Research in Water Resources including: • Strengthening of the existing facilities at the Research Stations; • Strengthening of the existing facilities at Water and Land Management Institutes	300	400	To be supported through the scheme "Research and Development"

	(WALMIs); • Promotion of higher education and intensive applied research through establishment of Centres of Excellence in different areas such as (a) Flood Management Studies, (b) Drought Management Strategies, (c) Water Management Planning, (d) Conflict Resolution in Water Resources, (e) Advanced Studies in Water Economics and Social Values, (f) Centre for Good Governance in Water Resources etc.; and • Setting up of a national level coordination mechanism.			
4.	Capacity Building Programme for Professionals, WUAs and Panchayat etc. through National Water Academy, WALMIs, reputed academic institutions, Farmers Training Centres (FTC) etc.	200	100	To be supported through a new scheme for "Human Resources Development & Capacity Building" and the scheme "IEC"
Sub-Total		800	900	

The need for strengthening and re-structuring of planning and monitoring mechanism both for central departments and in States is considered necessary and is required to be taken up on priority. Major activities and proposed outlays in this regard are in Table 6.4.

Table 6.4: Outlays and Targets in respect of Strengthening of Planning and Monitoring Mechanism

Sl. No.	Activity	Proposed Outlay (Rs in crores)		Remarks
		State plan	Central Plan	
1.	Restructuring of Water Resources Departments and Related Organizations in States and at Centre	500	200	To be supported through a new scheme for "Human Resources Development / Capacity Building"
2.	Investigation of schemes identified under	700	1,300	To be supported

	National Perspective Plan, investigation of schemes of national importance (identified as National Projects), and investigation of specific schemes benefitting tribal and difficult areas (as per specific request of State Governments)			through the scheme "River Basin Management"
3.	Collection, compilation and analyses of hydrological and related data and development and operation of "Water Resources Information System" which may inter-alia include (a) Hydrological data collection, (b)Collection of special data and information through "Minor Irrigation Census" and "Census for Major and Medium Irrigation project", (c) Water Quality Assessment, (d) Monitoring of projects and schemes, (e) Water Resources Information System	1700	4100	To be supported through the schemes "Development of Water Resources Information System" and "Hydrology Project"
Sub-Total		2900	5,600	

6.3 Summary of Proposed Outlays

I. State Plan

- Creation of facilities through infrastructure development — Rs 2,01,000 crores
- Strategy for improvement of the structures as well as adoption of better management practices for improving the efficiency — Rs 3,900 crores
- Education and Capacity Building — Rs 800 crores
- Strengthening of Planning and Monitoring Mechanism — Rs 2,900 crores

Total — Rs 2,08,600 crores

II. Central Plan Schemes

(Rs in crores)

Sl. No.	Name of the Scheme	Proposed outlay during XII Plan
Central Sector Schemes		
1	Development of Water Resources Information System	3980
2	Hydrology Project	120

3	River Basin Management	1300
4	Research and Development	400
5	National Water Academy (NWA)	50
6	Information, Education and Communication (IEC)	250
7	National Water Mission(NWM)	10,900
8	Human Resources Development / Capacity Building	400
9	Irrigation Management Programme	10,000
Total Outlay Proposed For Central Sector Schemes		27,400
State Sector Schemes		
1	Accelerated Irrigation Benefits Programme (including the activities related to command area development and water management which were covered under CAD&WM during XI Plan)	1,05,700
2	Dam Rehabilitation and Improvement Project	200
Total Outlay Proposed For State Sector Schemes		1,05,900
Total Central Plan Outlay Proposed		1,33,300

III. Proposed Outlay for Major and Medium Irrigation Sector

(Rs in crores)

- State Plan 2,08,600
- Central Plan 1,33,300
  - Central Sector Schemes 27,400
  - State Sector Schemes 1,05,900
- Total Plan Outlay 3,41,900

CHAPTER – 7
RECOMMENDATIONS OF THE 12TH PLAN WORKING GROUP ON MAJOR AND MEDIUM IRRIGATION SYSTEMS

Major and medium irrigation (MMI) projects have made considerable contribution in creation of irrigation potential. Due emphasis of irrigation projects, during earlier Plans, has helped in self-sufficiency in food grain production. The irrigation potential through MMI projects has increased from about 9.7 million hectares (mha) in 1951 (pre-Plan stage) to about 45.6 mha by March 2010 which definitely is an impressive progress. However, many issues related to MMI projects have cropped up over the time. These issues relate to both the existing projects and the ongoing. The existing projects suffer from a number of challenges including following two serious problems which are required to be addressed on priority.

i. The gap between irrigation potential created (IPC) and the irrigation potential utilized (IPU) is increasing year after year and as per the most updated information, the gap is about 18%.
ii. Poor operation and maintenance not only adversely affects the efficiency of MMI projects but also leads to relatively higher cost of deferred maintenance.

The ongoing major and medium irrigation projects suffer from serious problems related to non availability of adequate financial resources resulting in time and cost overruns. The overall scenario has led to adverse comments in some quarters about the poor performance of the project and also about the efficacy of MMI projects. The project authorities continue to make efforts to clarify the position and they have their own reasons. However, it remains a fact that serious issues related to management of MMI project need to be addressed on priority which calls for a shift of focus towards better management. The result of the studies awarded by the Ministry of Water Resources to Indian Institute of Management, Ahmadabad, Bangalore, Calcutta and Lucknow to identify the reasons for the gap between the irrigation potential created and the irrigation potential utilized and to suggest measures for reducing the gap also primarily suggest for adoption of improved management practices.

A very important issue relates to availability of adequate data and information related to the projects for proper evaluation of the performance of the water resources projects. Available data and information from various sources are very often at variance with each other leading to a state of confusion. This aspect has to be duly addressed in all seriousness. Ministry of Water Resources has initiated process of development of Water Resources Information System (WRIS). This is required to be completed at the earliest and made fully operational in public domain.

Another serious concern related to major and medium irrigation project is about the inadequacy of fully trained professionals. It is observed that the instances of depletion of the cadre strength in most of the States and also in related central agencies are very common. Further, systematic arrangement for capacity building including career development plan does not exist.

Keeping in view (a) the present state of water resources development and management, (b) importance of assured irrigation in addressing the serious challenge of “Food Security”, and

(c) the complexities of the irrigation development and management, the Working Group recommends the following priorities and measures for the XII Plan.

7.1 Focus of the XII Plan

The Working Group recommends that in respect of major and medium irrigation projects, the focus should be on (a) full utilization of created facilities, (b) improving water use efficiency, and (c) completing as many ongoing projects as possible for which the ongoing projects should be prioritized. In order to achieve these objectives, the central assistance should be used to incentivize and encourage States to adopt and implement an aggressive MMI management reform agenda and action plan. In view of focus of the MMI sector during XII Plan on reducing the gap between IPC and IPU and completion of ongoing projects, new MMI projects should be provided central assistance either on completion of ongoing projects or to address specific important regional challenges.

With a view to achieve the objective of full utilization of created facilities, the works related to (a) command area development and water management (CAD&WM), and (b) extension, renovation and modernization (ERM) of old major and medium irrigation projects are proposed to be given top most priority. Since, these works would increase the efficiency of water use, it is also recommended that liberalized central funding at enhanced rate should be considered and that there should not be any restriction in respect of one to one criteria (as presently applicable for central assistance under Accelerated Irrigation Benefits Programme) for central assistance in respect of CAD&WM and ERM projects. This is more so in view of the fact that one of the targets of National Water Mission is to enhance the water use efficiency.

Since CAD&WM has to play very important role in bridging the gap between IPC and IPU, it is proposed to enhance the rate of central assistance under CAD&WM to 75% from the present level of 50%. Simultaneously, effective measures are recommended for promotion of PIM, active involvement of WUAs in water management and adoption of better management practices.

The efficacy of PIM Acts from the viewpoint of their applicability and achievements in shaping approaches on the ground need to be critically examined. The Working Group recommends that the PIM Acts may be revisited to identify legal spaces and constraints that that may be of use both for the States that are in the process or are likely to come up with PIM laws and for the States that have PIM acts but may like to push in for some progressive amendments to the existing laws.

7.2 Improvement in Management Practice and Reform Measures

As indicated above, the central assistance should be used to incentivize and encourage States to adopt and implement an aggressive MMI management reform agenda and action plan. The reform measures should inter-alia include: (a) rationalization of water charges; (b) establishment of regulatory mechanism; (c) comprehensive capacity building programme for project management personnel including the field level workers; and (d) adoption of modern management tools etc.

In this regard, adequate outlays have been proposed for irrigation management, data acquisition, specialized studies, research and training etc. to incentivize and support States. It is strongly recommended that central assistance should be subject to the condition that

better management practices would be adopted by the State Governments. The management practices should, inter-alia, include:

i) establishment of minimum Irrigation Service Fee (ISF) at a reasonable level, as prescribed by the Thirteenth Finance Commission;
ii) promotion of Participatory Irrigation Management through WUAs at outlet and distributary level;
iii) maximization of the collection of ISF from users through WUAs, among other things, by allowing WUAs to retain at least 50 percent of ISF collected for maintenance of the distribution system;
iv) undertaking, in a campaign mode, a program to close the gap between IPC and IPU through farmer-participatory CAD works;
v) enhancing the resources available to the MMI departments for improving O&M of irrigation systems through technological improvements such as automation and use of ITES;
vi) broadening the disciplinary skill-set available with irrigation departments to include social science and agriculture extension skills; and
vii) substantially improving the amount and quality of training and capacity building opportunities for MMI staff at all levels.

7.3 Data Collection and Information System

The Working Group very strongly recommends for observation and collection of all relevant data and information from various sources and making them available for users through water resources information system in public domain. The data should inter-alia include generation of real time information on areas served and level of irrigation service received by users. The analyses of available data and information should be encouraged with a view to evaluate the performance of the existing system and also for identifying better and improved options for efficient management. The evaluation and benchmarking studies should include creation of performance benchmarks to monitor and improve the performance of MMI systems as a whole as well as at branch and distributary levels. The "Water Resources Information System (WRIS)" being developed by the Ministry of Water Resources with assistance from National Remote Sensing Centre should be made fully operational. One of the important targets should be to ensure reporting of data in respect of project wise irrigated area, irrigation potential utilized and such other information which are essential for performance evaluation. An outlay of Rs 5,800 crores has been proposed during XII Plan for additional data collection and making WRIS fully operational.

7.4 Higher Studies, Research, Capacity Building, and Mass Awareness Programme

Working Group very strongly recommends for higher studies and research covering all aspects of water resources management. Similarly capacity building and career development programmes for water resources professional including those associated with water management at the field level are strongly recommended. It is suggested that various academic and professional institutions and research organizations should be actively associated. Mass awareness programme is equally important. The Working Group recommends the following.

i. Core grant up to Rs 20 crore to identified national institutes of eminence – such as IITs, IIMs, NIT, ISB, etc. to establish centres of excellence in irrigation management to undertake research, education and training for senior MMI managers.

ii. Provide each of the 14 WALMI's grant-in-aid of Rs 5 crore over the five year period to strengthen their training, research and extension work provided (a) they induct trainers in social science, extension, agriculture, environment and other disciplines, (b) undertake regular evaluation of their training programs, (c) offer a certain minimum number of training programs for farmers and irrigation staff every year, and (d) submit an independent, third party evaluation report of their work at the end of every year.

iii. The Working Group recommends that specific provision of funds is made to involve leading ITES players to work with state governments to develop management information systems for MMI schemes with specific purpose of generating real-time information on the working and performance of these systems to enable their benchmarking.

7.5 Re-structuring of Water Resources Organizations

With focus on adoption of better management practices, it is considered necessary to undertake the re-structuring of the Water Resources Departments in the States and the related organizations in Centre to achieve the objective. Recognizing the fact that water related issues need to be addressed through multi-disciplinary approach, involvement of professionals from various disciplines at working level is considered very much desirable. Accordingly, outlay of Rs 500 crores for State government Departments and Rs 200 crores for central organizations is recommended for the purpose.

7.6 Changes in Accelerated Irrigation Benefits Programme (AIBP)

In order to ensure that the targets for XII Plan, particularly those related to adoption of better management practices are fully achieved, it is necessary that the Central Government should, on one hand, provide necessary incentive to States and on the other hand strictly adhere to the strategies identified for achieving the targets. AIBP being the most important scheme, the following incentives and conditions are proposed to be linked with the central assistance under this programme.

i. The central assistance at the rate of 90% should continue for the projects in special category States, projects in KBK (undivided Kalhandi, Bolangir and Koraput) districts of Orissa and projects benefitting tribal areas, drought prone and flood prone areas. It is also proposed that sustainable irrigation projects in areas included under Desert Development Programme should also be eligible for 90% central assistance under Accelerated Irrigation Benefits Programme.
ii. The rate of central assistance should be increased to 50% in place of 25% for all ongoing projects in general categories States provided the States initiate necessary actions immediately and fully implement the reform agenda within first two years of the XII Plan i.e., during 2012-13 and 2013-14. In case of failure to fully implement the reform agenda, the central assistance should be restricted to only 25%.
iii. The condition of one to one should be relaxed in case of ERM projects. The condition of one to one should also be relaxed in case of command area development works in respect of projects already completed under AIBP. This is considered necessary to achieve the objective of increasing water use efficiency by 20% as envisaged under National Water Mission. This relaxation would be in addition to the existing provisions in the AIBP guidelines regarding relaxation in respect of condition of one to one.

iv. New MMI projects of general category States should be included for support under AIBP only in exceptional cases and such projects would be eligible for central assistance at the rate of 25% only.

v. Lift irrigation schemes should have a mandatory condition of implementing micro irrigation in certain percentage of the command area of the project.

vi. Monitoring of all schemes under central assistance should include a specific mention of the progress made in respect of implementation of the reform agenda.

7.7 Irrigation Management Fund

The Working Group is in agreement with the general line of argument taken by the Thirteenth Finance Commission and recommends that the central assistance should be linked to outcomes in terms of MMI performance and impacts. The Working Group is also of the view that the incentive grant of Rs 5,000 crores over 4 years provided by the Thirteenth Finance Commission is too small to nudge States in taking up an aggressive reform agenda. Moreover, its formula of allocating this incentive grants in proportion to Gross Receipts recovered and IPU of different States at the end of 10^{th} Five Year Plan is not designed to reward improved outcomes. The Working Group recommends a much stronger incentive for improving MMI performance outcomes, and believes that there is a strong case for investing more in realizing the reform agenda. The investment is considered all the more important because it is very much desirable to fully renovate the systems before handing them over to the local bodies such as Water Users' Associations or the Panchayati Raj Institutions. It is also proposed that a very strict monitoring mechanism should be put in place for implementation of "Irrigation Management Fund". An outlay of Rs 10,000 crores has been proposed for the purpose. The incentive should be appropriately linked with ISF collections either by the States or the local bodies such as Panchayats or Water Users' Association.

The Working Group is of the view that one main reason why MMI systems underperform and the IPC-IPU gap keeps growing is because irrigation departments of the states are acutely under-resourced. The O&M budgets they are given offer them little freedom to undertake routine maintenance works, leading to mounting deferred maintenance which over time necessitates rehabilitation. The Working Group noted that despite massive investments in creating new potential, the annual O&M expenditure in all states remains well below 1 percent of the capital cost. Another contributing factor to this condition is the low level at which Irrigation Service Fees (ISF) are fixed and progressive decline in the ratio of actual collection to ISF demand.

The Working Group is strongly of the view that management reform needs to begin with three measures: [a] increasing the O&M funds available to MMI managers on an annual basis; [b] rationalizing ISF levels; and [c] incentivizing ISF rationalization and improving collection ratio (ISF collected as % of ISF demand).

To this end, the Working Group recommends that the Central Government reimburses to state irrigation departments a matching contribution to its ISF collection from irrigators on a 1:1 ratio, provided: [a] States desiring to avail of this matching grant maintain their own non-plan allocations to Irrigation Departments at the normal rate of growth of the aggregate non-plan budget of the state; this is to ensure that central governments matching support is additional to state's non-plan budget for MMI systems; [b] states allocate central grant to MMI systems in proportion to their ISF collection; [c] an Independent Water Regulatory Agency / Authority is established to claim central incentive grant on behalf of the state government.

At the end of the financial year, States desiring to avail of this matching grant will – through their regulator – present a certified, audited statement depicting the actual ISF collected from irrigators from different MMI systems. The Central Government will have an independent verification undertaken of the claims on ISF collection (including a scrutiny of a sample of vouchers) based on which central grant will be released each year.

To give strong encouragement to PIM, the Central Government will provide a 30 percent bonus on that portion of each state's ISF collection which has been collected through Water User Associations (WUAs), as certified by the state's water regulator and verified by an independent agency designated by the Central Government. This bonus will be allowable only if WUAs are allowed to keep 50% of the ISF collected by them and their federations at the distributary level are allowed to keep 20% of the ISF paid by irrigators.

Similarly, to encourage volumetric water deliveries and ISF collection, the Central Government will provide an additional 20 percent bonus on that portion of a state's ISF collection which accrues through volumetric water supply to WUAs at the outlet level under an irrigation service contract with each WUA.

The Working Group expects that such a scheme of incentivizing ISF collection, with proper implementation, will produce myriad beneficial impacts. In particular, it will: [a] improve the ISF collection ratio; [b] generate more accurate data on irrigation potential utilized; [c] give strong fillip to PIM; [d] speed up CAD; [e] encourage rationalization of ISF levels; [f] encourage volumetric water supply and pricing; [g] foster partnership between irrigation agencies and WUAs; and [h] in general help reduce the gap between IPC and IPU.

7.8 Outlay proposed for MMI sector for XII Plan

The outlays proposed for various activities namely (a) full utilization of created facilities and improving water use efficiency, (b) completion of on-going projects, (c) taking up new projects, (d) research, education, capacity building and mass awareness, and (e) strengthening of data acquisition, planning and monitoring mechanism are as under.

Sl. No.	Description of Planned Activities	Proposed Outlay (Rs in crores)		
		State Plan	Central Plan	Total
A. Full Utilization of Created Facilities and Improving Water Use Efficiency				
a.	Command area development and water management	10,000	20,000	30,000
b.	Extension, renovation and modernization of major and medium irrigation projects	10,000	7,000	17,000
c.	Irrigation management fund	0	10,000	10,000
d.	Dam safety	2,000	200	2,200
e.	Better management practices	900	1,900	2,800
f.	Implementation of pilot scheme with fully automated distribution system for Benchmarking	1,000	9,000	10,000
	Sub-total	23,900	48,100	72,000
B. Completion of On-going Projects				
a.	Major irrigation projects	134,000	67,000	201,000

b.	Medium irrigation projects	11,000	5,500	16,500
	Sub-total	145,000	72,500	217,500
C. Taking up New Projects				
a.	Major irrigation projects	32,000	5,500	37,500
b.	Medium irrigation projects	4,000	700	4,700
	Sub-total	36,000	6,200	42,200
D. Research, Education, Capacity Building and Mass Awareness				
a.	Promotion of research	300	400	700
b.	Promotion of higher studies	0	200	200
c.	Capacity building programme	200	100	300
d.	Mass awareness	300	200	500
	Sub-total	800	900	1,700
E. Strengthening of Data Acquisition, Planning and Monitoring Mechanism				
a.	Investigation, advance planning	700	1,300	2,000
b.	Data acquisition and analysis, information system and monitoring	1,700	4,100	5,800
c.	Restructuring of Water Resources Deptts. in States and related central organization	500	200	700
	Sub-total	2,900	5,600	8,500
	Total	208,600	133,300	341,900

7.9 Targets planned to be achieved during XII Plan

Summary of Proposed Outlays

I. **State Plan**

- Creation of facilities through infrastructure development — Rs 2,01,000 crores
- Strategy for improvement of the structures as well as adoption of better management practices for improving the efficiency — Rs 3,900 crores
- Education and Capacity Building — Rs 800 crores
- Strengthening of Planning and Monitoring Mechanism — Rs 2,900 crores

Total — **Rs 2,08,600 crores**

II. Central Plan Schemes (Rs in crores)

Sl. No.	Name of the Scheme	Proposed outlay during XII Plan
Central Sector Schemes		
1	Development of Water Resources Information System	3980
2	Hydrology Project	120
3	River Basin Management	1300
4	Research and Development	400
5	National Water Academy (NWA)	50

6	Information, Education and Communication (IEC)	250
7	National Water Mission(NWM)	10,900
8	Human Resources Development / Capacity Building	400
9	Irrigation Management Programme	10,000
Total Outlay Proposed For Central Sector Schemes		27,400
State Sector Schemes		
1	Accelerated Irrigation Benefits Programme (including the activities related to command area development and water management which were covered under CAD&WM during XI Plan)	1,05,700
2	Dam Rehabilitation and Improvement Project	200
Total Outlay Proposed For State Sector Schemes		1,05,900
Total Central Plan Outlay Proposed		**1,33,300**

III. Proposed Outlay for Major and Medium Irrigation Sector (Rs in crores)

- State Plan **2,08,600**
- Central Plan **1,33,300**
  - Central Sector Schemes 27,400
  - State Sector Schemes 1,05,900
- **Total Plan Outlay** **3,41,900**

As mentioned above, focus of XII Plan should be on (a) full utilization of created facilities, (b) improving water use efficiency, and (c) completing as many ongoing projects as possible for which the ongoing projects should be prioritized. In order to achieve these objectives, the central assistance should be used to incentivize and encourage States to adopt and implement an aggressive MMI management reform agenda and action plan. Since the implementation of various activities is linked to reform agenda, considerable improvement in management practices is expected. Specific monitorable targets are as under.

i. Reducing the gap between IPC and IPU by 10 million hectare (mha) through CAD etc.
ii. Increasing the ISF collection of MMI to the lever recommended by the 13th Finance Commission;
iii. Increasing ISF collection through WUAs to 50 percent of the total for the MMI sector of the country
iv. Increasing the MMI irrigated area served by volumetric water delivery and irrigation service contracts with WUAs to 1 million ha
v. Restoration of about 2.2 mha of lost irrigation potential through ERM of MMI projects
vi. Creation of additional irrigation potential of about 7.9 mha
vii. Improving water use efficiency from current level of about 30% to about 36%.

Annexure 1.1

File No. 25(1)/A/2010-WR
Government of India
Planning Commission
(Water Resources Division)

436 Yojana Bhawan, Parliament Street,
New Delhi Dated 31.5.2011

ORDER

Subject: Constitution of Working Group on ***Major and Medium Irrigation and Command Area Development*** for the Twelfth Five Year Plan (2012-2017).

Reference: Planning Commission Order of even no. Dated 15.10.2010, Corrigendum Dated 19.1.2011, second revision Order dated 29.3.2011.

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In continuation of the Planning Commission Orders cited in the reference and on the request of the Ministry of Water Resources, it has been decided with the approval of the Competent Authority to include seven new Official Members (as in sl no 22 to 29 in the table below) as Members of the Working group. ***Also Shri A.B.Pandya, former Commissioner (Projects) Ministry of Water Resources and currently Director General, national water Development Agency, Saket, New Delhi would continue to function as Member Secretary of this Working Group.*** The Commissioner (Projects) Ministry of Water Resources is being included as one of the members of the Working Group. The revised composition of the Working Group is a under.

1	Dr. Tushar Shah, Senior Fellow, IWMI, Anand	Chairperson
2	Shri Umesh Narayan Panjiar, Secretary, Ministry of Water Resources	Co-Chairperson
3	Shri Prabeer Kumar Basu, Secretary, Ministry of Agriculture, Government of India, New Delhi	Member
4	Member (Water Planning and Projects), Central Water Commission	Member
5	Principal Secretary, Water Resources, Government of Uttar Pradesh, Lucknow	Member
6	Principal Secretary, Water Resources, Government of Gujarat, Gandhinagar	Member
7	Principal Secretary, Water Resources, Government of Andhra Pradesh	Member
8	Principal Secretary, Water Resources, Government of Maharashtra	Member
9	Shri Sachin Oza, Executive Director, Development Support Centre, Ahmedabad	Member
10	Shri Niranjan Pant, Giri Institute of Development Studies, Lucknow	Member
11	Prof. Samar Dutta, IIM, Ahmedabad	Member
12	Shri C.R Shanmugham, DHAN Foundation	Member
13	Shri Videh Upadhyay, Senior Lawyer, Supreme Court of India	Member

14	Commissioner (CAD & WM), Ministry of Water Resources,Government of India New Delhi	Member
15	Prof. Vishwa Ballabh, Professor(Economics)& Coordinator, Centre of Rural Management, XLRI School of Business and Human Resources, Jamshedpur, (Jharkhand). INDIA	Member
16	Dr. K J Joy SOPPECOM 16 Kale Park, Someshwarvadi Road, Pashan, Pune-411008, Maharashtra India	Member
17	Mr. R Doraiswamy Executive Director Pragathi Farmers Society for Rural Studies and Development, No. 72. 7th Cross, C T Street, Vasanthanagar, Banglore-560052, Karnataka India	Member
18	V Retna Reddy Director Livelihood and Natural Resource Management Institute, 12-2-417/18, Saradnagar, Hyderabad-500067	Member
19	Prof. M S Rathore Institute of Development Studies 8B, Jhalana Institutional Area Jaipur 302 004	Member
20	Shri Vidyasagar Rao (retired Engineer from Central Water Commission)	Member
21	Mr Bharat Trambakrao Kavale, Director, Waghad Prakalp Stariya Pani Vapar Sanstha At Post Mohadi, Tal. DinDori, Dist. Nashik Maharashtra, India -422006	Member
22	Shri Pradeep Kumar, Commissioner (Projects), Ministry of Water Resources, Government of India, New Delhi	Member
23	Sh. Avinash Mishra Joint Adviser Water Resources Division, Planning Commission	Member
24	Secretary, Water Resources Department, Government of Karnataka	Member
25	Secretary, Water Resources Department, Government of Orissa	Member
26	The Principal Secretary, Water Resources Department, Government of Madhya Pradesh	Member
27	Shri M.K.Sinha, Chief Engineer, PMO Central Water Commission, New Delhi	Member
28	Shri S. K.Srivastava, Chief Engineer, PAO, Central Water Commission, New Delhi	Member
29	Sh. V. K.Chawala, Chief Engineer, IMO, Central Water Commission, New	Member

	Delhi	
30	Shri A.B.Pandya, Director General, National Water Development Agency, 18-20, Community Centre, Saket, New Delhi - 110 017	Member - Secretary

2. The Terms of Reference to the Working Group will be

- Provide a critical review of the physical and financial performance of the sector during the 11th Plan and suggest strategies, priorities and allocations for the 12th Plan.
- Suggest a blueprint for reform aimed at improving utilization of existing capacities, irrigation efficiency, cost recovery and improved performance of irrigation departments
- Suggest measures to achieve greater water-use efficiency in agriculture
- Suggest reform of the Accelerated Irrigation Benefit Programme to make it more effective, including possible conditionalities for release of funds and the reintegration of the Accelerated Irrigation Benefit Programme and Command Area Development and Water Management Programme
- Evaluate performance of PIM initiatives and suggest ways of strengthening the programme
- Provide an estimate of the magnitude of the problems of water-logging and salinity in irrigation commands and suggest ways of mitigating their impact and reducing their incidence in future
- Any other issue considered relevant by the group.

3. The expenditure on TA/DA of official members in connection with the meetings of the Working Group will be borne by the parent Department/Ministry/Organization as per rules of entitlement applicable to them. This expenditure in respect of non-official Members will be borne by the Planning Commission.

5.The Working Group will submit its report to Planning Commission by June 30th, 2011.

6. Shri A.B.Pandya, Director General, National Water Development Agency under the Ministry of Water Resources and Member Secretary of the Working Group (Telephone 011-26519164) will be the nodal officer for this Working Group and further correspondence/ query may kindly be addressed to him.

Sd/-
(Avinash Mishra)
Joint Adviser (WR)
Telefax: 011-23096732

To

1. Chairman and all Members of the Working Group. Member Secretary of the Working Group may kindly bring this revised Order to the notice of Chairman, Co-Chairman and all the Official and Non Official members of the Working Group please.
2. PS to Deputy Chairman, Planning Commission

3. PS to all Members/Minister of State, Planning Commission
4. PPS to Member-Secretary, Planning Commission
5. Senior Adviser (Water Resources), Planning Commission.
6. Adviser (Administration), Planning Commission.
7. Adviser (Agri), Planning Commission
8. Adviser (Plan Coordination and Management Division), Planning Commission

Sd/-
(Avinash Mishra)
Joint Adviser (WR)
Telefax: 011-23096732

Annexure 1.2

Minutes of the First Meeting of the Working Group on Major and Medium Irrigation & Command Area Development for XII Five Year Plan (2012-2017) held on 20-01-2011 at 15:30 Hrs.

1. The First Meeting of the Working Group on Major and Medium Irrigation & Command Area Development (MMI & CAD) for the XII Five Year Plan was held on 20th Jan. 2011 under the chairpersonship of Dr. Tushaar Shah, Senior Fellow, IWMI, Anand. List of the participants is at Annexure I.

2. At the outset Member-Secretary of the Working Group welcomed the participants with request to give their self introduction. After introduction, the Chairperson in his opening remarks mentioned that it is an introductory meeting and he expressed that there is a growing concern in the country due to complex issues of project implementation, huge investment, big size of MMI & CAD sector and aspirations of the people at large. Referring to the Mid Term Appraisal document of Planning Commission on gap between Irrigation Potential created and its utilization, he expressed that this group should provide more attention and greater interest for utilization of the created potential, greater focus on better system management, participatory water management in Command Area Development (CAD). The group may bring in more ideas for planning the systems while taking into account experiences gained from major initiatives taken by States like Maharashtra, Andhra Pradesh and Gujarat by enacting the various laws and setting up new practices.

3. Chairman, CWC, who co-chaired the Group in absence of Secretary, MoWR & Co-chairperson of the group, reiterated the remarks of Chairperson that MMI & CAD form the major part of investment in irrigation sector. This sector will have an important role to play in National Action Plan on Climate Change and measures needed to mitigate the impacts of the increased variability of climatological phenomena. He also emphasized in need for more investment in (i) maintenance and upkeep of the existing systems,(ii) restoration and renovation of canal systems and (iii) definitely on CAD & WM.

4. In order to familiarize the group, Member Secretary made a presentation on overview of Major & Medium sector covering trends of plan-wise investments, potential creation and cost of creation in the country as well as the completion of ongoing MMI project in X & XI Plan, likely spillover status as reported by the States. Tentative results of physical and financial progress of major and medium projects were also indicated. An overview of Accelerated Irrigation Benefit Programme (AIBP) and its encouraging impact in the sector was also highlighted.

5. Commissioner (CAD&WM) made a presentation on overview of Command Area Development & Water Management sector covering, historic background, objectives, Strategies, achievements, constraints, suggestions for improvement etc. changes since launching of CAD programme in 1974-75 to its restructuring as CAD& WM in 2004 was highlight of the presentation.

6. After the above two presentations, comments and views from participants were called by the Chairperson.

(i) Referring to the latter presentation, wherein it was mentioned that an increase of 11%

efficiency in water use can be achieved in CAD, doubt was raised why 20% increase in NAPCC is envisaged. It was clarified that the increase of 11% as reported in some studies on performance of CAD projects reflects only field level application efficiencies whereas NAPCC envisages increase in overall water use efficiency by 20% over that existing now. The overall efficiency is a product of storage, conveyance and field application efficiencies. For bringing about an overall improvement, investment for problematic/ specific part/reaches in all the three components is simultaneously required.

(ii) It was also discussed that Irrigation Potential Creation under MMI is of the order of 9 lakh ha /annum where as area covered under CAD is targeted to be of the order of 3.5 lakh ha /annum which may widen the gap between Irrigation Potential Created and Utilized (IPC & IPU)

(iii) Why CAD&WM should not be dovetailed with MMI.

As regards widening of gap between new irrigation potential creation and CAD works is concerned, the same was advocated by the working group at the time of formulation of XI Plan also. However, the requirement of CAD works may not be uniform as the commands of ERM projects may already have such measures in place and may not require new CAD works. It is a well recognized concept that the CADWM works may be carried out in step with the construction of minor canals so that the benefits are available right from the outset.

7. Prof. Samar K. Datta, IIM, Ahmedabad brought out the problems of non-unique definitions of irrigated areas being used by various agencies and consequent difficulties in rationalizing the data on a common platform. Though definitions have been made very clear by Task Force, yet reflection of data by States at the lower level of hierarchy is a cause of concern. As per his experience some of the other problems of data collections with remedial measures may be as under:

i) Data provided by revenue and irrigation Deptt. are different necessitating a co-ordination committee.

ii) Legal measures for effective water management in commands.

iii) Compensatory restoration of existing irrigation potential lost due to change in usages pattern like that practiced in case of compensatory aforestation measures.

iv) Accounting for changing water use/cropping pattern while computing the revenues. This can be addressed by volumetric charges for water.

v) Gap between IPC and IPU (supply side as well as demand side deficiencies not addressed).

8. Member Secretary pointed out that the Working Group will need to collect data regarding physical and financial progress of projects during the XI Plan. As the experience in the previous similar exercises goes, the data collection and analyses pose a serious challenge due to a large variety of formats adopted by the States while sending the data. In order to eliminate this difficulty, it is proposed to collect the data using a web-based application. A basic level

demonstration was made on the system indicating the individual data items required in case of major & medium and CAD projects. The members were of the opinion that the detailed requirement may be maintained at optimal level as requirement of large amount of details may lead to delays in data collection process. It was also expressed that the web-based application may be housed on CWC website/server for ease of access by all concerned.

9. Further, for complementary inputs on various related activities it was suggested by the Chairperson to call upon following NGOs/Experts with presentations on their field of expertise in next meeting of the working Group:

1) Sh. S.V. Sodal, retired Secretary, Govt. of Maharashtra on Management reforms (relating to TOR-2.)
2) Sh. S.J. Desai on Management in Agriculture (relating to TOR-3.)
3) CWC may make a presentation on monitoring of projects under AIBP, bringing out common reasons for delay in implementation and achievement of targeted benefits, findings of NRSA on for verifying the benefits accrued in completed projects under AIBP through Remote Sensing Technique bringing out its benefits and constraints (relating to TOR-4.)
4) Sh. Sanjay Gupta on PIM initiatives in Andhra Pradesh (relating to TOR-5.)
5) One representative from CSSRI, Karnal with presentation on estimate of magnitude of salinity, alkalinity and water logging in irrigation command and suggest measures for treatment and mitigation of impact (TOR-6.)

10. It was agreed to co-opt following additional members:

1) Sh. Avinash Mishra, Dy. Adviser, Planning Commission
2) One representative each from Karnataka, Orissa and Madhya Pradesh
3) Chief Engineer (PMO), Chief engineer (PAO) and Chief Engineer (IMO) from CWC.

11. Finally, the Chairperson suggested that the latest guidelines on AIBP and CADWM should be circulated to all the members of the group and call suggestions from all the state Governments on implement in AIBP programme. The Member-Secretary intimated that for convenience of all the members an new e-mail ID : working_group_mmi_cad@ yahoo.in has been opened where inputs can be mailed by them for the group.

12. The group desired that it may hold three meetings - one each tentatively in February, April, & May in order to finalize the final report by the end of June 2011.

13. The meeting ended with the vote of thanks to the Chair.

Annexure I

LIST OF PARTICIPANTS OF THE FIRST MEETING OF THE WORKING GROUP ON MAJOR AND MEDIUMIRRIGATION AND COMMAND AREA DEVELOPMENT FOR TWELFTH FIVE PLAN (2012-17) HELD ON 20.01.2011.

S/Shri/Smt.

Sl. N0.	NAME & DESIGNATION	ADDRESS AND E-MAIL	MOBILE NO. / TELEPHONE
Members			
1.	**Dr. Tushaar Shah** **In the Chair**	IWMI, Anand	
2.	Shri A.K. Bajaj, Chairman, CWC	CWC, New Delhi.	
3.	Sh. R.C. Jha (Member, RM), CWC	CWC, New Delhi	9811805299 011-26103221
4.	Sh. V. Venkatachalam* Add. Secretary, Min. of Agriculture & Co-op. ***Rep. Secretary, Agriculture**	Min. of Agriculture & Co-op. Krishi Bhawan, New Delhi **vvenkat1952@yahoo.co.in**	9717790938
5.	Sh. A.B. Pandya Commissioner (Proj.)	Ministry of Water Resources Govt. of India, New Delhi. abpandya@yahoo.co.uk	011-23710107
6.	Shri G.S. Jha Commissioner(CAD&WM)	Ministry of Water Resources Govt. of India, New Delhi.	
7.	Prof. Samar K. Datta	Centre for Management in Agriculture(CMA), IIM, Ahmedabad Skdatta.iima@gmail.com	09427358845 079-66324818(O) -66325404 (R)
8.	Shri Anand Mohan * Chief Engineer(Adv.Planing) ***Representing Pr.Secretary(WR) Govt. of U.P.**	U.P. Irrigation Deptt. Sinchai Bhawan, Lucknow.	09415205512
9.	Sh. Sachin Oza Executive Director	Development Support Centre, Ahmedabad. **sachin@dscindia.org**	09426310093
10	Shri Videh Upadhyay Sr. Lawyer, Supreme Court of India	J-241, Sarita Vihar New Delhi. **videhup@gmail.com**	9910966477
SPECIAL INVITEES			
11.	Shri M.K. Sinha Chief Engineer(PMO)	CWC, New Delhi **mksinhacwc@yahoo.co.in**	26109231
12.	Shri S.K. Srivastava Chief Engineer (PAO)	CWC, New Delhi **cwc.srivastava@gmail.com**	26103561
OTHERS			
13.	Shri P.S. Kutiyal Director, P&P Dte.	CWC, New Delhi. **ppdte@rediffmail.com**	9868120681 011-26109425
14.	Shri Jay Vilash	Govt. of Uttar Pradesh, U.P.	09454411885

	Jt. Secretary (Irrigation)	**jayvilash@rediffmail.com**	0522-2238123
15.	Sh. Narmadeshwar Jha Dy. Director, P&P Dte.	CWC, New Delhi. **ppdte@rediffmail.com**	 011-26109425
16.	Sh. Shankar Deen Deputy Director	Ram Ganga Command Kanpur, U.P.	9475113769

Annexure 1.3

MINUTES OF THE SECOND MEETING OF "WORKING GROUP ON MAJOR AND MEDIUM IRRIGATION AND COMMAND AREA DEVELOPMENT" FOR XII FIVE YEAR PLAN HELD ON 19TH APRIL 2011 AT NEW DELHI.

The second meeting of the Working Group on Major & Medium Irrigation and Command Area Development for XII Five Year Plan held on 19th April 2011 at New Delhi under the chairmanship of Dr. Tushar Shah, Senior Fellow, IWMI. A list of participants is annexed at Annexure – I.

2. Shri P. S. Kutiyal, Director (P&P) welcomed the Chairman of the Working Group and other participants and informed the participants that the co-Chairman and the Member Secretary could not attend the meeting as they were abroad on official duty. Shri Kutiyal requested the Chairman to address the participants.

3. While welcoming the participants, Dr. Tushar Shah, Chairman, Working Group expressed his happiness on overwhelming participation from various State Governments. He mentioned that the group was meeting at a very crucial juncture in view of the need for addressing the serious challenge of the food security and climate change on one hand and the reported non-optimal utilization of created facilities particularly those for major and major irrigation projects on the other hand. He observed that various reports conclusively established non-optimal utilization of the potentials of major and medium irrigation projects. He requested the participants to give serious thought to the issue and identify measures which would ensure optimal utilization of the facilities created and also justify the funding in the sector. He also requested the participants to make available all necessary data and information for preparation of the report of the Working Group.

4. The Member (WP&P), Central Water Commission (CWC) referred to the achievements in the sector since independence and mentioned that the overall irrigation potential in the country has gone up from about 22.6 million hectares at pre-plan stage to about 108 million hectares by the end of March 2010. He also mentioned about 15% gap between the irrigation potential created and the irrigation potential utilized and particularly those in respect of major and medium irrigation and the studies taken up by the Ministry of Water Resources through Indian Institutes of Management, Ahmadabad, Bangalore, Calcutta and Lucknow in this regard. Referring to the discrepancy in the data reported by various sources namely Irrigation Department, Agriculture Department and Revenue Department of various State Governments; he emphasized the need for collection of data in a systematic manner. Reiterating the valuable suggestion of the Chairman of the Working Group, he requested the participants to suggest measures which could be taken up for implementation on priority during the XII Five Year Plan specifically for ensuring full utilization of the created facilities. He also requested the participants to provide necessary data / information related to the various projects on priority to enable the Group to undertake critical review and analysis of the present scenario and to identify the most appropriate measures to be taken up during XII Five Year Plan.

5. Thereafter, Shri S. K. Sinha, Director, CWC made a presentation on "Assessment of Irrigation Potential Created through AIBP assisted projects in India". A presentation was also made by Dr. S. K. Kamra of Central Soil Salinity Research Institute, Karnal on "Status and Projects for Management of

Salt Affected Soils in India". Copies of the presentations are at Annexure – II and Annexure – III respectively.

6. The presentations generated considerable interest and the participants made very valuable suggestions. The Chairman observed that the presentations were very comprehensive and that these would help in better understanding of issues and in identifying most appropriate strategies.

7. The representatives from the State Governments were requested to express their views and suggestions. They were specifically requested to address the issue of non-optimal utilization of created irrigation potential, suggest measures for optimal utilization of created facilities, and the important role of major and medium irrigation project in overall development of the States. Shri Mahboob Iqbal, Secretary, Water Resources Departement, Government of Jammu and Kashmir, Shri Shrikant Walgad, Administrator, CADA, Government of Haryana, Shri R.K. Jarhyaw, Superintending Engineer, Government of Himachal Pradesh, Shri Devi Rajak, Engineer-in-Chief, Government of Bihar, Shri Prashant Vishnoi, Executive Engineer, Government of Uttarakhand, Shri Anand Mohan, Chief Engineer, Government of Uttar Pradesh, Shri Amarjit S Dullet, Chief Engineer, Government of Punjab and Shri B. Venu Gopalacharya, Superintending Engineer, Government of Andhra Pradesh presented their views and made valuable suggestions for the XII Plan.

8. Majority of representatives from the States emphasized the need for extension, renovation and modernization of the projects particularly the old projects. It emerged that the major reason for relatively poor performance of the major and medium project was inadequacy of funds for operation and maintenance. The importance of improved management was also highlighted by the representatives from the States. The participants very strongly recommended for liberal central assistance for taking up special repairs etc. of the projects. The representatives from States also highlighted the initiatives taken by the State Governments for better management. Some of the important suggestions that emerged during the discussions are as under.

a. Following suggestions were made in respect of Accelerated Irrigation Benefits Programme (AIBP).
    - 1:1 criteria for inclusion of projects under AIBP should be relaxed.
    - Central Government grant of 25% for general category States should be enhanced up to 50%.
    - Procedure for processing of the proposal for States for funding under AIBP should be simplified.
    - Training programmes should be organized by the Ministry of Water Resources and Central Water Commission for the State Government officials.
    - Existing norms for the rates in respect of surface water minor irrigation schemes should be enhanced.

b. Following important suggestions emerged in respect of the scheme "Command Area Development and Water Management (CAD&WM)".
    - The norm for support under CAD&WM should be enhanced to at least Rs 25,000 per hectare and the rate for reimbursement of establishment cost should also be increased.

- The requirement in respect of farmers' share of 10% should not be insisted upon.

c. Some other suggestions (including specific suggestions for some of the States) are as under.
   - Norms for funding under the scheme "repair, Renovation and Restoration of Water Bodies should be enhanced.
   - Liberal funding should be considered for Jammu and Kashmir in view of its strategic location and for ensuring optimal utilization of the India's share in Indus water.
   - Areas of Haryana which are adjacent to the Desert Development Progtramme districts of Rajasthan should be given central assistance at par.
   - Funding under CAD&WM in hilly State of Himachal Pradesh should be in the ratio of 90:10 [Centre:State] instead of 50:50.
   - Intra-State linking projects of the State of Bihar should be expedited and provided assistance under AIBP.
   - In view of specific geographical features, the cost norm for surface water minor irrigation scheme of Uttarakhand should be enhanced.
   - With a view to improve the efficiency of the projects, the century old irrigation systems of Uttar Pradesh and Punjab should be provided special assistance under AIBP for taking up the extension, renovation and modernization of such system.

9. The suggestions of the representatives from States are at Annexure – IV.

10. Shri Sachin Oza, Executive Director, Development Support Centre, Ahmedabad stated that their centre conducted workshops covering about 200 participants / farmers, in Gujarat in which the stakeholder / farmers themselves flagged out issues like (a) need of model PIM acts, (b) need of policy and legislation for transfer of system for water management by WUA's, (c) need for canal rehabilitation, (d) fixing of water fee, and (e) transfer of system to WUAs (transfer of management of irrigation from Government to WUAs managerially and / or hydraulically). Main outcome was willingness of farmers in Gujarat to collect the water charges higher than the rate fixed and retains 50% on whole due to which operation and maintenance problem were being effectively addressed.

11. Shri Videh Upadhyay, Senior Lawyer of the Supreme Court suggested that rehabilitation and resettlement and other such issues which led to litigation should be examined in proper perspective and effective measures should be taken to ensure that such factors do not hamper the progress of the project.

12. Shri C. R. Shanmugham, DHAN Foundation, Madurai, emphasized the need for improving water use efficiency and increasing crop production in agriculture. He also emphasized the need for taking up the renovation of traditional water systems such as Ahars and Pynes in Bihar and Jharkhand and similar water harvesting /storage structures in other parts of India on priority.

13. The Observations of Shri Shanmugham is at Annexure – V.

14. Shri V. K. Chawla, Chief Engineer, Irrigation Management Organization, CWC advocated for provision of 10% coverage by micro irrigation system in all the proposals of ERM Projects, wherever feasible (region specific). To this, Shri Venu Gopalacharya, Superintending Engineer, Andhra Pradesh

intimated that in Andhra Pradesh, lift irrigation schemes are planned with components of drip irrigation.

15. The Member (WP&P) informed the participants about the emphasis laid on better management practices and need for improving the efficiency by the 13th Finance Commission and the allocation to States under special water management fund.

16. Concluding the discussion, the Chairman thanked participants for valuable suggestions. He observed that while appropriate funding for major and medium irrigation is necessary, there is a need to emphasize regular maintenance of irrigation systems and their better management for ensuring full utilization for created facilities. He said that, according to a World Bank report in 2005, our public irrigation systems require Rs.17,000 crores a year to maintain them and keep them in good condition. However, a recent CWC report shows that we hardly spend Rs.1,000 crores on maintenance and repair of existing irrigation system. Irrigation Department's budgets get used up for establishment costs and they have hardly any funds for repair and maintenance of systems. The Chairman drew a parallel between Accelerated Irrigation Benefit Programme (AIBP) and Accelerated Power Development Programme (APDP). He argued that the APDP was reformed into Accelerated Power Development and Reform Program (APDRP) first and then to Re-structured APDRP (R-APDRP) to emphasize and incentivize management reform and improvement and in order to ensure that the assets created were managed properly and utilized to the fullest extent. He suggested that AIBP should follow the example of APDRP. AIBP should be up-scaled and additional component should be used as a non-lapsable fund to provide State Irrigation Department incentives for introducing irrigation management reform, improve water pricing system and in general for improving the utilization and overall performance of public irrigation systems.

17. Meeting ended with a vote of thanks to the Chair.

Annexure I

LIST OF PARTICIPANTS OF THE FIRST MEETING OF THE WORKING GROUP ON MAJOR AND MEDIUMIRRIGATION AND COMMAND AREA DEVELOPMENT FOR TWELFTH FIVE PLANS (2012-17) HELD ON 19.04.2011.

SL. NO.	NAME & DESIGNATION	ADDRESS AND E-MAIL	MOBILE NO. / TELEPHONE
Members/Special Invitees			
1.	Dr. Tushaar Shah, Sr. Fellow/ Scientist **In the Chair**	IWMI/Ernet, Anand	
2.	Sh. M.E. Haque (Member, WP&P), CWC	CWC, New Delhi	011-26103221
3.	Shri G.S. Jha Commissioner(CAD&WM)	Ministry of Water Resources Govt. of India, New Delhi.	
4	Sh.C.R.Shanmugham, Programme Advisor,Dhan Foundation,S S colony, Madurai-10	DHAN Foundation, S S colony, Madurai-625010 TamilNadu crshanmugham10@gmail.com	
5	Sh. Sachin Oza Executive Director	Development Support Centre, Ahmedabad. sachin@dscindia.org	09426310093
6	Shri Videh Upadhyay Sr. Lawyer, Supreme Court of India	J-241, Sarita Vihar New Delhi. videhup@gmail.com	9910966477
7	Sh.Mehboob Iqbal Commissioner-cum-Secretary	Irri &FC Deptt. Govt of Jammu & Kashmir Civil Secretariat, Jammu Sheikh.mehboob51@gmail.com	09419190706
8	Sh.Devi Rajak	Engg. in Chief, WRD, Govt. of Bihar	094318-77570 0612-221580
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10	Shri S.K. Srivastava Chief Engineer (PAO)	CWC, New Delhi cwc.srivastava@gmail.com	26103561
11	Sh.A K Jain, Chief Engineer, CWC	Sewa Bhawan, CWC , New Delhi akjain54@gmail.com	26101593
12	Sh V.K. Chawla CE(IMO),CWC	Chawlavk54@yahoo.com	
13	Dr. S K Karma Head, Div. Irrigation and Drainage Engg	CSSRI,Karnal skkamra@cssri.ernet.in	094161-09968 0184-2291119 Ext.177
14	Sh.Amarjit S. Dullet	Chief Engineer Canals	09779000108

		Hydel Building Sect 18 B,Chandigarh asdullet@gmail.com	
15	Sh.Anand Mohan	Chief Engineer (Advance Planning) U P Irrigation Dept. Lucknow anandmohanpal@indiatimes.com	09415205512
16	Sh.Gh. Rasool Zarger	CE, Irri & FC Dept. Kashmir	09419018821
17	Sh.Aswani Sharma, Chief Engineer, Ravi Tawi Irrigation, Jammu, J&K	Canal Road Jammu	09419180782
18	Sh.B R Dogra,Chief Engineer, Irri &FC Deptt. Jammu	Canal Road Jammu	09419108581
19	Sh.Srikant Walgad	Administrator CADA Haryana	09501054111
20	Sh.R.K Jarhyaw, Suprintending Engineer	SNP Fatehpur Distt, Kangra,HP	094180-36555
21	Sh.B. Venu Gopalacharya Suprintending Engineer	O/O CE (IS &WR), I&CAD Dept Jalasaudha, Errummanzil Govt Of AP, Hyderabad acharyavenu@yahoo.co.in	099989056367
22	Dr Satbir S Kadian SE(Project)	O/O E-I-C, Sinchai Bhawan, Sector 5,Panchkula kadianss@hotmai.com	09650829977
23	Sh.Sanjay Saxena Nodal Officer	Irrigation &Flood Control Govt of Delhi sanjaysaxena1982@gmail.com	9868261111 01123864929
24	Sh.Prashant Vishnoi	Executive Engineer Irrigation Division –Kashipur Uttarakhand prashantvishnoi73@gmail.com	09410539713
25	Sh. K. C. Rana EE	SNP Div. Badulchar	09805957937
26	Shri P.S. Kutiyal Director, P&P Dte. **--Acting Member Secretary**	CWC, New Delhi. ppdte@rediffmail.com	9868120681 011-26109425
OTHERS			
27	Sh. Neeraj Kumar Superintending Engineer, CWC	Indus Basin, CWC Chandigarh	
28	Sh. S K Sinha Director-Mon(N),CWC	Sewa Bhawan ,CWC , New Delhi mon_cwc@yahoo.com	26102858
29	Sh.Ravinder Singh Sr JC ,MOWR	108 B Shastri Bhawan New Delhi	011-23389005

30	Sh. Narmadeshwar Jha Dy. Director, P&P Dte.	CWC, New Delhi. ppdte@rediffmail.com	 011-26109425
31	Sh.Maneesh Jaiswal Assistant Director,(P&P)	Sewa Bhawan ,CWC , New Delhi	 011-26109425

Annexure 1.4

MINUTES OF THE THIRD MEETING OF "WORKING GROUP ON MAJOR AND MEDIUM IRRIGATION AND COMMAND AREA DEVELOPMENT" FOR XII FIVE YEAR PLAN HELD ON 21st JUNE 2011 AT AHMEDABAD.

The Third meeting of the Working Group on Major & Medium Irrigation and Command Area Development for XII Five Year Plan held on 21st June 2011 at Ahmedabad under the chairmanship of Dr. Tushar Shah, Senior Fellow, IWMI. A list of participants is at Annexure – I.

2. While welcoming the participants including new members, Dr. Tushar Shah, Chairman, Working Group intimated that the group has already convened two meeting in which of the northern states shared their views and aspirations from XII Plan. Terming the irrigation sector in the country as a cross road in view of changing world and its irrigation requirement, he stated that need in changed irrigation system is need of the time and many states are demanding better irrigation services and are ready to pay for it. He mentioned that the national level public investment in the country is not able to build the envisaged results, as the gap between irrigation potential created and utilized is increasing at one end and net area irrigated by public sector going down, as per the land use statistics (LUS), at the other. Further, he added that tactful change like China may be required to invest more about 60 b$ (Rs. 300,000 Crore)to rebuild the old and less efficient projects, and entire area of managing the irrigation system has to be emphasized by investing in hardware, software, better management practices, capacity building, replication of improved technology, real time information etc. Then he desired that the discussion would be in three parts; Views of Invitee States, Presentation session and Agenda for Change.

3. Accordingly, the representatives from the State Governments were requested to express their views and suggestions. They were specifically requested to address the issue of non-optimal utilization of created irrigation potential, suggest measures for optimal utilization of created facilities, and the important role of major and medium irrigation project in overall development of the States. Shri R S Dwivedi, Chief Engineer, Hasdeo Bango, Govt. of Chhattisgarh, Shri Mukeshwar Dhote, EE O/o the E-in-C, Bodhibpal, Government of Madhya Pradesh, Shri S. J. Desai, Secretary, Water Resources, Government of Gujarat, Shri S L Patil, Chief Engineer & Joint Secretary, WRD, Government of Maharashtra, Shri Vinod Shah, Nodal Officer CAD, Chambal, Kota, Govt of Rajasthan, presented their views and made valuable suggestions for the XII Plan.

4. Majority of representatives from the States emphasized the need for extension, renovation and modernization of the projects particularly the old projects. It emerged that the major reason for relatively poor performance of the major and medium project was inadequacy of funds for operation and maintenance and need for rebuilding the flow irrigation system. The importance of improved management was also highlighted by the representatives from the States. The participants very strongly recommended for liberal central assistance for taking up under AIBP, CAD&WM, special repairs etc. of the projects. The representatives from States also highlighted the initiatives taken by the State Governments for better management. Some of the important suggestions that emerged during the discussions are as under:

d. Following suggestions were made in respect of Accelerated Irrigation Benefits Programme (AIBP):

- 1:1 criteria for inclusion of projects under AIBP should be relaxed.
- Central Government grant of 25% for general category States should be enhanced up to 50%.
- Procedure for processing of the proposal for States for funding under AIBP should be simplified.
- Existing norms for completion of major and medium irrigation schemes should be enhanced to 6 year.
- Comprehensive water course management should be made the integral part of MMI projects, where engineers should be supported by Agronomist, Sociologist and Economist.
- Besides taking up the CAD&WM programme, rebuilding of entire irrigation system is required and after renovation emphasis should be laid to hand over systematicaly to WUAs with suitable NGO/Expert for guidance in place for them.

e. Following important suggestions emerged in respect of the scheme "Command Area Development and Water Management (CAD&WM)":

- The existing per hectare cost norms for under CAD&WM activities should be enhanced.
- Concept of ERM may be applicable to CAD Programme also.
- Correction of system deficiency under CAD&WM programme per hectare cost needs to be increased to Rs. 25000-30000/ha. System of outlet rectification needs critical review, as maximum water loss takes place from outlet and water course, it was advocated to take up it as a separate activity under CAD&WM.
- Central Government grant of 50% for CAD&WM projects should be enhanced up to 60% in the XII Plan.

f. Some other suggestions (including specific suggestions for some of the States) are as under.

- Norms for funding under the scheme "repair, Renovation and Restoration of Water Bodies" should be enhanced.

- Increased rate of CA for Scheduled Caste areas in pattern of drought prone and tribal areas and nexalite affected areas as special category states for Chhattisgarh State was advocated.

- 1:1 criteria for inclusion of projects under CAD&WM for state like Rajasthan, where the projects for new creation are less likely and bridging the irrigation gap between created and utilized and overall growth has been witnessed through this programme, should be relaxed.

- Looking at the poor water holding capacity and high percolation rate of the soil, like IGNP, St-II in Rajasthan, suitable micro irrigation technology needs to be emphasized.

- Research on solar energy operated pump-sets for use in drip and sprinkler irrigation needs to be carried out.

- Cost norms for Minor Irrigation needs to be raised from existing Rs. 2lakh/ha to Rs.3lakh/ha in the XII Plan.

- Farmers of the areas where fresh water cushions have developed above saline native ground water, particularly in the immediate vicinity of the main canal and branches, should be encouraged to use the ground water in conjunction with canal water to prevent water logging, to address tail-enders issue or irrigation water scarcity.

The suggestions of the representatives from States are at Annexure – II

5. Thereafter issue-wise presentations relating to ToRs of the Group were made as follows: a. Shri S. J. Desai, Secretary, Water Resources, Government of Gujarat, made a presentation on "Measure to increase Water Use Efficiency in Agriculture".
b. Shri Sanjay Gupta, Asstt. Project Director, APADMS, Planning Department, made a presentation on "Scaling up Participatory Irrigation Management Learning from Andhra Pradesh".
c. Shri Sachin Oza, Executive Director, Development Support Centre, Ahmedabad, made a presentation on "Principle and practice of Water Management of Surface Irrigation System".

6. The presentations generated considerable interest and the participants actively participated making valuable suggestions. The Chairman appreciated the presentations were very comprehensive and that these would help in better understanding of issues and in identifying most appropriate strategies. Copies of the presentations are at Annexure –III, Annexure – IV and Annexure –V respectively

7. Shri Videh Upadhyay, Senior Lawyer of the Supreme Court conveyed that issues related to Governance is being addressed separately by the relevant Working Group in which he is also a member.

8. Shri C. R. Shanmugham, DHAN Foundation, Madurai, emphasized the need for improving the existing variability of data of potential utilized / gross irrigated area from different sources through inter-departmental joint meetings amongst them.

9. Prof. M S Rathore, Centre of Environment studies (CEDS), B-92, Nityanandnagar, Gandhipath, Quince Road Jaipur, emphasized the need of engineer as manager, not only as a facilitator. He also mentioned that for community management of surface and ground water, capacity building of engineers, water audit, water budgeting and prepare plan for the village by water user group, under guidance of technical support group with suitable Expert from NGO would be required. He further suggested measures for surface water irrigation during XII plan as under:

a. Rejuvenation/ rehabilitation of project b. Protection of catchment area c. Restoration of natural drainage line d. improvement of irrigation efficiency etc.

10. Prof. Vishwa Ballabh, Professor(Economics)& Coordinator, Centre of Rural Management, XLRI School of Bussiness and Human Resources, Jamshedpur, Jharkhand stated that there is urgent demand of strategic change; for possibility to improve the water use efficiency, replication of success stories, resilience for change, incentive to change and importantly address the human engineering part of the major and medium irrigation. He further urged need of the people who can lead to changes, long term funds with incentives, independent monitoring and removal of all the perverse.

11. After the lunch, the Member (WP&P), CWC, put forth a draft Strategy for XII Plan in respect of Major and Medium Irrigation Projects and Schemes for Command Area Development in a two page presentation highlighting the activities; for Focus on, increased emphasis on, Targets and Specific activities recommended to be undertaken through central sector schemes, for discussion for the participants so that the content of the report can be duly finalized so as to include relevant issues as per the ToRs of the Group. The same was discussed in detail and the suggestion was broadly agreed by the Group. Copy of the presentations is at Annexure –VI. The Chairman decided to form groups of members to finalize the format for the report of the Group in consultation With Member (WP&P), CWC, Member-Secretary and others.

12. Shri A. B. Pandya, Director General, NWDA and Member-secretary of the Working Group intimated that besides consistent persuasion, project-wise web-based information on Major and Medium Irrigation and CAD&WM is still awaited from many states, which forms the basis for projection for the XII Plan. He, therefore, proposed to request for time extension to Planning Commission upto 30th Sep. 2011 for submission of the report of the Group. The same was agreed by the group.

13. Concluding the discussion, the Chairman thanked participants for valuable suggestions and requested to all the members to send their inputs for preparation of the report of the Working Group.

14. Meeting ended with a vote of thanks to the Chair.

Annexure I

LIST OF PARTICIPANTS OF THE THIRD MEETING OF THE WORKING GROUP ON MAJOR AND MEDIUMIRRIGATION AND COMMAND AREA DEVELOPMENT FOR TWELFTH FIVE PLANS (2012-17) HELD ON 21.06.2011 AT AHMEDABAD.

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Annexute 1.5

Minutes of the Fourth Meeting of "Working Group on Major And Medium Irrigation And Command Area Development" for XII Five Year Plan Held on 9th and 10th August, 2011 at New Delhi.

The Fourth Meeting of the Working Group on Major and Medium Irrigation and Command Area Development for XII Five Year Plan held on 9th & 10th August, 2011 at New Delhi under the chairmanship of Dr. Tushar Shah, Senior Fellow, IWMI. A list of the participants is annexed at Annexure-I.

Dr. Tushar Shah, the Chairman of the Working Group welcomed all the members, special invitees and other participants and requested them to give self introduction. After the introduction the Chairman requested the special invitees of the Southern and North Eastern Indian States, present in the meeting, to deliberate their inputs, views, projections and aspirations from XII Five Year Plan.

The Group heard the representatives of all the invitee States and discussed over the

Presentations made by some of them which are given at Annexure-I to Annexure-IV by Sh. M Senthil, AED, Govt of Tamil Nadu, Sh. R Unnikrishanan, Govt. of Kerala, Sh. B C Nigam, Spl. Secretary Govt. of Jharkhand and sh. S. Tilak Ch. Das, Govt. of Assam respectively.

In the second session after the lunch the discussion on preparation of chapters and chapter wise responsibilities of sub-groups of the members involved in was discussed in detail and broke up for the next day.

On the next day the meeting of the members started with presentations on "Guidelines of Planning Commission and constitutional provision for implementation of major medium irrigation, flood control and multipurpose projects" by Sh R Vidyasagar Rao and "EFC on DRIP-A world Bank Aided Project" by CWC. Deliberation continued upto tea time, wherein It was agreed that all the sub groups for preparation of Chapters from I to VI would circulate these chapters to co-members by the end of August, 2011 followed by comments view and their inputs by the end of first week of September, 2011 so that consolidated chapters could be discussed in the next meeting of the group in the first fortnight of September, 2011 so as to enable them to finalize the report by the end of September, 2011, the revised date for extension of submission of the group accepted by the Planning Commission.

The Chairperson requested to all the members to contribute their best and sharing inputs on time.

The meeting ended with a vote of thanks to the Chair.

Annexure-I

LIST OF PARTICIPANTS OF THE FOURTH MEETING OF THE WORKING GROUP ON MAJOR AND MEDIUM IRRIGATION AND COMMAND AREA DEVELOPMENT FOR TWELFTH FIVE YEAR PLAN (HELD ON 9.08.2011 & 10.08.2011

S/Shri/Smt.

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Annexure 1.6

List of Participants of Fifth Meeting of the Working Group on MMI & CAD for XII FYP held on 12th October, 2011 in the Conference Hall, CWC.Sewa Bhawan, R.K.Puram, New Delhi for finalization of Chapters and Recommendations.

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6. Shri C.R. Shanmugham, Programme Advisor
7. Prof. Vishwa Ballabh
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9. Shri R.S. Julaniya
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14. Dr. Maan Singh
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Annexure 2.4(b)

STATE-WISE & PROJECT-WISE FINANCIAL STATUS OF MAJOR, MEDIUM AND ERM PROJECTS AS REPORTED COMPLETED WITH LIABILITIES IN XII PLAN

STATE	Project Name	Type of Project	Special Classification	Status	Approval Status	Un approved Cost	Original Cost	Latest Estimated Cost	Start Year	Upto X Plan	2007-08	2008-09	2009-10	2010-11	2011-12	Liability in XII Plan	Beyond XII plan
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
ANDHRA PRADESH	**Sri Tenneti Viswanatham Pedderu Reservoir Project Final**	Medium	Improvement of Water Management	Completed with liabilities in XII plan	APD	0	26.27	38.41	1999	40.07	3.2251	0.2515	0.0209	1.15	4.42	5.4	0
				1		**0**	**26.27**	**38.41**		**40.07**	**3.2251**	**0.2515**	**0.0209**	**1.15**	**4.42**	**5.4**	**0**
GUJARAT	**Guhai**	ERM	Not Applicable	Completed with liabilities in XII plan	APD	0	0.029	0.057	2007	0	0.35	1.32	0.22	0.61	0.7	2.5	0
GUJARAT	**Panam High Level Canal**	Medium	Improvement of Water Management	Completed with liabilities in XII plan	APD	0	130.71	260	2004	16.25	27.98	42.5	33.18	27.95	34	94.39	0
				2		**0**	**130.739**	**260.057**	**4011**	**16.25**	**28.33**	**43.82**	**33.4**	**28.56**	**34.7**	**96.89**	**0**
HIMACHAL PRADESH	**Changer Area Medium Lift Irrigation Project in Distt. Bilaspur (HP)**	Medium	Not Applicable	Completed with liabilities in XII plan	APD	0	28.37	88.09	1999	16.23	30.98	20.94	9.14	5.96	2	2	2
				1		**0**	**28.37**	**88.09**	**1999**	**16.23**	**30.98**	**20.94**	**9.14**	**5.96**	**2**	**2**	**2**
JHARKHAND	**AJAY BARRAGE PROJECT**	Major	Not Applicable	Completed with liabilities in XII plan	UA	351.84	0	0	1975	255.01	10.7	12.32	7.15	12.42	20	5	0
JHARKHAND	**GUMANI BARRAGE PROJECT**	Major	Not Applicable	Completed with liabilities in XII plan	APD	0	3.8389	185.76	1976	110.88	18.48	15.457	4.236	3.352	33.355	5	0
JHARKHAND	**BATANE RESERVOIR SCHEME**	Medium	Not Applicable	Completed with liabilities in XII plan	UA	116.02	0	0	1984	30	5.16	0.5	4.75	2.96	3.6	3	0
JHARKHAND	**BHAIRWA RESERVOIR SCHEME**	Medium	Not Applicable	Completed with liabilities in XII plan	UA	122.64	0	0	1987	61.98	15.99	2.75	5.96	0	28	8	0
JHARKHAND	**KATRI RESERVOIR SCHEME**	Medium	Not Applicable	Completed with liabilities in XII plan	UA	47.97	0	0	1986	54.18	0.73	0.34	0	0	0	0	0
JHARKHAND	**Kesho Reservoir Scheme**	Medium	Not Applicable	Completed with liabilities in XII plan	UA	102.88	0	0	1988	4	24.98	20	4.5	14.05	30	5	0
JHARKHAND	**PANCHKHERO RESERVOIR SCHEME**	Medium	Not Applicable	Completed with liabilities in XII plan	APD	0	9.55	75.69	1990	40.28	17.16	8.25	2	0.59	11	5	0
JHARKHAND	**RAMREKHA RESERVOIR SCHEME**	Medium	Not Applicable	Completed with liabilities in XII plan	UA	53.86	0	0	1982	25.63	12.92	8.48	0.8	1.39	4	0.5	0
JHARKHAND	**TAJNA RESERVOIR SCHEME**	Medium	Not Applicable	Completed with liabilities in XII plan	APD	0	87.76	0	2011	0	0	0	0	0	25.23	62.53	0
				9		**795.21**	**101.1489**	**261.45**	**17879**	**581.96**	**106.12**	**68.097**	**29.396**	**34.762**	**155.185**	**94.03**	**0**
KARNATAKA	**Almatti Left Bank Canal**	Major	Not Applicable	Completed with liabilities in XII plan	APD	0	79.42	182.26	1993	137.75	2.31	3.42	0.53	1.35	4	5.82	0

STATE	Project Name	Type of Project	Special Classification	Status	Approval Status	Un approved Cost	Original Cost	Latest Estimated Cost	Start Year	Upto X Plan	2007-08	2008-09	2009-10	2010-11	2011-12	Liability in XII Plan	Beyond XII plan
KARNATAKA	**Maskinala Project**	Medium	Not Applicable	Completed with liabilities in XII plan	UA	3.11	0	0	1976	47.42	1.23	1.03	1.33	1	1.45	5	0
				2		**3.11**	**79.42**	**182.26**		**185.17**	**3.54**	**4.45**	**1.86**	**2.35**	**5.45**	**10.82**	**0**
MADHYA PRADESH	**Barchar Project**	Medium	Improvement of Water Management	Completed with liabilities in XII plan	UA	3.5	0	0	1981	18.14	0.53	0.924	0.149	0.11	0.17	0.23	0
MADHYA PRADESH	**MACHAK DISTRIBUTORY EXT PROJECT**	Medium	Not Applicable	Completed with liabilities in XII plan	UA	44.28	0	0	2003	15.31	7.28	0.78	0.1	0.3	0.54	6.34	0
MADHYA PRADESH	**Mahan Gulab sagar Medium Project**	Medium	Not Applicable	Completed with liabilities in XII plan	UA	3.11	0	486.96	1983	110.43	24.14	29.24	21.92	66.87	104	103.23	0
MADHYA PRADESH	**Mardan pur (LIS)**	Medium	Not Applicable	Completed with liabilities in XII plan	UA	16.28	0	0	2008	8.4	0	0	0	0	0	7.88	0
				4		**67.17**	**0**	**486.96**	**7975**	**152.28**	**31.95**	**30.944**	**22.169**	**67.28**	**104.71**	**117.68**	**0**
MAHARASHTRA	**Bhima(Ujani)Project**	Major	Not Applicable	Completed with liabilities in XII plan	UA	1992.78	0	0	1965	1092.37	29.84	19	50.57	58.29	50	692.71	0
MAHARASHTRA	**Pench Project**	Major	Not Applicable	Completed with liabilities in XII plan	UA	168.93	0	0	2008	0	0	8.129	1.7852	8.3418	20	168.33	0
MAHARASHTRA	**Amba**	Medium	Improvement of Water Management	Completed with liabilities in XII plan	UA	3.11	0	0	1970	16.96	0.186	0.228	0.43	0.235	0.625	25	0
MAHARASHTRA	**AMRAWATI PROJECT**	Medium	Not Applicable	Completed with liabilities in XII plan	APD	0	4.63	0	1985	46.76	1.58	0.74	1.41	0.8	10	18	0
MAHARASHTRA	**Benitura Medium Project**	Medium	Not Applicable	Completed with liabilities in XII plan	UA	45.56	0	0	1986	26.41	0.15	0.38	0.22	1	1	0	0
MAHARASHTRA	**Borghat L.I.S.**	Medium	Not Applicable	Completed with liabilities in XII plan	UA	121.46	0	0	2009	0	0	12.071	5.144	8.24	35	67.19	0
MAHARASHTRA	**Pothara Nalla Project**	Medium	Not Applicable	Completed with liabilities in XII plan	APD	0	63.08	0	1982	19.32	14.04	8.39	22.12	9.79	3	76.34	0
MAHARASHTRA	**Ruti Medium Project**	Medium	Not Applicable	Completed with liabilities in XII plan	UA	5.04	0	0	1999	1.77	0.53	0	0.07	0	1.52	1.15	0
				8		**2336.88**	**67.71**	**0**	**15904**	**1203.59**	**46.326**	**48.938**	**81.7492**	**86.6968**	**121.145**	**1048.72**	**0**
ORISSA	**Titilagarh Irrigation Project**	Medium	Not Applicable	Completed with liabilities in XII plan	APD	0	21.13	0	1995	44.09	24.67	19.86	30.46	2.24	2	10	0
				1		**0**	**21.13**	**0**	**1995**	**44.09**	**24.67**	**19.86**	**30.46**	**2.24**	**2**	**10**	**0**
RAJASTHAN	**Gang Canal Modernization**	Major	Improvement of Water Management	Completed with liabilities in XII plan	APD	0	445.79	621.42	2000	339.6	41.52	24.94	16.57	10	50	138.79	0

STATE	Project Name	Type of Project	Special Classification	Status	Approval Status	Un approved Cost	Original Cost	Latest Estimated Cost	Start Year	Upto X Plan	2007-08	2008-09	2009-10	2010-11	2011-12	Liability in XII Plan	Beyond XII plan
RAJASTHAN	**Rajasthan Water Sector Restructuring Project (RWSRP)**	Major	Special Repairs not covered under ERM	Completed with liabilities in XII plan	APD	0	733.59	0	2002	433.47	85.09	66.8	99.18	55	100	137.46	0
RAJASTHAN	**Gagrin**	Medium	Improvement of Water Management	Completed with liabilities in XII plan	APD	0	80.12	0	2006	1.96	16.92	6.52	11.97	25	10	7.75	0
RAJASTHAN	**Gardada**	Medium	Improvement of Water Management	Completed with liabilities in XII plan	UA	3.11	0	0	2003	47.68	26.41	27.08	9.29	2.65	2.4	31.53	0
RAJASTHAN	**Lhasi**	Medium	Improvement of Water Management	Completed with liabilities in XII plan	APD	0	44.73	0	2007	0	21.97	9.25	10	10.25	15	25.53	0
RAJASTHAN	**Piplad**	Medium	Improvement of Water Management	Completed with liabilities in XII plan	APD	0	33.64	0	2006	2	4.32	9.55	15	21	10	3.31	0
RAJASTHAN	**Takli**	Medium	Improvement of Water Management	Completed with liabilities in XII plan	APD	0	51.81	0	2006	2	3.26	7.64	0.8	34.48	25	58.26	0
				7		**3.11**	**1389.68**	**621.42**	**14030**	**826.71**	**199.49**	**151.78**	**162.81**	**158.38**	**212.4**	**402.63**	**0**
UTTAR PRADESH	**SARYU NAHAR PROJECT**	Major	Not Applicable	Completed with liabilities in XII plan	APD	0	78.68	7270.32	1978	2245.13	280.99	270.42	80.2	167.54	339	3887.04	0
				1		**0**	**78.68**	**7270.32**	**1978**	**2245.13**	**280.99**	**270.42**	**80.2**	**167.54**	**339**	**3887.04**	**0**
WEST BENGAL	**Tatko Irrigation Project (Revised)**	Medium	Improvement of Water Management	Completed with liabilities in XII plan	APD	0	0.9875	19.76	1977	10.2031	0.365	1.139	0.0729	0	4.6	3.7	0
				1			**0.9875**	**19.76**	**1977**	**10.2031**	**0.365**	**1.139**	**0.0729**	**0**	**4.6**	**3.7**	**0**

	TOTAL	**8 MJ, 28MD, 1ERM**	**11 IWM, 25 NA, 1Spl. Rep.**	**37**	**18UA, 19APD**	**3205.48**	**1924.135**	**9228.727**		**5321.683**	**755.9861**	**660.6395**	**451.278**	**554.9188**	**985.61**	**5678.91**	**2**

Annexure 4.1

134 COMPLETED PROJECTS UNDER AIBP				
Major/Medium Irrigation projects under AIBP				
Sl. No.	**Name of State/Project**	**Districts benefitted**	**Year of inclusion**	**Year of completion**
(1)	**(2)**	**(3)**	**(4)**	**(5)**
Major, Medium & Minor Irrigation Projects				
	ANDHRA PRADESH			
1	**Sriram Sagar(Stage-I)**	**Nizamabad, Warangal, Adilabad, Karimnagar,Nalgonda & Khammam**	**1996-97**	**2005-06**
2	**Cheyyeru(Annamaya)**	**Cuddapah**	**1996-97**	**2003-04**
3	**Jurala**	**Mehboobnagar**	**1997-98**	**2006-07**
4	**Somasilla**	**Nellore**	**1997-98**	**2006-07**
5	**Nagarjunsagar**	**Nalgonda, Krishna, Khammam, Nellore, Guntur & Prakasam**	**1998-99**	**2005-06**
6	**Madduvalasa**	**Vizayanagaram**	**1998-99**	**2005-06**
7	**Gundalavagu**	**Khammam**	**2000-01**	**2007-08**
8	**Maddigedda**	**East Godavari**	**2000-01**	**2006-07**
9	**Vamsedhera Ph.I**	**Shrikakulam**	**2003-04**	**2009-10**
10	**Valligallu Reservoir**	**Kadappa**	**2006-07**	**2007-08**
11	**Ali Sagar LIS**	**Nizamabad**	**2006-07**	**2007-08**
12	**A.R.Guthpa LIS**	**Nizamabad**	**2006-07**	**2007-08**
13	**Swarnamukhi Med Irrigation Project**	**Nellore**	**2005-06**	**2009-10**
	ASSAM			
14	**Pahumara**	**Barpeta**	**1996-97**	**2007-08**
15	**Hawaipur LIS**	**Karbi Anglong**	**1996-97**	**2006-07**
16	**Rupahi LIS**	**Barpeta**	**1996-97**	**2001-02**
17	**Kolonga**	**Karbi Anglong**	**1996-97**	**2006-07**
18	**Bordikarai**	**Sonitpur**	**1997-98**	**2004-05**
19	**Mod. of Jamuna Irr. Project**	**Nowgaon**	**2001-02**	**2009-10**
20	**Integ. Irri. Scheme Kollong Basin**	**Nowgaon**	**1997-98**	**2006-07**
	BIHAR			
21	**Upper Kiul**	**Munger**	**1996-97**	**2006-07**
22	**Orni Reservoir**	**Bhagalpur**	**1997-98**	**2006-07**
23	**Bilasi Reservoir**	**Bhagalpur**	**1997-98**	**2000-01**
24	**Sone canal modernisation**	**Bhojpur, Rohtas**	**1998-99**	**2009-10**

	CHHATTISGARH			
25	**Hasdeo Bango**	**Bilaspur, Raigarh**	**1997-98**	**2006-07**
26	**Shivnath Diversion**	**Rajnandgaon**	**1997-98**	**2002-03**
27	**Jonk Diversion**	**Raipur**	**1999-2000**	**2006-07**
28	**Barnai**	**Surguja**	**2002-03**	**2006-07**
29	**Mahanadi Reservoir**	**Raipur, Durg**	**2005-06**	**2010-11**
30	**Minimata (Hasdeo Bango Ph-IV)**	**Bilaspur, Raigarh**	**2007-08**	**2010-11**
	GOA			
31	**Salauli Phase-1**	**South Goa**	**1997-98**	**2006-07**
	GUJARAT			
32	**Jhuj**	**Valsad, Surat**	**1996-97**	**1999-2000**
33	**Sipu**	**Banaskantha**	**1996-97**	**1999-2000**
34	**Mukteshwar**	**Banaskantha**	**1996-97**	**2006-07**
35	**Harnav-II**	**Sabarkantha**	**1996-97**	**1997-98**
36	**Umaria**	**Panchamahal**	**1996-97**	**1996-97**
37	**Damanganga**	**Valsad**	**1997-98**	**1999-2000**
38	**Karjan**	**Bharuch**	**1997-98**	**1999-2000**
39	**Sukhi**	**Vadodara**	**1997-98**	**1999-2000**
40	**Deo**	**Vadodara, Panchamahal**	**1997-98**	**1997-98**
41	**Watrak Kadana RB Canal**	**Sabarkantha**	**1997-98**	**1999-2000**
42	**Aji-IV**	**Jamnagar**	**2000-01**	**2009-10**
43	**Ozat-II**	**Junagarh**	**2000-01**	**2009-10**
44	**Bhadar-II**	**Rajkot**	**2002-03**	**2009-10**
	HARYANA			
45	**Gurgaon Canal**	**Faridabad, Gurgaon**	**1996-97**	**2003-04**
46	**WRCP**	**Whole State**	**1996-97**	**2006-07**
	JAMMU & KASHMIR			
47	**Marwal Lift**	**Pulwama, Budgam**	**1996-97**	**2006-07**
48	**Lethpora Lift**	**Pulwama**	**1996-97**	**2006-07**
49	**Koil Lift**	**Pulwama**	**1996-97**	**2006-07**
50	**Mod. of Pratap Canal**	**Jammu**	**1999-2000**	**2006-07**
51	**Mod. of Kathua Canal**	**Kathua**	**1999-2000**	**2006-07**
52	**Igophey**	**Leh**	**2000-01**	**2006-07**
53	**Zaingir Canal**	**Baramulla**	**2001-02**	**2006-07**

54	Mod. Of Martand Canal	Anantnag	2006-07	2010-11
55	Mod. Of Mav Khul	Anantnag	2006-07	2010-11
	JHARKHAND			
56	Latratu	Ranchi	1997-98	2002-03
57	Tapkara Res. Scheme	Gumla	1997-98	2002-03
	KARNATAKA			
58	Hirehalla	Koppel	1996-97	2006-07
59	Maskinala	Raichur	2002-03	2003-04
60	Votehole Medium Project	Hassan	2007-08	2009-10
	KERALA			
61	Kallada Project	Kollam, Alapuzha, Pattanamthitta	1996-97	2004-05
	MADHYA PRADESH			
62	Bansagar (Unit-I)		1996-97	2007-08
63	Upper Weinganga	Seoni Balaghat	1996-97	2002-03
64	Sindh Phase-I	Gwalior, Shivpuri	1999-2000	2007-08
65	Urmil	Chhatarpur	2000-01	2002-03
66	Banjar	Balaghat	2000-01	2002-03
	MAHARASHTRA			
67	Surya	Thane	1996-97	2006-07
68	Bhima	Solapur	1997-98	2006-07
69	Upper Tapi	Jalgaon	1997-98	2004-05
70	Upper Wardha	Amravati Wardha	1997-98	2009-10
71	Wan	Akola, Buldhana	1998-99	2005-06
72	Jayakwadi	Aurangabad, Jalna, Nanded, Parbhani, Ahmednagar	2000-01	2004-05
73	Vishnupuri	Nanded	2000-01	2005-06
74	Bahula	Jalgaon	2000-01	2006-07
75	Krishna	Satara, Sangli	2002-03	2009-10
76	Kukadi	Pune, Solapur, Ahmednagar	2002-03	2009-10
77	Hetwane	Raigarh	2002-03	2009-10
78	Chaskman	Pune	2002-03	2009-10
79	Wan Phase II	Akola, Buldhana	2006-07	2009-10
80	Pothra Nalla	Wardha	2006-07	2009-10
81	Utawali	Buldhana	2006-07	2009-10

82	Purna	Amravati	2006-07	2009-10
83	Kar	Wardha	2006-07	2009-10
84	Lal Nalla	Wardha, Chandrapur	2006-07	2009-10
85	Arunavati	Yavatmal	2006-07	2009-10
86	Tajanpore LIS	Ahmednagar	2006-07	2009-10
87	Khadakwasla	Pune	2002-03	2004-05
88	Kadvi	Kolhapur	2002-03	2004-05
89	Kasarsai	Pune	2002-03	2004-05
90	Jawal Gaon	Solapur, Osmanabad	2002-03	2004-05
91	Kumbhi	Kolhapur	2002-03	2006-07
92	Kasari	Kolhapur	2002-03	2004-05
93	Patgoan	Kolhapur	2004-05	2006-07
94	Madan Tank	Wardha	2005-06	2007-08
95	Shivna Takli	Aurangabad	2005-06	2007-08
96	Amravati	Dhule	2005-06	2007-08
97	Chandra Bhaga Irrigation Project	Amravati	2007-08	2009-10
98	Sapan Irrigation Project	Amravati	2007-08	2009-10
99	Pentakli project	Buldhana	2007-08	2009-10
100	Prakasha Barrage	Dhule, Nandurbar	2007-08	2009-10
101	Sulwade Barrage	Dhule	2007-08	2009-10
102	Sarangkheda Barrage	Dhule, Shahada	2007-08	2009-10
	ORISSA			
103	Upper Kolab	Koraput	1997-98	2004-05
104	Potteru	Malkangiri	2001-02	2004-05
105	Naraj Barrage	Cuttack	2001-02	2005-06
106	Improvement of Sasan Canal	Sambalpur, Bolangir, Jharsuguda	2002-03	2004-05
107	Salandi Left Main Canal	Balasore, Keonjhar	2002-03	2005-06
108	Improvement of Salki Irr. Project	Phulbani	2003-04	2004-05
109	Titlagarh	Bolangir	1998-99	2010-11
	PUNJAB			
110	Ranjit Sagar Dam		1996-97	2000-01
111	Remodelling of UBDC	Amritsar, Gurdaspur	2000-01	2006-07
	RAJASTHAN			
112	Jaismand (Modernisation)	Alwar	1996-97	2000-01
113	Chhapi	Jhalawar	1996-97	2004-05
114	Panchana	Sawai Madhopur	1997-98	2004-05
115	Bisalpur	Tonk, Sawai Madhopur	1998-99	2006-07
116	Gambhiri (Modernisation)	Chittorgarh	1998-99	2000-01
117	Chauli	Jhalawar	1998-99	2006-07

118	Mahi Bajaj Sagar	Banswara, Dungarpur	1999-2000	2006-07
	TAMIL NADU			
119	WRCP	Entire State	1996-97	2006-07
	UTTAR PRADESH			
120	Upper Ganga & Madhya Ganga	Bulandshahar, Agra, Aligarh, Mathura, Etah, Mainpuri	1996-97	2000-01
121	Sharda Sahayak	14 districts**	1996-97	2000-01
122	Kharif Channel in H.K.Doab	Muzaffarpur, Meerut	1996-97	2004-05
123	Rajghat Dam	Lalitpur, Jalaun, Jhansi, Hamirpur	1996-97	1996-97
124	Gunta Nala Dam	Banda	1996-97	1999-2000
125	Tehri	17 districts***	1999-2000	2006-07
126	Gyanpur Pump Canal	Mirzapur	1999-2000	2001-02
127	Rajghat Canal	Lalitpur, Jalaun, Jhansi, Hamirpur	2000-01	2009-10
128	Mod. of Agra Canal	Agra, Mathura	2002-03	2009-10
129	Jarauli Pump Canal	Fatehpur	2003-04	2007-08
130	Saryu Canal	Bahraich, Basti, Gorakhpur, Gonda Shrivasti	1996-97	2010-11
131	Eastern Ganga Canal	Bijnaur	1999-2000	2010-11
	WEST BENGAL			
132	Kangsabati	Bankura, Hooghly, Midnapur	1997-98	2001-02
133	Mod. of Barrage & Irrg. System of DVC		1997-98	2007-08
		Bankura Burdwan, Hooghly, Howrah		
134	Hanumata	Purulia	2000-01	2009-10

Annexure 4.2

DETAILS OF MI SCHEMES UNDER AIBP SINCE INCEPTION UPTO 31.07.2011

Sl. No.	State	Total Nos. of Schemes included	Estimated Cost (Rs. in crores)	Potential Planned ('000 ha)	Nos. of schemes completed upto 31.03.2011	Potential Created ('000 ha) upto 31.03.2011	Total CLA /grant released upto 31.07.2011 (Rs. in Crores)
A.	**Special category States**						
1	Arunachal Pradesh	1960	352.8617	64.614	1829	58.7910	267.0530
2	Assam	1114	3049.3965	387.5559	453	139.9064	1411.3308
3	Manipur	843	303.4305	43.652	697	33.7300	204.5395
4	Meghalaya	198	291.46486	37.2896	106	11.40840	173.99040
5	Mizoram	317	311.9010	30.042	269	24.3790	216.0690
6	Nagaland	1308	342.23153	54.342	1235	47.6760	262.3811
7	Sikkim	658	80.0345	14.9131	433	6.3616	30.4537
8	Tripura	1204	292.6109	55.543	1180	44.9830	183.9219
9	Himachal Pradesh	447	358.1839	79.3537	228	48.6844	175.6113
10	Jammu & Kashmir	532	1014.061	181.5153	344	123.7923	717.5947
11	Orissa (KBK)	81	221.7565	27.496	20	20.7960	153.5835
12	Uttarakhand	2482	1723.1429	212.2078	1662	157.3679	1179.2495
A	**Total**	**11144**	**8341.0758**	**1188.5244**	**8456**	**717.8760**	**4975.7784**
B.	**Non-Special Category States**						
1	Andhra Pradesh	105	702.9905	56.7470	17	3.4130	372.06
2	Chhattisgarh	238	679.4227	77.10	125	44.1760	464.5703
3	Madhya Pradesh	242	754.3355	75.6534	94	17.7100	578.4591
4	Maharashtra	186	1227.3130	121.5340	90	45.4240	678.4562
5	Bihar	92	130.3417	38.586	60	23.4660	70.7524
6	West Bengal	66	25.51455	6.27640	23	2.7600	16.220

7	Rajasthan	7	39.722	4.411	1	0.448	14.170
8	Karnataka	305	371.7405	32.7732	33	2.598	83.1454
9	Jharkhand	285	452.7598	56.8420			231.6474
B	**Total**	**1526**	**4384.1403**	**469.923**	**443**	**139.9950**	**2509.4808**
	Grand Total	**12670**	**12725.2160**	**1658.4474**	**8899**	**857.8710**	**7485.2592**

Annexure 4.3

DETAILS OF FINANCIAL ASSISTANCE PROVIDED UNDER AIBP IN XI PLAN AS ON JULY 2011

Sl. No.	Name of State	Total Releases upto 2006-07 (Loan + Grant)	2007-08	2008-09	2009-10	2010-11	2011-12	Grand Total
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1	Andhra Pradesh	2111.682	987.769	855.180	1300.728	22.792	113.40	5391.551
2	Arunachal Pradesh	106.500	47.180	33.958	30.780	48.635		267.053
3	Assam	202.325	77.338	405.954	589.973	406.403		1681.993
4	Bihar	485.533	62.240	109.703	77.913	55.754		791.142
5	Chhattisgarh	286.575	96.964	193.040	60.885	174.811	67.630	879.905
6	Goa	132.960	32.480	39.230	20.250	20.000		244.920
7	Gujarat	4614.411	585.720	258.610	6.080	361.420		5826.240
8	Haryana	90.540	0.000	0.000	0.000			90.540
9	Himachal Pradesh	104.347	114.050	119.318	90.680	43.521		471.915
10	Jammu & Kashmir	171.258	199.225	393.066	171.728	156.034		1091.311
11	Jharkhand	90.525	9.224	3.720	0.000	242.887		346.357
12	Karnataka	2651.662	349.900	442.419	823.828	567.759		4835.568
13	Kerala	164.536	0.000	0.905	3.812	10.017		179.270
14	Madhya Pradesh	2238.311	500.345	473.782	758.746	658.692		4629.876
15	Maharashtra	1765.574	972.250	2257.832	1395.395	2069.056		8460.106
16	Manipur	353.758	103.987	221.673	42.540	249.997		971.955
17	Meghalaya	19.333	1.160	24.801	22.502	110.195		177.990
18	Mizoram	43.466	34.343	50.718	36.450	51.092		216.070
19	Nagaland	45.987	40.510	48.598	57.286	70.000		262.381
20	Orissa	1207.732	624.359	724.439	871.572	591.681		4019.782
21	Punjab	441.787	13.500	9.540	22.050	140.476		627.353
22	Rajasthan	1595.193	156.530	178.620	157.577	41.920		2129.840
23	Sikkim	10.245	3.240	0.000	2.605	14.364		30.454
24	Tripura	174.727	8.100	43.175	36.209	48.000		310.210
25	Tamil Nadu	20.000	0.000	0.000	0.000			20.000
26	Uttar Pradesh	2179.318	150.690	315.473	238.082	432.538		3316.102
27	Uttarakhand	254.875	265.650	371.658	127.006	160.060		1179.250
28	West Bengal	176.900	8.950	22.810	0.914	89.100		298.674
Total		21740.056	5445.705	7598.221	6945.590	6837.203	181.030	48747.806

Annexure 4.4

Minutes of the Task Force set up by Planning Commission

No. 25(11)/A/2009-WR
Planning Commission
(WR Division)

Subject: Minutes of the Meeting of Task Force on Accelerated Irrigation Benefit Programme.

As a follow up to the discussions with the Chief Secretaries of the States regarding implementation of the economic stimulus package, the Cabinet Secretary has announced that a Task Force under the chairmanship of Secretary Planning Commission with representatives of the Ministry of Water Resources, Ministry of Rural Development, Ministry of Environment & Forests, Ministry of Power and few States will re-examine the AIBP norms including sharing of costs and approval procedures.

The Task Force meeting to discuss the norms of the Accelerated Irrigation Benefit Programme was convened under the chairmanship of Secretary Planning Commission on 10.06.2009 at 11.00 am in R. No. 228, Yojana Bhawan. The list of the members of the Task Force who attended the meeting is as per Annexure II.

In the meeting important issues pertaining to the AIBP norms and costing procedures were discussed with special reference to the number of projects that could be taken up by the States, the need for inclusion of DPAP/non-tribal area schemes in the States that have irrigation development below the national average, the possibility of inclusion of large anti-water logging projects under AIBP, the issue of increasing the central share in AIBP schemes beyond 25%, the need for firming up the sources of funding of multipurpose projects, the possibility of introducing a three tier monitoring procedure for AIBP projects on the lines of PMGY(rural roads) and rural drinking water etc. The need for amending the list of the DPAP areas by considering latest available rainfall data and the possibility of extending the time limit for completion of the MI schemes from 2 to 3 years was also discussed.

After considering all relevant details the Task Force finalized its recommendation which are listed at Annexure I.

Annexure I

Number of projects to be funded and implemented concurrently

There is an anomaly between the States which receive funds on account of PM's package, DPAP and for tribal areas and States which do not benefit from the above special dispensation. The later category is currently constrained by the criteria of 1:1 according to which the State is entitled to take up only one new project on completion of one existing project. The Task Force after considering all relevant factors agreed to liberalise the existing 1:1 norm on one time basis by allowing sanction and implementation of upto three new projects for such States and thereafter following the 1:1 norm. So that such States can implement upto three projects concurrently at any given point of time. However, a higher number of projects can continue to be implemented by States that are receiving funds under the special packages like PM's package, DPAP and for tribal areas on account of which in such states the number may exceed three.

1. Extension, Renovation and Modernisation of projects.

The Task Force recommended inclusion of extension, renovation and modernisation of projects as new projects with the stipulation that inclusion of such projects should be within the overall availability of funds and budget ceilings.

2. Inclusion of Minor Irrigation schemes of Non-DPAP Non-Tribal Areas.

The Task Force considered the suggestion for inclusion of minor irrigation schemes of Non-DPAP Non-Tribal Areas. After careful consideration the Task Force did not accept the suggestion on account of overall constraint of resources and also on account of availability of funds from alternate sources, such as, NREGS, Integrated Watershed Management Programme of DoLR and NABARD among others. The Task Force also noted that the States also have their own major programmes for minor irrigation and this component should primarily be funded from States' resources and other Central resources as indicated above.

3. Inclusion of Projects to Tackle problems of Water Logging.

The suggestion to include projects to tackle major water logging on account of seepage from canal was considered from all aspects. It was noted that substantial loss of water happened on account of such water logging as also loss of cultivable command. There are cases of several thousand acres being affected by this type of problem. The Task Force recommended that this cannot be brought within the purview of AIBP which is primarily meant to create additional potential through new projects or by restoration/renovation. The problem of water logging does not strictly fall within this broad mandate. The Task Force also noted that this is a large scale and wide-spread problem in major and medium irrigation projects and needs to be tackled on a separate footing. A separate scheme may be developed outside AIBP for Central Assistance to tackle such problems of water logging.

4. Increase in the Ceiling of Central Assistance.

The Task Force considered suggestions for raising the ceiling of Central Grants from 25% to 50% in the case of normal AIBP project. The Task Force noted that in large number of cases, because of special nature of the projects and also its location in tribal areas, already much higher level of Central Assistance is available i.e, upto 90%. This meets the requirements of areas which are in urgent need of

additional irrigation. After considering the overall constraint of resources, the Task Force recommended rasing the Central Grant portion for the general category of projects from present 25% to 30%. This will be subject to availability of funds and budget constraints in consultation with Ministry of Finance.

5. Funding of Multi purpose projects.

The Task Force considered requests for higher level of funding for multi purpose projects and inclusion of power related components. After considering all aspects, the Task Force did not accept this request. The Task Force further recommended that the share of irrigation and flood control as determined by competent authorities will, however, continue to be funded from AIBP component. The Task Force also recommended that the power component cost is already factored into the pricing of the electricity and will be a pass through item considered by the relevant Electricity Regulatory Commission and become a part of the tariff. Therefore, it did not find any justification in support of any part of the power component being funded under AIBP.

6. Investment Clearance.

The investment clearance of the Planning Commission along with the revised cost clearance (wherever necessary) would be mandatory for AIBP funding.

7. Monitoring of AIBP projects.

The Task Force recommended that there has to be of a comprehensive quality management system for AIBP with a three tier quality monitoring. This will be in line with the three tier quality management system prevalent under Prime Minister's Gramin Sadak Yojana (PMGSY) and consist of quality monitoring at the project implementation unit, at state level and at national level. A comprehensive scheme to this effect will be devised by the Ministry of Water Resources and made operational beginning with the current financial year. The present arrangements for monitoring of AIBP projects by CWC and NRSA, Hyderabad will continue. The Task Force recommended that the entire monitoring and quality management system should be modernized by using of ICT (Information Communication Technology) suitably and developing a comprehensive database. States would be required to provide data through an appropriate computerise based monitoring system to be set up by the Ministry of Water Resources. GIS systems will be utilized at the project level, at the State level and at the National level for project formulation, planning, implementation and monitoring.

8. Provision of Higher Central Assistance under PM's Special package.

The issue of providing higher Central Assistance for AIBP projects included in the PM's package for agrarian distress districts of Andhra Pradesh, Karnataka, Kerala and Maharashtra was considered. The Task Force noted that these States were already benefiting substantially on account of large number of projects being funded concurrently and not being subjected to the ceiling of 1:1 applicable under the earlier guidelines for other States. The Task Force considered that further liberalization would not be possible and did not accept the suggestion for higher percentage of Central Assistance for projects in these States.

9. Amending the List of DPAP areas

The Task Force considered the request for revision of the list of DPAP areas on the basis of latest rainfall data. The Task Force did not agree to this request as it fell outside the purview of its mandate. The Task Force noted that the Department of Land Resources in the Ministry of Rural Development handles the DPAP support programmes under which DPAP areas are being provided substantial funds for watershed management. DoLR has since comprehensively devised an integrated watershed development programmes including DPAP related programmes under the nomenclature of integrated Watershed Management Programme. Planning Commission has also provided substantially higher allocations for such programmes. Therefore, the substantive requirements of funds of DPAP areas and other rain-fed areas would be met from this and other sources including NREGS, etc.

10. Extending the time period for completion of MI schemes.

Several States suggested an increase in the completion time of the MI schemes from existing 2 to 3 years. It was decided that since this is an accelerated programme, enhancement of the time schedule is not justified.

11. Payment of Net Present Value.

The Task Force noted the request for exempting the AIBP projects from payment of Net Present Value. The Task Force noted that this was a statutory requirement and cannot be waived. However, the Task Force recommended that the amount assessed and paid forwards NPV from AIBP and other irrigation projects should be earmarked for catchment area treatment and Ministry of Environment & Forest should make appropriate arrangements so that such funds are made available through efficient administrative arrangements.

12. Funding Norms for Minor Irrigation Schemes.

The Task Force considered the request for raising the current funding norms for minor irrigation schemes. After taking into account all relevant factors the Task Force recommended raising of the present cost norms for minor irrigation projects from Rs.1.5 lakh per hectare to Rs.2 lakh per hectare.

13. Inclusion of the projects in the Desert Development Programme Areas.

The Task Force considered proposals for higher level of funding for AIBP projects falling in desert areas identified in the component of Desert Development Plan (DDP) and recommended that such projects should be funded at par with projects in DPAP area and that these projects would be eligible for 90% grant assistance.

ANNEXURE-II

MEETING ON TASK FORCE ON ACCELERATED IRRIGATION BENEFIT PROGRAMME

List of participants

1. Dr.Subas Pani Secretary, Planning Commission	Chairman
2. Sh.Anil Kumar, AS, Power	Member
3. Sh. Arvind Mayaram, AS&FA, MoRD	Member
4. Sh. Yudhvir Uppal, Sr. Adviser (WR), Planning Commission	Member
5. Smt.Anjuly Chibber Duggal, JS PF-I, Deptt. of Expenditure	Member
6. Sh. Indra Raj, Commissioner Projects, MoWR	Member
7. Sh. S.K. Joshi, Pr. Secretary (Irr.) Govt. of Andhra Pradesh	Member
8. Sh. Ansar Ahmed, IGF, MoEF	Member
9. Sh. S. Bhowmik, Addl. Director, MoE&F	
10. Sh. K. N. Garg, Director, CEA	
11. Sh. Avinash Mishra, Dy. Adviser (WR)	
12. Sh. R. K. Sharma, SRO (WR)	
13. Sh. Rahul Dubey Consultant (WR)	