#### Introduction

Irrigation is one of the most crucial inputs for agriculture. It has an important complementary role in the production process. The other key inputs like seed and fertilizer would not enable realization of their full benefit unless combined with irrigation. Also, in an economy where the supply of land is highly inelastic and the growth of net sown area has leveled off, the future growth of agriculture is heavily dependent on intensive cultivation of the existing land. Irrigation can facilitate this by enabling farmers to grow multiple crops on the same plot of land across different agricultural seasons. India's irrigated agriculture sector has been fundamental to India's economic development and poverty alleviation. Little less than 20% of India's GDP and two-thirds the total employment is based on agriculture sector. Agriculture is the primary source of livelihood in rural areas, which account for three-fourth of India's population and around 80 per cent of its poor population.

The rapid expansion of irrigation and drainage infrastructure has been one of India's major achievements over the planned economic development era. Ever since early fifties, gross irrigated area has expanded more than four fold. The projected rate of growth in irrigated area for the period 1995 to 2020 of 1.2 % per annum is, however, well below the rate of 2.0 % per annum during 1982-93. It is seen that growth rate of gross canal irrigated areas is rapidly falling. The most severe problem facing Indian canal irrigation is not so much the slowdown in its growth, but the rapid deterioration of systems that have already been created. Maintenance is being woefully neglected, leading to poor capacity utilization, rising incidence of water logging and salinity and lower water use efficiency (WUE). Deterioration of existing irrigation infrastructure has the grave risk of more and more farming households reverting to rainfed farming with consequent implication on poverty and productivity and increased exposure to the vagaries of monsoon. On the whole large canal based irrigation is threatening to become unsustainable physically, environmentally as well as financially. According to Eleventh Plan document, irrigation efficiency needs be upgraded from the present level of 35% to about 60% in case of surface water system and from about 65% to 75% in groundwater system.

According to the Ministry of Water Resources, Irrigation Potential Created (IPC) upto the end of Tenth Plan stood at 102.70 million hectares against which Irrigation Potential Utilized (PU) was of the order of 86.25 million hectares. This indicates the utilization of irrigation potential created at about 84%. This has been on decline particularly since early 1990s. Details of cumulative IPC and IPU and proportionate utilization of IPC are at Table - 1. Secular decline in the ratio of IPU to IPC over the period of planned economic development since the First Plan is mainly on account of poor operation and maintenance of already created irrigation potential. The Ministry of Water Resources commissioned in 2007 a study through four IIMs in the country to study the factors contributing to the gap between irrigation potential created and utilized in a holistic manner, and suggest measures for reducing the gap. The IIMs were allotted the States on the basis of their geographical locations. Following are the main observations relating to the methods of calculation/compilation of data on IPC and IPU, contained in the reports of these studies:

- a) Planning Commission has developed the concepts of IPC and IPU for monitoring project specific issues. IPC and IPU cannot be viewed at a state/regional level, aggregated and compared. Estimates of IPC and IPU being dependent on a number of parameters that change over time, this aggregation over time is also methodologically not sound.
- b) Adding up of potential created over the years without adjusting for the possible natural wear and tear that affects the potential supply of irrigation water from an older irrigation

system. Ministry of Water Resources doesn't apply any discount rate while adding IPC over years, although all MMI systems, being physical systems, are subject to natural and normal wear and tear, which keeps their lifespan limited to approximately 100 years. This leads to overestimation of IPC.

- c) MMI projects are on a different footing as compared to minor ones in terms of life span, ownership and control. Considering these conceptual differences between the two broad categories of irrigation, addition of all irrigation capacities may compound the confusion over widening gap between IPC and IPU.
- d) Time lag between creation of irrigation capacity in the form of IPC and its realization in the form of IPU is much larger in case of MMI projects than in minor ones, as much larger order of public investment are involved in the former than in the latter in creating the necessary infrastructure network to effectively tap the benefits of capacity created. Therefore, created irrigation potential may not immediately find its utilization leading to underestimation of IPU.
- e) The initial calculation of IPC with no further updates may lead to serious miscalculation because of the expected decrease in IPC due to lack of maintenance, change in cropping pattern with undermining the increased use of HYV, and dhange in climatic conditions. Non incorporation of privately owned irrigation facilities creates confusion about the actual gap as it may be filling the existing gap. There are also instances of overstating the IPC with creation of potential in a less suitable area.

The studies have made a number of recommendations including reconciliation of data on IPC and IPU by standing committees at district and national level, proper coordination between different departments at the district level for collection of statistics on IPC and IPU, re-defining the concepts of IPC and IPU, strengthening of WUAs/PRIs for pushing up both demand for and supply of irrigation, use of discount rate for working out the present potential of irrigation project, etc. The recommendations are under the active consideration of the Ministry of Water Resources.

One of the reasons for poor maintenance is low recovery from irrigation infrastructure vis-à-vis cost of operation and maintenance. Since the Second Finance Commission, Finance Commissions have more or less suggested the State Governments to revise their water charges to bring at least to the levels where operation & maintenance of various irrigation schemes become self-sustaining. Since revision of water charges is a politically sensitive issue for the States, not much progress seems to have been made on this count. For instance, Uttar Pradesh had last revised the water charges for state tubewells and canals respectively in October 1994 and September 1995. As regards maintenance expenditure, successive Finance Commissions have adopted adequacy approach by adopting higher of the normatively projected/budget estimates in order to provide for better and effective maintenance of irrigation potential created in the country. Normatively, therefore, higher maintenance expenditure coupled with growing and commensurate revenue receipts under irrigation has been the scenario built into the non-plan revenue expenditure and receipts respectively by the successive Finance Commissions.

Ratio of non-plan revenue receipts (NPRR) to non-plan revenue expenditure (NPRE) under irrigation referred to as Rate of Recovery (ROR) can indicate the sustainability of the sector. Although higher ROR under irrigation may not necessary indicate better maintenance of irrigation projects, a higher ROR for a state would imply that irrigation system is more self-financing so far as maintenance of irrigation schemes of that State is concerned. As discussed in the foregoing paragraph, all Finance Commissions have required the States to improve their respective ROR without compromising the

need for ever-growing maintenance expenditure. An attempt has been made in this study to analyze the trends in ROR. The award period of the Twelfth Finance Commission has been selected for comparison of NPRR and NPR E under irrigation (MH 2701 & 2702) as projected by the Twelfth Finance Commission with actual receipts and expenditure for the period from 2005-06 to 2009-10 (BE). The ROR values for all States are 26.28% for 2005-06, 26.95% for 2006-07 and 32.50% for 2007-08.

This study has been conducted with the following objectives:

- (a) Analysis of trends in non-plan revenue expenditure (NPRE) under MH 2700, 2701 & 2702 and receipts (NPRR) under MH 700, 701 & 702 so as to find out how these two have behaved during the Twelfth Finance Commission (TFC) period vis-à-vis projections;
- (b) Suggesting norms for projecting the irrigation sector NPRE and NPRR for the Thirteenth Finance Commission period; and
- (c) Suggesting institutional reforms required for proper maintenance of irrigation schemes and recovery of O&M costs.

## Chapter 1:

# Broad approach of the Finance Commissions to Revenue Receipts and Expenditure of the State Governments under Irrigation

The approach of the Finance Commissions to the revenue receipts and expenditure of the state governments has hitherto been governed broadly by the following three considerations:

- i. Fiscal capacity of the States;
- ii. Fiscal requirements of the States; and
- iii. Inter-State equity.

Second Finance Commission, for the first time, highlighted the importance of irrigation as a source of revenue to the State Governments. The Commission had observed that out of the additional revenue raised during the period of the first five year plan except for Uttar Pradesh, irrigation rates did not contribute any sizeable amount. It was noted that dismal picture of revenue position of most states was due to deterioration in the net receipts from irrigation. In a number of states, there was a steady increase in the accumulated arrears of revenue particularly on irrigation rates. The Second Finance Commission had emphasized the need for reducing these arrears as this would materially assist the states in implementing their development plans. They had recommended that efforts should be made to ensure that the irrigation sector like power, transport, commercial and industrial schemes of the States must yield the maximum revenue so as to compensate for the net burden of interest charges. They had also apprehended that the completion of some of the States. They had assessed the normal revenue expenditure of the States which excluded the items of capital nature. O&M expenditure on irrigation sector was, however, subsumed in the normal revenue expenditure of the State governments.

The Third Finance Commission had determined the budgetary needs of each of the State governments on the basis of forecasts submitted by the individual States to the Finance Commission and those to Planning Commission, trends of growth of revenue and expenditure based on past actuals, and additional demands subsequently submitted to the Commission. The basic approach of the Second Finance Commission to irrigation sector was, however, retained by the Third Finance Commission.

Emphasizing the need for strong database for assessment of revenue receipts and expenditure of the States, the Fourth Commission, *inter alia*, suggested that data on financial and economic results of commercial irrigation should be collected. The Fifth Finance Commission recognized the need for better maintenance of irrigation projects and projected the non-plan revenue expenditure on irrigation on the basis of three years average expenditure with substantial step -up thereon. They endorsed the recommendations of Nijalingappa Committee appointed by the Government of India in 1964 to suggest ways and means of improving financial returns from irrigation projects. The Committee had observed that losses on irrigation schemes were due to various reasons such as low water rates, inability or unwillingness to revise them, faulty planning, lack of ability to take follow up measures, bad water managem ent, *etc.* Its recommendations also included quinquennial revision of water rates for irrigation purpose in accordance with price changes. They opined that the losses of

irrigation projects should be contained within the stipulated limits. Expenditure on Irrigation schemes were reflected in the committed expenditure of the States.

However Finance Commissions have been projecting expenditure on operation and maintenance of irrigation schemes based on different norms for different types of schemes ever since the Sixth Finance Commission. The Ministry of Water Resources has also been consulted before firming up norms for expenditure on operation & maintenance of irrigation schemes. Detailed norms as suggested by the Union Government and adopted by the Finance Commissions are at **Table-2**.

Salient features of the approach of the Finance Commissions to non-plan revenue (operation and maintenance) expenditure on irrigation schemes may be summed up as follows:

- Non-Plan Revenue Receipts (user charges) and Non-Plan Revenue Expenditure (operation & maintenance expenses) were more or less not projected separately by the Finance Commissions up to the Fifth Finance Commission. NPRR and NPRE under irrigation would be subsumed respectively in the overall revenue receipts and expenditure of the respective States. It is observed that overall expenditures of the State Governments were projected by the successive Finance Commissions on the basis of requirements of the States during the next five years. Sixth Finance Commission onwards, Finance Commissions have been adopting normative approach as compared to demand-driven approach adopted by previous Commissions.
- The Sixth Commission took an in-depth view on the deterioration in net irrigation receipts and mounting irrigation arrears as also of losses suffered by the states on irrigation projects.
- All Finance Commissions have recognized the need for adequate expenditure on the maintenance of irrigation schemes and higher of the expenditure estimated normatively or budget estimates of the states have been adopted.
- Finance Commissions seem to have projected expenditure of respective State Governments on operation & maintenance of irrigation schemes on the assumption that it would adequately, if not fully, be met with corresponding revenue receipts or user charges.
- These projections have been worked out largely on the basis of norms obtained from Ministry of Irrigation/Water Resources [except for the Tenth Finance Commission where the norms were calculated on the basis of data regarding utilized and unutilized potential obtained from the Planning Commission and the norms assumed by the Commission].
- All the Finance Commissions have emphasized the need for correcting the huge gap between O&M expenditure and recovery of cost in the form of user charges. Finance Commissions have been of the view that if there is an increase in States' expenditure on maintenance, it should be matched with commensurate increase in revenue receipts entailing a lesser amount of burden on the budgetary resources.
- It has also been emphasized by the earlier Commissions that user charges should also cover interest on capital employed on the irrigation schemes. The underlying argument of the Commissions has been that the public sources of irrigation should be so manage d as to avoid losses when large number of agriculturists were incurring heavy costs in obtaining water from private sources.
- Different financial norms have been usually applied to major, medium irrigation and minor irrigation on the basis of area covered by the scheme (usually per hectare). Further, higher financial norms were applied to utilized potential as compared to unutilized potential. Other

aspects such as special repairs, establishment, etc are also taken care of by these norms. Further, adequate step-up is adopted for hilly states in view of cost differentials such as higher cost of materials. However, these States have been expected to recover cost of maintenance at the same rate as for the States in the plains.

#### Chapter 2

# Revenue Receipts and Expenditure of the State Governments under Irrigation – Twelfth Finance Commission vs. Actuals

This chapter gives a comparative picture of Non-Plan Revenue Receipts (NPRR) and Non-Plan Revenue Expenditure (NPRE) of States under Irrigation (major heads 2700, 2701 & 2702) as projected by the Twelfth Finance Commission with actual receipts and expenditure for the period from 2005-06 to 2009-10 (BE).

We have also studied the State-wise relative share of irrigation receipts in the total TRR, ONTR and NPRE (irrigation) in the total NPRE during the period 2005-06 to 2009-10 (BE). It is observed that share of NPRR under irrigation in the total own non tax revenue receipts of the States and that of NPRE (irrigation) in total NPRE have been insignificant for most of the states during the TFC award period. Against the all-states average at 0.31% in 2005-06, share of NPRR (irrigation) in total revenue receipts continued to be meager at 0.31% in 2006-07 and 0.36% in 2007-08. Its share in total own non tax revenue of all-states was 2.83% in 2005-06 which declined to 2.49% in 2006-07 but increased to 2.92% in 2007-08. Similarly, all states average of the share of NPRE under irrigation in total NPRE was 2.50% in 2006-07 and 2.78% in 2007-08 against 2.44% in 2005-06. Details of the se shares are given in *Tables 3 (a) to 3 (c)*. Contra-entries have, however, not been netted out from Total NPRE, NPRE (irrigation), Total NPRR, and NPRR (irrigation) made by the states during this period.

As regards irrigation receipts, successive Finance Commissions have underscored the need for higher recovery of O&M costs incurred on irrigation schemes. Tenth Finance Commission observed that irrigation receipts were quite insensitive to the very substantial gains in agricultural productivity in irrigated tracts. The Commission was of the opinion that irrigation receipts should cover not only O&M costs but also give a return of at least 1% per annum on capital employed. It was assumed that irrigation receipts would reach 100% of O&M costs by the terminal year, i.e., 1999-00 for the general category states and 75% for the special category states. The Eleventh Finance Commission also emphasized the need for reducing implicit subsidy for irrigation sector. However, irrigation receipts whichever was higher. The Twelfth Finance Commission spoke of commercial viability of irrigation projects and applied the progressive principle of recovery of current costs for projecting receipts for irrigation.

#### Norms adopted by the Twelfth Finance Commission

#### Maintenance of Irrigation Works

The Twelfth Finance Commission obtained norms for the maintenance of irrigation works (major heads 2701 and 2702) from the Ministry of Water Resources. The Ministry indicated normative expenditure requirements of Rs. 600 per hectare for utilized potential and Rs. 300 per hectare for unutilized potential for major and medium irrigation for the base year 2004-05 and Rs. 400 per hectare for utilized potential under minor irrigation.

The Commission decided to adopt the rates suggested by MOWR but for minor irrigation adopted a rate of Rs 300 per hectare for utilized potential while ignoring the unutilized potential for minor

irrigation. For special category states, a step up of 30% was applied to the maintenance norms as indicated by the Ministry.

For each state, the norm based estimates for 200405 were generated and compared with 200405 (BE), and the higher of the two values was adopted for the base year estimate. On the base year estimates, an annual rate of growth of 5% was applied to generate the projected values for the forecast period {*Table 4(a) and Table 4(b)*}.

## **Receipts from Irrigation**

Rate of Recovery (ROR) may be defined as the ratio of NPRR (irrigation) to NPRE (irrigation). As mentioned earlier, the Twelfth Finance Commission laid emphasis on the commercial viability of irrigation projects, the principle of progressively higher recovery of current costs was adopted for projecting receipts for irrigation. Irrigation receipts for 2004-05 (B.E.), which was adopted as the base year estimate, were 32.3% of the non-plan revenue expenditure (irrigation) for all states put together. This recovery rate was considered low by the Twelfth Finance Commission as maintenance of irrigation works would suffer without higher rates of cost recovery. Hence in the assessment of receipts, cost recovery rates of 50% in 2005-06, 60% in 2006-07, 70% in 2007-08, 80% in 2008-09 and 90% in 2009-10, were progressively adopted (*Table 5*). The Eleventh finance Commission (EFC) had, however, estimated non-plan revenue receipts for irrigation by comparing TGR based estimates to budget estimates of the respective states and adopting higher of the two. Further EFC applied growth rate of 25% per annum to all types of user charges including irrigation receipts. This step-up was built in with a view to reducing implicit subsidies provided in the state budgets.

Comparison of NPRR and NPRE under Irrigation (MH 2701 & 2702) as projected by the Twelfth Finance Commission with actual receipts and expenditure for the period from 2005-06 to 2007-08 and 2008-09 (RE) and 2009-10 (BE) is indicated in:

- Table 6(a) for total non-plan revenue expenditure under irrigation;
- Table 7(a) for NPRE for major and medium irrigation works;
- Table 8(a) for NPRE expenditure for minor irrigation works; and
- Table 9(a) for NPRR under irrigation.
- **Tables 6(b)**, **7(b)**, **8(b)** and **9(b)** correspond to the percentage deviation of the actual values from the projected.
- *Table 10* for Rate of Recovery (ROR).

After accounting for contra-entries received from the states which were made in MH 2700, 2701 and 2702 in their respective budgets during the TFC period, year-wise and state-wise NPRE for irrigation for the TFC period has been compared with corresponding TFC projections and is presented in the *Table-6 (a) to 8(b)*. Huge deviations in expenditure from TFC projections are mainly seen in 2008-09 and 2009-10. However, figures for 2008-09 and 2009-10 pertain to RE and BE respectively. Whereas, Himachal Pradesh, Jharkhand and Maharashtra have far exceeded the TFC projection NPRE during the TF period, Karnataka spent much less than projected expenditure during the TFC period. It is also seen that barring a few states, NPRE for minor irrigation fell short of corresponding TFC projections for most of the states during the TFC award period. Therefore, excess of expenditure on irrigation vis-s-vis TFC projections is mainly on account of O&M expenditure on MMI.

No state has been able to recover O&M expenditure as per TFC norms except for Chhattisgarh, Gujarat and Maharashtra during the TFC award period. These 3 states have mainly benefited from large receipts on account of commercial supply of water. All-states combined recovery has ranged between 24% and 33% less than the TFC projected recovery in terms of NPRR under irrigation. State-wise details are given in *Table-9(a) and 9(b)*. Accordingly Rate of Recovery of O&M costs has suffered and combined recovery for all states is estimated at 23.94% in 2009-10 (BE) against the TFC projected ROR of 90% of NPRE (irrigation) in 2009-10. State-wise details are given in *Table-10*.

## Chapter 3

#### Projections of NPRE under irrigation for 2010-11 to 2014 15

## On the basis of Inflation adjusted Norms of TFC:

The Twelfth Finance Commission obtained norms for the maintenance of irrigation works from the Ministry of Water Resources. Normative expenditure requirements of Rs. 600 per hectare for utilized potential and Rs. 300 per hectare for unutilized potential for major and medium irrigation for the base year 2004-05 were indicated. For minor irrigation, the Twelfth Finance Commission decided to adopt a rate of Rs. 300 per hectare for utilized potential and ignore the unutilized potential for minor irrigation. For special category states, a step up of 30% was applied to the maintenance norms as indicated by the Ministry.

By applying the rates of inflation, the norms adopted by the TFC have been adjusted for inflation for the year 2009-10, the base year for the Thirteenth Finance Commission. Inflation adjusted norms are worked out separately for special and general category states as under:

Year	Rate of Inflation (%)
2005-06	4.1
2006-07	5.6
2007-08	4.1
2008-09	8.4
2009-10	4.0

Following rates of inflation for the years 2006-10 have been used:

Rate of inflation for years from 2004-05 to 2007-08 have been taken from Economic Survey 2008-09 and for the years 2008-09 and 2009-10 from the Union Budget 2009-10 (Interim).

			(Rupees per ha)
Type of Irrigation	2004- 05	2009-10 (General Category)	2009-10 (Special Category)
Major and Medium			
Utilized Potential	600	774	1006
Unutilized Potential	300	387	503
Minor			
Utilized Potential	300	387	503

*Table 11* represents the data for Irrigation Potential by the end of 2006-07.

Inflation-adjusted norms have been applied to the irrigation potential in 2006-07 to estimate NPRE for the base year 2009-10. *Table 12* represents these estimates. Based on Irrigation Potential

Created (IPC) and Irrigation Potential Utilized (IPU) in 2006-07 provided by the Ministry of Water Resources and applying 5% annual growth rate on these estimates, State-wise NPRE is projected for the period from 2010-11 to 2014-15 in the similar manner as done by the Twelfth Finance Commission (*Table 13*)

*Table 14* shows a comparison between the inflation-adjusted estimates for 2009-10, 2009-10 (BE) of the States for NPRE (Irrigation) and NPRE for 2009-10 as projected by the Twelfth Finance Commission.

# On the basis of norms provided by the Ministry of Water Resources to Thirteenth Finance Commission.

The Ministry of Water Resources has suggested following norms for the operation & maintenance (O&M) expenditure on the irrigations schemes to the Commission:

- a. Funding norm for Major and Medium Surface (gravity) flow projects at Rs.1500 per hectare and for Lift irrigation schemes at Rs. 3000 per hectare for utilized potential. For unutilized potential, 50% of the norms may be adopted.
- b. 2/3<sup>rd</sup> of the above norms for Minor Irrigation (gravity and Lift) schemes, for utilized and unutilized potential.
- c. 60% enhancement of these norms may be adopted for hilly and special category states.
- d. Out of the above norms, 20% of funds may be earmarked for O&M of headwork.
- e. Ceiling of establishment component may be of the order of 40% of O&M funds.
- f. Additional funds for special repairs may be provided @ 20% of O&M norms in the first year which could be gradually reduced to 5% in the fifth year.

In addition, the Ministry has suggested that:

- a. As there is a wide gap between the revenue realized and the O&M expenditure, it is desirable that the States are encouraged to set up Water Regulatory Authorities to ensure equitable and optimum distribution to various sectors. Central Assistance for O&M should be linked with the setting up of regulatory authorities.
- b. Special grants for Extension, Renovation & Modernization (ERM) schemes to stabilize the system for better utilization of created potential may be considered.
- c. The Union Government may consider a scheme for central assistance for providing annual maintenance costs of projects to the State Governments.

It may be seen that the Ministry of Water Resources has suggested to the Finance Commission for the first **i**me O&M norms separately for surface and for lift irrigation schemes. However, the Ministry has provided breakup of the details of irrigation potential into surface and lift irrigation schemes only for two States, *viz.*, Himachal Pradesh and Orissa. Further this in these breakups have been received from the concerned State governments and forwarded to the Thirteenth Finance Commission. Due to lack of information for all States, reliability of the data and validation of the information, it would be difficult to adopt this criterion.

It is evident that these norms are on a very high side. Even the norms adopted by the TFC for the base year 2004-05 when adjusted for inflation for the year 2009-10 which would be the base year for the Thirteenth Finance Commission, are worked out at Rs. 774 and Rs.384 per hectare for the

utilized potential of major & medium and minor irrigation scheme respectively. Further 60% step-up for the special category states also appears to be on a higher side, on the one hand, and would not correspond to the absorptive capacity of these states, on the other. In order to work out O&M expenditure of the States on irrigation schemes, we have, therefore, suggest ed the following norms based on the inputs suggested by the Ministry of Water Resources to the Thirteenth Finance Commission (ThFC) to be reached by the terminal year of the award period of the ThFC:

- a. Rs.1500 per hectare for the utilized potential of major & medium projects. For unutilized potential, 50% of the se norms.
- b. Rs.750 for utilized potential of minor irrigation schemes. The unutilized potential of the minor irrigation schemes has been ignored, as in previous Commission.
- c. 30% step-up of these norms for special category states.

Since it was assumed that the MOWR suggested expenditure norm of Rs.1500 per ha for the utilized potential of MMI would be achieved by the terminal year of the Thirteenth Finance Commission, this would work out to Rs.1175.29 per ha for MMI for the base year, i.e., 2009-10 by applying a discount rate of 5% per annum. These norms were applied to **\$**ate-wise irrigation potential at the end of Tenth Plan to generate NPRE of the States separately under MH 2700/2701 (MMI) and 2702 (MI) for the base year, *i.e.*, 2009-10. These figures were compared with NPRE provided under MH 2700/2701 and 2702 in 2009-10 (BE) net of contra-entries of the respective states and higher of the two were adopted to estimate state-wise NPRE under irrigation in 2009-10. In order to make projections for the Thirteenth Finance Commission award period, 5% per annum growth rate has been applied to take care of inflation. Whereas projection of state-wise total NPRE under MH 2700/2701 is given in *Table 15(a)*, projected NPRE under MH 2700/2701 (MMI) and MH 2702 (MI) is indicated in *Table 15(b*) and *15(c)* respectively.

## Chapter-4 Suggestions on Receipts

# Norms proposed for the projection for irrigation receipts for the Thirteenth Finance Commission award period

We have estimated and proposed the projections for Non-Plan Revenue Expenditure (NPRE) under irrigation (under major heads 2700, 2701 & 2702) in the foregoing chapter. These projections are largely based on the norms for operation & maintenance (O&M) expenditure on the irrigation schemes suggested by the Ministry of Water Resources. In this chapter, we would examine the desired levels of non-plan revenue receipts (NPPRR) for irrigation (under major heads 700, 701 & 702) against the projected levels of NPRE for the Thirteenth Finance Commission award period.

As has been already pointed out in Chapter-1 that successive Finance Commissions have recognized irrigation as a source of revenue to the State Governments, other public bodies like Nijalingappa Committee (1964), Second Irrigation Commission (1972), Vaidyanathan Committee (1991) etc have also emphasized the need for improving financial returns from irrigation projects which are mainly due to various reasons such as low water rates, inability or unwillingness to revise them, faulty planning, lack of ability to take follow up measures, bad water management, *etc.* It may also be pointed out that a committee of officials set up by Planning Commission as a sequel to Vaidyanathan Committee Report, had suggested that irrigation charges be raised in a phased manner over a period of five years taking into account inflation also to cover full O&M costs. It also suggested that some provision should be built up in the system to take care of inflation. An important observation of the Committee was the need to evolve some regulatory mechanism with powers to regulate fixation of water charges by the States as in the telecommunication and power sectors. The National Water Policy, 2002 embodies the recommendations of Vaidyanathan Committee highlighting that the water charges should be fixed in such a way so as to cover at least maintenance and operation costs initially and a part of the capital cost subsequently.

The National Conference of Water Resources and Irrigation Ministers in its 12<sup>th</sup> meeting held in February, 2003 decided that the states would be urged to progressively rationalize the water rates and improve collection of water charges by linking them with agricultural support price. Disagreeing to a uniform formula of water pricing for the entire country, the Conference had resolved to recommend setting up of an independent State Regulatory Authority for rationalization of water rates by each States.

TFC had observed that irrigation receipts for 2004-05 (BE), which was adopted as the base year estimate, were 32.3% of the non-plan revenue expenditure on irrigation for all states put together. This rate of recovery was considered low as maintenance of irrigation works would suffer without higher rates of cost recovery. Emphasizing the commercial viability of irrigation projects, TFC adopted the principle of progressive recovery of current costs for projecting receipts for irrigation. In the assessment of irrigation receipts, TFC applied progressive cost recovery rates of 50% in 2005-06, 60% in 2006-07, 70% in 2007-08, 80% in 2008-09 and 90% in 2009-10.

We have worked out year-wise and state-wise ROR for the states during the TFC period. While ROR for these states together stood at 26.2% in 2005-06, it increased to 26.9% in 2006-07 and further

increased to 32.5% in 2007-08. However, it has declined to 25.36% in 2008-09 (RE) and further to 23.94% in 2009-10 (BE). It is felt that ROR of 23.94% in 2009-10 (BE) is low. Presuming that ROR for all the states together would progressively go up and given the need for ensuring commercial viability of irrigation projects as in the Twelfth Finance Commission, it is proposed that the states should be advised to ensure progressively higher recovery of current costs. Thus rate of progressively higher recovery at 25%, 35%, 45% and 60% and 75% of NPRE in 2010-11, 2011-12, 2012-13, 2013-14 and 2014-15 respectively should be incorporated in the assessment of receipts

Water charges are fixed and administered by the respective states. The objective of proposed projection for NPRR (irrigation) through ROR is to address the TOR relating to ensuring the commercial viability of irrigation projects. User charges for irrigation are crop-specific in the country and switching over to volumetric pricing for irrigation water appears a remote possibility on account of adequate infrastructure for measurement, lack of political will etc. Crop-specific water charges do not promote efficient use of water. However, we have no other mechanism to capture recovery of water charges. Given the availability of reliable information, there appear no other criteria but to project NPRR (irrigation) in such a way as to at least recover the recurring O&M costs (NPRE for irrigation) in progressively increasing rates.

## Chapter-5 Water Users Associations in India

The problems of irrigation systems in India often arise due to the absence of proper mechanisms for conservation, distribution and efficient use than the absolute shortage of water. Earlier approaches to irrigation development were based on the assumption that a combination of correct technology, efficient markets, and capable agencies or government departments would yield best possible results. These approaches were found ineffective in the absence of decentralization and devolution of powers to the users.

The central and state governments of independent India inherited the idea that most of the water rights belong to the State. But this ideology has been transformed in recent years and many State governments have adopted the principle of Participatory Irrigation Management (PIM). Command Area Development (CAD) programme, operational since 1973, became the major effort towards improving water use efficiency and productivity of irrigated agriculture. During the second half of 1990s, number of States in India transferred, at least in principle, the irrigation management responsibilities to WUAs, NGOs or private contractors. So far 13 states have either enacted PIM acts or amended existing irrigation acts to introduce PIM. More states are in the process of drafting/enacting PIM acts. States of Andhra Pradesh, Bihar, Goa, Karnataka, Madhya Pradesh, Maharashtra, Orissa, Rajasthan, Tamil Nadu and Kerala have either enacted exclusive legislation or amended their Irrigation Acts for involvement of farmers in irrigation management. Gujarat had experimented with the idea of farmers' cooperative movement in irrigation management and is in the process of enacting act for Participatory Irrigation Management (PIM). In most of the cases, full transfer of powers has been envisaged so far as responsibilities such as O&M, water distribution, fee collection, etc are concerned. For instance, the Maharashtra Management of Irrigation System Farmers (MMISF) Act, 2005 provides for the transfer of irrigation system management to WUAs and includes bulk supply and volumetric charging of irrigation water to WUAs as per their water entitlements. It is now widely recognized that appropriate institutional arrangements involving farmers and other stakeholders is critical for sustainable water resource management. The main objectives of PIM are as under:

- a. To create a sense of ownership of water resources and the irrigation system among the users, so as to promote economy in water use and preservation of the system.
- b. To improve service delivery through better operation and maintenance.
- c. To achieve optimum utilization of available resource through sophisticated deliveries, precisely as per crop needs.
- d. To achieve equity in water distribution.
- e. To increase production per unit of water where water is scarce and to increase production per unit of land where water is adequate.
- f. To make best use of natural precipitation and ground water in conjunction with flow irrigation for increasing irrigation and cropping intensity.
- g. To facilitate the users to have a choice of crops,
- h. To encourage collective and community responsibility on the farmers to collect water charges and payment to Irrigation Agency.
- i. To create healthy atmosphere between the Irrigation Agency personnel and the users.

Role of farmers' organizations in irrigation management and agricultural development is being recognized as a social system that ultimately would determine how productively the water flowing through the irrigation system be managed. These social systems may be traditional forms of farmer organization or more contemporary forms such as the Water Users' Associations (WUAs). There is broad consensus that this has been a step in the right direction and need be pursued more vigorously with genuine empowerment of WUAs. The objective should be to cover the entire command of all major and medium projects with WUAs by the end of the Eleventh Plan. The experience across States has, however, been uneven. It is reported that 55501 users associations had been created by the end of Tenth Plan. State-wise position of existing WUAs is indicated in *Table - 16*.

Viable WUAs need to have the ability to generate sufficient revenue to properly operate and maintain their irrigation system as well as cover the costs of their office and any emergency expenses that may arise from time to time. Many countries have irrigation systems similar to those found in India in terms of technology and size. In order to properly operate and maintain irrigation infrastructure of this type, there is a minimum service fee (or minimum water charges to be collected from WUAs/individuals) that is required. As per a World Bank Paper, for most WUAs, minimum service fee normally varies from US\$25 to US\$100 per ha in India. State Governments often ignore this fact and establish irrigation service fee (water charges) as a political policy, but the long-term result of these policies is rapid degrading of the irrigation infrastructure and a decline in efficiency of the system.

The historic revenue system with revenue officers assessing water charges and Panchayat Secretaries or Patwaris or Irrigation Departments or others being responsible for collection pass the water charges into government stream to finally end up in the treasury. This system makes it difficult to establish active WUAs. The real O&M costs of the present systems far exceed what is actually collected and deposited. This system also excludes WUAs from becoming involved in the operation and maintenance of irrigation systems and encouraging the members of WUAs to pay water charges sincerely.

Water charges in India do not reflect cost of operating and maintaining the irrigation infrastructure. Further charges so collected are typically deposited in the state government accounts rather than being retained at irrigation service area and used directly for O&M expenditure. Water charges are not only too low but users are also not allowed to participate meaningfully in the operation and maintenance of irrigation systems. Further the Government does not provide sufficient funds for maintaining the vast irrigation systems in the country. States have different systems for collecting and utilizing the water charges. The status in Uttar Pradesh, Andhra Pradesh, and Maharashtra is briefly summarized in *Table-17.* 

A suggested model of powers and functions that may be agreed to be transferred to WUAs is as under:

- (a) To levy water charges at levels not below the prevailing government rates;
- (b) To collect water charges from individual members;
- (c) To apply the revenue collected from O&M or betterment of the system;

- (d) To recommend crops to individual members, and determine allocation of water accordingly;
- (e) To maintain physical structures within their area of jurisdiction; and
- (f) To set rules of operation of gates and to operate them.

#### Chapter-6

#### The role of an autonomous State Water Resources Tariff Regulatory Commission.

The following major problems are associated with the pricing and distribution of water in the country:

- i. Large number of incomplete irrigation projects and inadequate funds for their completion.
- ii. Injudicious inter-sectoral and intra-sectoral distribution of water amongst various categories of water users;
- iii. Fragmented approach to water resources planning and development;
- iv. Low water use efficiency;
- v. Reluctance of State Governments to revise water user charges; and
- vi. Meagre recovery of O&M costs.

An autonomous institution at the State level could help to review and monitor water sector costs and revenues and to set rationalized bulk water user fees to enable the sector to move towards financial self-sustainability. Such an institution would have to function under an appropriate enabling legislation of the State Government and work as a regulator on the lines of other sector regulators such as the State Electricity Regulatory Commission.

It is seen that not many countries of the world have made a progress in setting up independent water regulatory agencies to deal with regulatory aspect of water resources. A study conducted by the Institute of Water Policy, Singapore has brought out the fact that while only 20% of the developed countries, for which the data was available, have set up independent water regulatory agencies, this stood at 21% for the developing countries. Therefore, the concept of independent water resources regulatory authority is at the nascent stage for the world as a whole as well.

In India, the concept of Water Resource Regulator has mainly been introduced through World Bank assisted irrigation projects across selected states. Typically, the Project Agreements included a clause requiring the recipient state government to set up a Water Regulatory Authority by a stipulated date. For instance the state government of Maharashtra legislated the Maharashtra Water Resources Regulatory Act, 2005 while the Maharashtra Water Sector Improvement Project was being negotiated in the year 2005. A project component of USD 21.11 million earmarked for water sector institutional restructuring and capacity building supported, inter alia, the establishment and operationalization of the Maharashtra Water Resources Regulatory Authority. Also the covenant for the World Bank Madhya Pradesh Water Sector Restructuring Project (2004) requires the Government of Madhya Pradesh to prepare and submit for consideration for adoption of appropriate draft enabling legislation for the establishment of an autonomous State Water Tariff Regulatory Commission to review and monitor water sector costs and revenues and for rationalised setting of bulk user fees to enable water sector operations to be financially viable.

#### The Maharashtra Water Resources Regulatory Authority

Maharashtra has taken the lead in establishing such an autonomous institution.

The state government initiated a number of administrative and legal reforms which constitute broadly 'water sector reforms'. These include formulation of a comprehensive State Water Policy in 2003, implementation of a Water Sector Improvement Project to rehabilitate 286 irrigation projects and the enactment, in March 2005, of two statutes, *viz.*, the Maharashtra Management of Irrigation Systems by Famers (MMISF) Act and the Maharashtra Water Resources Regulatory Authority (MWRRA) Act.

The MWRRA Act establishes a regulatory mechanism for overseeing the relationship between the service provider and water user entities and also within a water user entity, in terms of determination, enforcement and dispute resolution of entitlements and fixation of water charges. The Maharashtra Water Resources Regulatory Authority was established in August 2005 and became operational in mid-2006. The main functions of the Authority are summarized as follows:

- a. to determine, regulate and enforce the distribution of entitlement for various category of uses and the distribution of entitlement within each category of use;
- b. to establish a water tariff system for various categories of water used for stable and selfsustainable management of service delivery;
- c. to clear new projects in conformity with the Integrated State Water Plan, statutory and other obligations of interstate entitlement, and viability norms.

The Authority also performs some other functions such as special responsibility for removal of irrigation backlog as per Governor's directives, water management in periods of scarcity, issuing directives for enhancement and preservation of water quality and promotion of sound water conservation and management practices. It is also likely to be entrusted with the task of functioning as the State Ground Water Authority and to undertake fixing of downstream or retail tariff for municipalities and SEZs(amendments to the Maharashtra Act to this effect is likely soon). The Authority is also the appellate body for the settlement of disputes relating to entitlement.

The progress made by the Authority is summarized below:

- a. Six pilot projects were initially selected in 2006-07 for determining 'entitlement' on the basis of volumetric supply to Water User Associations (WUAs) for management by themselves. Number of pilot projects for the determination of volumetric entitlement went up to 20 in 2007-08 and further to about 60 in 2008-09. The concept of 'entitlement' would become fully operational once WUAs have been equipped with measuring devices for volumetric measurement, calculation of entitlements completed, fixation of rotation programme and irrigation passes issued to farmers by WUA and the WUAs have taken over in their respective systems.
- b. The Authority has taken up the preparation of regulations for full recovery of O&M cost through bulk water tariff envisaged for collection from various categories of users. The Approach Paper will be discussed with stakeholders before finalizing the regulations. The Authority expects to have the regulations finalized and issue the first tariff order shortly.
- c. River Basin Agencies are preparing the Integrated State Water Plan approved by the State Water Board and State Water Council. Preparation of the sub basin plan for Godavari basin has already been taken up. Meanwhile, the Authority has already started receiving and clearing irrigation projects. As many as 47 minor and 13 medium projects have so far been cleared by the Authority.
- d. One of the Members will also function as the State Ground Water Authority enacting ground water legislation. The Authority has also proposed that it be given the responsibility for fixing downstream or retail tariff for municipalities/SEZs *etc.* The amendments to the Act to undertake above functions have been identified and proposed for approval.
- e. The Authority is also working to gain experience through a consultative process. The Authority aims to achieve productivity, equity and sustainability in the water sector in the years to come so that the State could become a role model for water resources management in the country.
- f. An important role is envisaged for the Authority in the involvement the private players in the completion of pending irrigation projects through BOT.

#### 4. <u>Options</u>

The Maharashtra Act goes beyond a Tariff Regulatory Commission to setup an authority which not only clears new water resources project in conformity with the integrated State Water Plan, but also regulates and enforces the distribution of entitlement among various category of users and sets tariff

for such categories of water users. It also seems to have been entrusted with other executive functions such as ensuring that the irrigation backlog is removed from the relatively more backward regions of the States. In this process the regulatory authority seems to have taken on functions which really belong to the sphere of the executive in the form of the Water Resources Department. In the process of clearances, this system through the MWRRA adds another layer in the entire system of granting approvals for irrigation projects. The Maharashtra module appears to contain the seeds of likely conflict between the regulator and the executive arm of the Government i.e. the Department of Water Resources.

It is possible to envisage an independent Water Tariff Regulator Commission without burdening it with such duties as project clearance and ensuring removal of 'backlog' or other functions so that it focuses on setting water user fees in consultation with all stakeholders and monitoring water sector costs and revenues. The state governments should be encouraged to set up independent Water Regulatory Authority entrusted with the following regulatory functions:

a) fixing and regulating water tariff system and charges of surface and sub-surface water used for domestic, agriculture, industrial and other consumptive and non-consumptive purposes;

b) determining and regulating the distribution of entitlement for various categories of uses and distribution of entitlement within each category of use; and

c) periodically reviewing and monitoring of water sector costs and revenues.

## Chapter-7

## Possible Grants-in -aid for the maintenance of irrigation schemes

Para 1(i) of the Terms of Reference mandates the Thirteenth Finance Commission to recommend the principles which should govern the grants-in-aid of the revenues of the States out of the Consolidated Fund of India and the sums to be paid to the States which are in need of assistance by way of grants-in-aid of their revenues under article 275 of the Constitution for purposes other than those specified in the provisos to clause (1) of that article. These grants are, however, not defined. It has, therefore, been left to the discretion of the Finance Commission to recommend such grants for the purposes as it may deem appropriate.

Twelfth Finance Commission had, for the first time, recommended grants in-aid for better maintenance of certain specific capital assets over and above building in projections for maintenance expenditure on those capital assets in the overall non-plan revenue expenditure.

As stated in the introduction to the report of this study that ratio of IPU to IPC is progressively on decline since the First Plan, we had also discussed the issue with the Ministry of Water Resources. The Ministry is of the view that decline in the proportionate utilization of IPC is mainly on account of poor maintenance or neglect of maintenance of different irrigation schemes. The Ministry also supported providing grantsin-aid to the States for the maintenance of irrigation schemes. However, the Ministry observed that the establishment cost is abnormally high in most of the States which mainly consists of salaries. The Ministry emphasized the need for pruning of establishment cost and restricting establishment expenses within acceptable limits, say 40% of non plan revenue expenditure on irrigation.

For better management of irrigation schemes of the states, it is proposed that 25% of assessed normative expenditure may be recommended as grants in-aid for non-salary component of the non-plan revenue expenditure under major head 2700, 2701 & 2702. This amount is in addition to the normal expenditure, which the states would be incurring on maintenance of irrigation schemes. However, the states may be required to abide by the following conditions to avail of such grants:

- i. NPRE (irrigation) of the states should not be less than the Total NPRE for each year projected by the Thirteenth Finance Commission (as per Table-19);
- ii. The states should recover current cost of O&M in each year at least at the rate of recovery proposed in Chapter -4;
- iii. Set up independent Water Regulatory Authority by 2011-12 at least for the following regulatory functions:
  - a) to fix and regulate water tariff system and charges of surface and sub-surface water used for domestic, agriculture, industrial and other consumptive and non-consumptive purposes;
  - b) to determine and regulate the distribution of entitlement for various categories of uses and distribution of entitlement within each category of use; and
  - c) to periodically review and monitor the water sector costs and revenues.

Further, grants-in-aid for irrigation schemes are proposed for the last four years (i.e., 2011-12 to 2014-15) of the forecast period of the Thirteenth Finance Commission assuming that the states would take the first year (i.e., 2010-11) to prepare for absorbing these funds. Besides it would be desirable that the states encourage management of water resources by water users associations by appropriate legislative measures during the forecast period. We have detailed these conditions in the statement at **Annex**.

Since better maintenance of irrigation would lead to more utilization, need for formulating 'successive improvements in the use of IPC' as one of the conditionalities was also felt which could be reflected in improvement in IPU-IPC ratio. In order to examine year-wise and state-wise trends in the use of IPC, we took up the matter with the Ministry of Water Resources. The Ministry could not provide year-wise trends in cumulative IPC and IPU except at end of the years 1996-97, 2001-02 and 2006-07. State-wise figures on the cumulative IPC and IPU at the end of the years 1984-85, 1989-90 and 1991-92 were, therefore, taken from CWC which were available in their official website. Based on these figures, we have worked out state-wise IPU - IPC ratio for the years in respect of which figures were available with us and are given at Table-18. It may be seen that hough all-states IPU-IPC ratio is on decline, combined IPU-IPC ratio for the states has fluctuated for all the individual states from 1983-84 to 2006-07 except for two newly created states, viz., Jharkhand and Uttarakhand. Further we do not feel inclined to rely on the analysis of the figures in the light of conceptual limitations of IPC and IPU as pointed out in IIM studies which we had enumerated in the Introduction to this study as pointed out in the studies conducted recently by the IIMs. Moreover, state-wise figures on IPC and IPU are available only for the period ending Five Year Plans and not on annual basis. Thus we cannot monitor the trends in IPU-IPC ratio on yearly basis. In view of these limitations, it may not be possible to take annual improvements in IPU-IPC ratio as conditionality except for some benchmark utilization of irrigation potential. This could be reflected in certain proportionate improvement in the use of IPC for the states in 2011-12 (end of Eleventh Plan) that have fallen below the all-states average in 2006-07 while requiring the remaining states to maintain at least IPU-IPC ratio for 2006-07 by the end of Eleventh Plan. However, it may at best be formulated as a desirable condition only.

#### Conditionality for the release of grants-in -aid for maintenance of irrigation schemes (MH 2700, 2701 & 2702)

- 1 These grants should be spent only on non-salary maintenance items for public MMI and MI irrigation schemes.
- 2 These grants should be budgeted and spent for meeting the non-plan revenue expenditure only under the heads 2700, 2701 & 2702.
- 3 The grants may be allocated in two equal instalments in a financial year. While, there will be no pre-conditions for the release of the first instalment, the second instalment will be released on the fulfilment of the following sub-conditions for the total of NPRE under MH 2700, 2701 and 2702:

Year		Items*	Total of NPRR under MH 700, 701 and 702 to Total of NPRE under MH 2700, 2701 and 2702 should assume at least the following values under each of the sub-conditions:
0011 10	(a)	2011-12 (BE) should not be less than the projected Total NPRE for 2011-12.	35%
2011-12 -	(b)	2010-11 (RE) should not be less than the projected Normal NPRE for 2010-11 plus grants released in 2010-11.	25%
	(a)	2012-13 (BE) should not be less than the projected Total NPRE for 2012-13.	45%
2012-13 -	(b)	2010-11 (Actuals) should not be less than the Normal NPRE for 2010-11 plus grants released in 2010-11.	25%
	(a)	2013-14 (BE) should not be less than the projected Total NPRE for 2013-14.	60%
2013-14 -	(b)	2011-12 (Actuals) should not be less than the Normal NPRE for 2011-12 plus grants released in 2011-12.	35%
004445	(a)	2014-15 (BE) should not be less than the projected Total NPRE for 2014-15.	75%
2014-15 -	(b)	2012-13 (Actuals) should not be less than the Normal NPRE for 2012-13 plus grants released in 2012-13.	45%

\*Details of state-wise and year-wise projected Total NPRE, Normal NPRE and proposed grants-in-aid are given in the Table-19.

4. Grants should be released to only those states in the third year (i.e., 2012-13) which have set up statutory and independent water resources regulatory authority through appropriate legislation and notified all relevant provisions by 31<sup>st</sup> March 2012.

### **References and Source of Statistics**

- 1. Reports of the Finance Commissions from First to Thirteenth.
- 2. State Finance: Study of Budgets, RBI publication for relevant years.
- 3. Eleventh Five Year Plan Document.
- 4. National Water Policy, 2002.
- 5. Economic Survey 2007-08.
- 6. Union Budget 2009-10.
- 7. Information from the Ministry of Water Resources.
- 8. Note on Water Users Associations and Irrigation Service Fees, World Bank.
- 9. Official website of Ministry of Water Resources.
- 10. Research Report Water Management: Good Practices and Lessons Learned, Institute of Water Policy, Singapore.
- 11. Studying Gap between Irrigation Potential Created and Utilized in India, Final Report, November, 2008, Indian Institute of Ahmadabad, Kolkata, Bangalore, and Lucknow.

## Table – 1

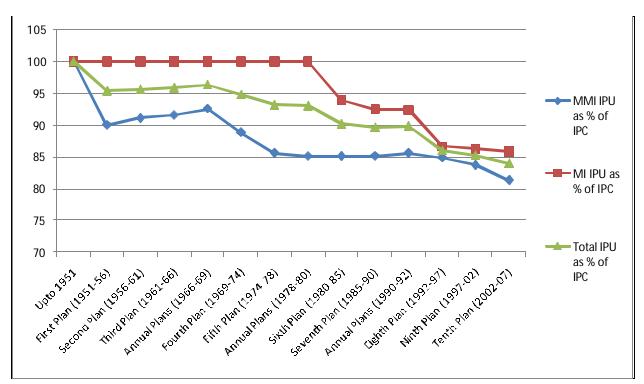
## Cumulative Irrigation Potential Created and Utilized during different Plan Periods

#### (in million hectares)

		MMI		MI Total					
Period	Created	Utilized	IPU as % of IPC	Created	Utilized	IPU as % of	Created	Utilized	IPU as % of
						IPC			IPC
Upto 1951	9.70	9.70	100.00	12.90	12.90	100.00	22.60	22.60	100.00
First Plan (1951-56)	12.20	10.98	90.00	14.06	14.06	100.00	26.26	25.04	95.35
Second Plan (1956-61)	14.33	13.05	91.07	14.75	14.75	100.00	29.08	27.80	95.60
Third Plan (1961-66)	16.57	15.17	91.55	17.00	17.00	100.00	33.57	32.17	95.83
Annual Plans (1966-69)	18.10	16.75	92.54	19.00	19.00	100.00	37.10	35.75	96.36
Fourth Plan (1969-74)	20.70	18.39	88.84	23.50	23.50	100.00	44.20	41.89	94.77
Fifth Plan (1974-78)	24.72	21.16	85.60	27.30	27.30	100.00	52.02	48.46	93.16
Annual Plans (1978-80)	26.61	22.64	85.08	30.00	30.00	100.00	56.61	52.64	92.99
Sixth Plan (1980-85)	27.70	23.57	85.09	37.52	35.25	93.95	65.22	58.82	90.19
Seventh Plan (1985-90)	29.92	25.47	85.13	46.61	43.12	92.51	76.53	68.59	89.62
Annual Plans (1990-92)	30.74	26.31	85.59	50.35	46.54	92.43	81.09	72.85	89.84
Eighth Plan (1992-97)	32.90	27.90	84.82	53.27	46.16	86.66	86.15	74.04	85.96
Ninth Plan (1997-02)	37.05	31.01	83.70	56.90	49.05	86.20	93.95	80.06	85.22
Tenth Plan (2002-07)	42.28	34.38	81.32	60.42	51.87	85.85	102.70	86.25	83.98

Source: Ministry of Water Resources, Government of India.

## Trends in declining Irrigation Potential Utilized as percentage of Irrigation Potential Created



## Table 2

Finance ommission	Norms Suggested by the Union Ministry	Norms adopted by the Finance Commission
Sixth	Rs.10-12 per acre for maintenance.	Rs.10 per acre (Rs.24.71 per ha) for maintenance of irrigation works for al Government sources of irrigatior whether canals, tanks or Governmen wells including tubewells.
Seventh	gross irrigated area equals to pot ential created. (b) Grants for maintenance of canal inspection roads used for public purposes should be borne by the	Rs.50 per ha with addition of 20% thereof for special repairs including the cost of regular establishment and tools an plant. For Andhra Pradesh, Kerala and Orissa, the Commission, howeve adopted a norm of Rs.45 per ha. Presumed that 2/3 <sup>rd</sup> of the potential to be created would be utilized. For that provision for working expenses at Rs.4 per ha of gross irrigated area provided.
Eighth	<b>3 3</b>	Provided a consolidated amount of Rs.100 per ha of gross irrigated area for maintenance including normal repair special repairs and regular establishment In addition, provided funds at Rs.30 per ha for the maintenance of the unutilize potential existing at the end of 1983-84. For hill states these norms increased b 30 % to provide for cost disabilities compared to the cost in plains.

	<ol> <li>Regular maintenance of canals be financed separately. Based on typical studios carried out by the Central Water Commission a provision at Rs.50/- per hectare of irrigated area may be made till more data become available from States.</li> <li>The States should also review and revise upwards their water rates with regular periodicity to ensure that the costs of O&amp;M are met fully and a return on capital investment of at least 1% is realized.</li> </ol>	
Ninth	per ha for the maintenance of utilized potential plus Rs.65 per ha for regular establishment and Rs.36 per ha for special repairs). Unutilized Potential: Rs.60 per ha. Suggested maintenance expenditure	Utilized Potential: Rs.180 per ha. Unutilized Potential: Rs.60 per ha. Provided for a price increase at the rate of 5 per cent per annum. Normative expenditure level has been projected to be reached in a graduated manner by the end of the Commission period. For hill states, norms for maintenance expenditure raised by 30% and receipts expected to cover the normal
Tenth		<ul> <li>Expediture only.</li> <li>Major and Medium: Rs.300 per ha for the utilized potential and Rs.100 per ha for the unutilized potential.</li> <li>Minor: Rs.150 per ha for utilized potential.</li> <li>Minor: Rs.150 per ha for utilized potential.</li> <li>For hilly States, a step up of 30% applied on the norms.</li> </ul>
Eleventh	<ul> <li>Major and Medium: Rs.450 per ha for maintenance of unutilized potential and Rs.150 per ha for unutilized potential.</li> <li>Minor: Rs.225 per ha for utilized and Rs.75 per ha for unutilized potential.</li> <li>Additionally, Rs.300 per ha for special repairs of existing irrigation systems; and Step-up by 30% for maintenance of</li> </ul>	<ul> <li>Major and Medium: Rs.450 per ha for maintenance of utilized potential and Rs.150 per ha for unutilized potential.</li> <li>Minor: Rs.225 per ha for the utilized potential.</li> <li>Additional provision of 30% made for the hilly States to adjust for the cost differentials for maintenance.</li> </ul>

	utilized potential in the hill States.	An increment of 5% per annum provided to take care of possible price increase.
Twelfth	Major & Medium: Rs.600 per ha for utilized potential and Rs.300 per ha for unutilized potential of major and medium irrigation projects in the base year 2004-05. Minor: Rs.400 per ha in 2004-05 for utilized potential. For special category states, a step up of 30 per cent applied on the maintenance norms.	Major & Medium: Rs.600 per ha for utilized potential and Rs.300 per ha for unutilized potential. Minor: Half of those for major and medium projects. Adopted a rate of Rs.300 per hectare in 2004-05 for utilized potential of minor irrigation. Ignore the unutilized potential of minor irrigation works as being insignificant. For special category states, a step up of 30 per cent applied on the norms. On the base year estimates so worked out, 5 per cent annual rate of growth applied to generate projected levels in the forecast period.

S.No.	State	2005-06	2006-07	2007-08	2008-09 (RE)	2009-10 (BE)
1	Andhra Pradesh	1.06	1.09	0.63	0.93	0.72
2	Arunachal Pradesh	0.01	0.01	0.00	0.00	0.00
3	Assam	0.03	0.03	0.03	0.05	0.04
4	Bihar	2.46	2.80	5.14	2.61	2.23
5	Chhattisgarh	3.80	7.95	6.17	8.47	6.78
6	Goa	1.55	0.40	0.40	0.76	0.81
7	Gujarat	7.55	6.83	10.05	10.89	10.54
8	Haryana	2.61	1.91	1.42	3.20	3.62
9	Himachal Pradesh	0.14	0.05	0.04	0.07	0.07
10	Jammu & Kashmir	0.55	0.54	0.74	0.36	0.35
11	Jharkhand	0.79	4.14	10.74	1.42	1.16
12	Karnataka	0.77	0.69	1.14	1.62	2.00
13	Kerala	0.68	0.72	0.59	0.65	0.61
14	Madhya Pradesh	1.69	1.46	1.86	2.07	1.77
15	Maharashtra	7.38	6.69	3.98	7.42	11.27
16	Manipur	2.68	4.37	5.31	4.92	5.03
17	Meghalaya	0.02	0.05	0.03	0.03	0.02
18	Mizoram	0.02	0.00	0.00	0.01	0.01
19	Nagaland	0.01	0.00	0.01	0.01	0.01
20	Orissa	2.86	2.09	1.83	3.34	4.02
21	Punjab	0.58	0.26	0.43	0.36	0.45
22	Rajasthan	2.38	2.21	1.76	2.33	1.66
23	Sikkim	0.03	0.02	0.01	0.01	0.01
24	Tamil Nadu	0.66	0.88	0.63	0.82	0.68
25	Tripura	0.47	0.27	0.08	0.23	0.20
26	Uttar Pradesh	6.78	2.78	6.07	2.75	2.96
27	Uttarakhand	1.10	1.06	1.37	1.60	0.84
28	West Bengal	2.39	2.07	1.80	0.59	1.32
	All States	2.83	2.49	2.92	2.90	3.10

# Revenue Receipts of Irrigation as % of Own Non Tax Revenue (ONTR)

Source : Finance Accounts and Budget documents of the respective states.

Table 3 (b)

S.No.	State	2005-06	2006-07	2007-08	2008-09 (RE)	2009-10 (BE)
1	Andhra Pradesh	0.14	0.16	0.08	0.11	0.12
2	Arunachal Pradesh	0.00	0.00	0.00	0.00	0.00
3	Assam	0.00	0.00	0.00	0.00	0.00
4	Bihar	0.07	0.06	0.10	0.03	0.03
5	Chhattisgarh	0.53	1.01	0.90	1.02	0.98
6	Goa	0.54	0.14	0.14	0.25	0.26
7	Gujarat	1.01	1.09	1.30	1.19	1.21
8	Haryana	0.46	0.49	0.37	0.56	0.58
9	Himachal Pradesh	0.01	0.01	0.01	0.01	0.01
10	Jammu & Kashmir	0.03	0.03	0.04	0.03	0.02
11	Jharkhand	0.13	0.52	1.43	0.19	0.20
12	Karnataka	0.10	0.07	0.09	0.07	0.09
13	Kerala	0.04	0.04	0.03	0.03	0.03
14	Madhya Pradesh	0.18	0.15	0.17	0.19	0.17
15	Maharashtra	0.90	0.81	0.85	0.94	1.05
16	Manipur	0.09	0.28	0.25	0.24	0.26
17	Meghalaya	0.00	0.00	0.00	0.00	0.00
18	Mizoram	0.00	0.00	0.00	0.00	0.00
19	Nagaland	0.00	0.00	0.00	0.00	0.00
20	Orissa	0.31	0.30	0.22	0.33	0.34
21	Punjab	0.16	0.10	0.12	0.11	0.10
22	Rajasthan	0.31	0.30	0.23	0.26	0.23
23	Sikkim	0.02	0.01	0.00	0.00	0.00
24	Tamil Nadu	0.05	0.07	0.04	0.08	0.04
25	Tripura	0.01	0.01	0.00	0.01	0.01
26	Uttar Pradesh	0.44	0.30	0.51	0.27	0.18
27	Uttarakhand	0.13	0.09	0.12	0.12	0.11
28	West Bengal	0.10	0.10	0.09	0.08	0.09
	All States	0.31	0.31	0.36	0.31	0.30

# Irrigation Revenue Receipts as % of Total Revenue Receipts

Source : Finance Accounts and Budget documents of the respective states.

Table 3 (c)

S.No.	State	2005-06	2006-07	2007-08	2008-09 (RE)	2009-10 (BE)
1	Andhra Pradesh	7.16	6.85	8.72	10.07	8.04
2	Arunachal Pradesh	0.70	0.75	1.41	0.42	1.45
3	Assam	1.62	1.72	1.71	1.65	1.49
4	Bihar	1.71	1.79	2.04	1.70	3.15
5	Chhattisgarh	1.42	1.52	1.40	1.09	1.25
6	Goa	1.00	0.95	0.99	0.76	0.93
7	Gujarat	1.37	1.62	1.43	1.34	1.14
8	Haryana	3.22	3.15	3.96	3.62	4.34
9	Himachal Pradesh	1.51	2.07	2.43	2.02	2.00
10	Jammu & Kashmir	1.19	1.59	1.50	1.61	1.70
11	Jharkhand	1.82	2.45	2.08	1.89	2.50
12	Karnataka	0.66	0.77	0.54	0.58	0.59
13	Kerala	1.27	0.92	1.11	0.98	1.03
14	Madhya Pradesh	1.51	1.49	1.60	1.38	1.38
15	Maharashtra	2.42	2.37	2.30	1.72	1.86
16	Manipur	1.21	0.77	0.71	0.61	2.03
17	Meghalaya	0.63	0.62	0.59	0.56	0.67
18	Mizoram	0.06	0.06	0.09	0.08	0.10
19	Nagaland	0.43	0.40	0.39	0.39	0.44
20	Orissa	1.31	1.27	1.73	1.67	1.55
21	Punjab	3.18	2.68	2.34	2.52	2.44
22	Rajasthan	4.76	4.44	4.15	3.91	3.67
23	Sikkim	0.09	0.08	0.07	0.08	0.09
24	Tamil Nadu	1.78	1.77	1.73	1.37	1.37
25	Tripura	0.88	0.58	0.44	0.66	0.78
26	Uttar Pradesh	2.76	3.51	3.80	4.20	3.73
27	Uttarakhand	3.65	3.10	3.01	3.60	2.58
28	West Bengal	1.61	1.68	1.47	1.23	1.51
	All States	2.44	2.50	2.71	2.62	2.59

# Expenditure on Irrigation as % of Non Plan Revenue Expenditure

Source : Finance Accounts and Budget documents of the respective states.

# Table 4 (a)

						(Rs. Crore)
State	2005-06	2006-07	2007-08	2008-09	2009-10	Total
Andhra Pradesh	197.53	207.41	217.78	228.67	240.10	1091.49
Arunachal Pradesh	0.00	0.00	0.00	0.00	0.00	0.00
Assam	39.95	41.95	44.04	46.25	48.56	220.75
Bihar	178.29	187.21	196.57	206.40	216.72	985.19
Chhattisgarh	59.29	62.25	65.37	68.63	72.07	327.61
Goa	7.25	7.62	8.00	8.40	8.82	40.09
Gujarat	201.13	211.18	221.74	232.83	244.47	1111.35
Haryana	226.57	237.90	249.79	262.28	275.40	1251.94
Himachal Pradesh	2.26	2.37	2.49	2.61	2.74	12.47
Jammu & Kashmir	14.12	14.83	15.57	16.34	17.16	78.02
Jharkhand	17.75	18.64	19.57	20.55	21.58	98.09
Karnataka	122.03	128.13	134.53	141.26	148.32	674.27
Kerala	87.35	91.71	96.30	101.11	106.17	482.64
Madhya Pradesh	178.48	187.41	196.78	206.62	216.95	986.24
Maharashtra	158.20	166.11	174.42	183.14	192.30	874.17
Manipur	18.88	19.82	20.81	21.85	22.95	104.31
Meghalaya	0.00	0.00	0.00	0.00	0.00	0.00
Mizoram	0.00	0.00	0.00	0.00	0.00	0.00
Nagaland	0.00	0.00	0.00	0.00	0.00	0.00
Orissa	113.71	119.40	125.37	131.64	138.22	628.34
Punjab	331.92	348.52	365.94	384.24	403.45	1834.07
Rajasthan	156.38	172.83	191.39	204.70	218.99	944.29
Sikkim	0.00	0.00	0.00	0.00	0.00	0.00
Tamil Nadu	129.41	135.88	142.67	149.81	157.30	715.07
Tripura	0.38	0.40	0.42	0.44	0.46	2.10
Uttar Pradesh	432.14	453.75	476.43	500.26	525.27	2387.85
Uttarakhand	129.97	136.47	143.30	150.46	157.98	718.18
West Bengal	141.06	148.11	155.51	163.29	171.45	779.42
All States	2944.05	3099.89	3264.80	3431.79	3607.43	16347.96

Maintenance Expenditure Provided for Major and Medium Irrigation (MH 2701) (Rs. Crore)

Maintenance Expenditure Provided for Minor Irrigation (MH 2702)
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Waintenance Expenditure Provided for Minor Irrigation (WH 2702) (Rs. Cr								
	2005-06	2006-07	2007-08	2008-09	2009-10	Total		
Andhra Pradesh	87.61	91.99	96.59	101.42	106.49	484.10		
Arunachal Pradesh	6.10	6.41	6.73	7.06	7.42	33.72		
Assam	111.62	117.20	123.06	129.22	135.68	616.78		
Bihar	118.42	124.34	130.56	137.09	143.94	654.35		
Chhattisgarh	10.17	10.68	11.21	11.77	12.36	56.19		
Goa	6.23	6.54	6.87	7.21	7.57	34.42		
Gujarat	62.41	65.53	68.81	72.25	75.86	344.86		
Haryana	49.71	52.20	54.81	57.55	60.42	274.69		
Himachal Pradesh	56.59	59.42	62.39	65.51	68.78	312.69		
Jammu & Kashmir	75.48	79.26	83.22	87.38	91.75	417.09		
Jharkhand	23.36	24.53	25.76	27.05	28.40	129.10		
Karnataka	125.61	131.89	138.48	145.41	152.68	694.07		
Kerala	107.86	113.25	118.91	124.86	131.10	595.98		
Madhya Pradesh	67.71	71.09	74.65	78.38	82.30	374.13		
Maharashtra	139.24	146.20	153.51	161.19	169.25	769.39		
Manipur	6.88	7.22	7.59	7.96	8.36	38.01		
Meghalaya	7.08	7.44	7.81	8.20	8.61	39.14		
Mizoram	0.79	0.83	0.88	0.92	0.97	4.39		
Nagaland	6.99	7.34	7.71	8.09	8.50	38.63		
Orissa	42.13	44.24	46.45	48.77	51.21	232.80		
Punjab	117.72	123.61	129.79	136.28	143.09	650.49		
Rajasthan	74.40	78.12	82.02	86.13	90.43	411.10		
Sikkim	1.38	1.45	1.52	1.60	1.68	7.63		
Tamil Nadu	66.76	70.10	73.61	77.29	81.15	368.91		
Tripura	17.91	18.80	19.74	20.73	21.76	98.94		
Uttar Pradesh	544.31	571.52	600.10	630.10	661.61	3007.64		
Uttarakhand	32.18	33.79	35.48	37.26	39.12	177.83		
West Bengal	252.86	265.50	278.78	292.72	307.35	1397.21		
All States	2219.51	2330.49	2447.04	2569.40	2697.84	12264.28		

# Table 5

Total Projected Receipts from Irrigation as per TFC

	(Rs. Cru								
	2005-06	2006-07	2007-08	2008-09	2009-10	Total			
Andhra Pradesh	142.57	179.64	220.06	264.07	311.93	1118.27			
Arunachal Pradesh	3.05	3.85	4.71	5.65	6.68	23.93			
Assam	75.79	95.49	116.97	140.38	165.82	594.44			
Bihar	148.36	186.93	228.99	274.79	324.59	1163.66			
Chhattisgarh	34.73	43.76	53.61	64.32	75.99	272.40			
Goa	6.74	8.50	10.41	12.49	14.75	52.88			
Gujarat	131.77	166.03	203.39	244.06	288.30	1033.54			
Haryana	138.14	174.06	213.22	255.86	302.24	1083.52			
Himachal Pradesh	29.43	37.07	45.42	54.50	64.37	230.78			
Jammu & Kashmir	44.80	56.45	69.15	82.98	98.02	351.40			
Jharkhand	20.56	25.90	31.73	38.08	44.98	161.25			
Karnataka	123.82	156.01	191.11	229.34	270.90	971.18			
Kerala	97.61	122.98	150.65	180.78	213.54	765.55			
Madhya Pradesh	123.10	155.10	190.00	228.00	269.33	965.52			
Maharashtra	148.72	187.39	229.55	275.46	325.40	1166.52			
Manipur	12.88	16.22	19.88	23.85	28.18	101.01			
Meghalaya	3.54	4.46	5.47	6.56	7.75	27.78			
Mizoram	0.40	0.50	0.62	0.74	0.87	3.12			
Nagaland	3.50	4.40	5.40	6.47	7.65	27.42			
Orissa	77.92	98.18	120.27	144.33	170.49	611.19			
Punjab	224.82	283.28	347.01	416.42	491.89	1763.41			
Rajasthan	115.39	150.57	191.39	232.66	278.48	968.49			
Sikkim	0.69	0.87	1.06	1.28	1.51	5.42			
Tamil Nadu	98.09	123.59	151.40	181.68	214.61	769.35			
Tripura	9.15	11.52	14.11	16.94	20.00	71.71			
Uttar Pradesh	488.23	615.16	753.57	904.29	1068.19	3829.44			
Uttarakhand	81.08	102.16	125.15	150.18	177.39	635.94			
West Bengal	196.96	248.17	304.00	364.81	430.92	1544.86			
All States	2581.78	3258.23	3998.29	4800.95	5674.74	20313.99			

# Table 6(a)

Total Maintenance Expenditure on Irrigation as compared with projected expenditure

(Rs. Crore)										(Rs. Crore)						
S Ma	State	2005-06		2006-07		2007-08		2008-09			2009-10		· · ·			
S.No.		Projected	Actual	Deviation	Projected	Actual	Deviation	Projected	Actual	Deviation	Projected	(RE)	Deviation	Projected	(BE)	Deviation
1	Andhra Pradesh	285.14	253.93	31.21	299.4	296.32	3.08	314.37	287.76	26.61	330.09	306.39	23.70	346.59	349.50	-2.91
2	Arunachal Pradesh	6.1	6.56	-0.46	6.41	8.14	-1.73	6.73	17.15	-10.42	7.06	30.27	-23.21	7.42	27.97	-20.55
3	Assam	151.57	136.40	15.17	159.15	168.18	-9.03	167.1	182.07	-14.97	175.47	306.22	-130.75	184.24	391.59	-207.35
4	Bihar	296.71	256.59	40.12	311.55	296.52	15.03	327.13	385.64	-58.51	343.49	565.91	-222.42	360.66	813.79	-453.13
5	Chhattisgarh	69.46	77.49	-8.03	72.93	93.87	-20.94	76.58	101.35	-24.77	80.4	98.20	-17.80	84.43	125.58	-41.15
6	Goa	13.48	17.70	-4.22	14.16	18.76	-4.60	14.87	21.87	-7.00	15.61	30.30	-14.69	16.39	34.34	-17.95
7	Gujarat	263.54	289.39	-25.85	276.71	380.24	-103.53	290.55	358.84	-68.29	305.08	380.50	-75.42	320.33	368.16	-47.83
8	Haryana	276.28	136.78	139.50	290.1	207.38	82.72	304.6	306.37	-1.77	319.83	635.23	-315.40	335.82	575.92	-240.10
9	Himachal Pradesh	58.85	76.70	-17.85	61.79	128.96	-67.17	64.88	169.73	-104.85	68.12	177.90	-109.78	71.52	183.96	-112.44
10	Jammu & Kashmir	89.6	104.00	-14.40	94.09	156.00	-61.91	98.79	175.00	-76.21	103.72	197.00	-93.28	108.91	238.63	-129.72
11	Jharkhand	41.11	115.71	-74.60	43.17	162.29	-119.12	45.33	163.23	-117.90	47.6	235.89	-188.29	49.98	314.56	-264.58
12	Karnataka	247.64	150.72	96.92	260.02	196.61	63.41	273.01	156.33	116.68	286.67	182.82	103.85	301	196.90	104.10
13	Kerala	195.21	193.13	2.08	204.96	169.69	35.27	215.21	250.01	-34.80	225.97	245.71	-19.74	237.27	268.10	-30.83
14	Madhya Pradesh	246.19	246.38	-0.19	258.5	252.11	6.39	271.43	299.93	-28.50	285	322.41	-37.41	299.25	373.30	-74.05
15	Maharashtra	297.44	659.60	-362.16	312.31	728.49	-416.18	327.93	603.44	-275.51	344.33	879.95	-535.62	361.55	917.23	-555.68
16	Manipur	25.76	19.23	6.53	27.04	15.43	11.61	28.4	12.91	15.49	29.81	45.21	-15.40	31.31	49.92	-18.61
17	Meghalaya	7.08	7.45	-0.37	7.44	8.32	-0.88	7.81	9.03	-1.22	8.2	9.10	-0.90	8.61	13.59	-4.98
18	Mizoram	0.79	0.62	0.17	0.83	0.73	0.10	0.88	1.08	-0.20	0.92	1.56	-0.64	0.97	1.86	-0.89
19	Nagaland	6.99	7.03	-0.04	7.34	7.12	0.22	7.71	8.21	-0.50	8.09	9.61	-1.52	8.5	10.42	-1.92
20	Orissa	155.84	150.25	5.59	163.64	166.15	-2.51	171.82	236.27	-64.45	180.41	332.70	-152.29	189.43	349.82	-160.39
21	Punjab	449.64	451.21	-1.57	472.13	370.08	102.05	495.73	410.08	85.65	520.52	521.60	-1.08	546.54	573.97	-27.43
22	Rajasthan	230.78	198.93	31.85	250.95	209.22	41.73	273.41	220.52	52.89	290.83	278.00	12.83	309.42	333.51	-24.09
23	Sikkim	1.38	1.30	0.08	1.45	1.21	0.24	1.52	1.24	0.28	1.6	1.91	-0.31	1.68	1.78	-0.10
24	Tamil Nadu	196.17	173.34	22.83	205.98	194.71	11.27	216.28	230.01	-13.73	227.1	617.19	-390.09	238.45	342.57	-104.12
25	Tripura	18.29	17.39	0.90	19.2	11.65	7.55	20.16	9.81	10.35	21.17	21.24	-0.07	22.22	27.40	-5.18
26	Uttar Pradesh	976.45	845.14	131.31	1025.27	1324.82	-299.55	1076.53	1704.62	-628.09	1130.36	1925.08	-794.72	1186.88	2210.68	-1023.80
27	Uttaranchal	162.15	153.13	9.02	170.26	151.93	18.33	178.78	163.16	15.62	187.72	218.68	-30.96	197.1	228.85	-31.75
28	West Bengal	393.92	395.27	-1.35	413.61	456.44	-42.83	434.29	429.02	5.27	456.01	543.56	-87.55	478.8	734.38	-255.58
	All States	5163.56	5141.35	22.21	5430.39	6181.34	-750.95	5711.83	6914.67	-1202.84	6001.18	9120.15	-3118.97	6305.27	10058.28	-3753.01

# Table 6 (b)

S.No.	State	2005-06	2006-07	2007-08	2008-09 (RE)	2009-10 (BE)
1	Andhra Pradesh	(10.9)	(1.0)	(8.5)	(7.2)	0.8
2	Arunachal Pradesh	7.6	26.9	154.9	328.8	277.0
3	Assam	(10.0)	5.7	9.0	74.5	112.5
4	Bihar	(13.5)	(4.8)	17.9	64.8	125.6
5	Chhattisgarh	11.6	28.7	32.3	22.1	48.7
6	Goa	31.3	32.5	47.1	94.1	109.5
7	Gujarat	9.8	37.4	23.5	24.7	14.9
8	Haryana	(50.5)	(28.5)	0.6	98.6	71.5
9	Himachal Pradesh	30.3	108.7	161.6	161.2	157.2
10	Jammu & Kashmir	16.1	65.8	77.1	89.9	119.1
11	Jharkhand	181.5	275.9	260.1	395.6	529.4
12	Karnataka	(39.1)	(24.4)	(42.7)	(36.2)	(34.6)
13	Kerala	(1.1)	(17.2)	16.2	8.7	13.0
14	Madhya Pradesh	0.1	(2.5)	10.5	13.1	24.7
15	Maharashtra	121.8	133.3	84.0	155.6	153.7
16	Manipur	(25.4)	(42.9)	(54.5)	51.7	59.4
17	Meghalaya	5.2	11.8	15.6	11.0	57.8
18	Mizoram	(22.0)	(12.4)	22.9	69.5	91.8
19	Nagaland	0.6	(3.0)	6.5	18.8	22.6
20	Orissa	(3.6)	1.5	37.5	84.4	84.7
21	Punjab	0.3	(21.6)	(17.3)	0.2	5.0
22	Rajasthan	(13.8)	(16.6)	(19.3)	(4.4)	7.8
23	Sikkim	(5.8)	(16.6)	(18.4)	19.4	6.0
24	Tamil Nadu	(11.6)	(5.5)	6.4	171.8	43.7
25	Tripura	(4.9)	(39.3)	(51.4)	0.3	23.3
26	Uttar Pradesh	(13.4)	29.2	58.3	70.3	86.3
27	Uttaranchal	(5.6)	(10.8)	(8.7)	16.5	16.1
28	West Bengal	0.3	10.4	(1.2)	19.2	53.4
	All States	(0.4)	13.8	21.1	52.0	59.5

# Percent Deviation from Projected Values of Total Maintenance Expenditure for Irrigation

Figures within parentheses denote (-) sign

#### Maintenance Expenditure on Major and Medium Irrigation (Comparison)

C No.	Chata.		2005-06			2006-07			2007-08		2008-09			2009-10		
S.No.	State	Projected	Actual	Deviation	Projected	Actual	Deviation	Projected	Actual	Deviation	Projected	(RE)	Deviation	Projected	(BE)	Deviation
1	Andhra Pradesh	197.53	222.15	-24.62	207.41	261.42	-54.01	217.78	251.53	-33.75	228.67	266.00	-37.33	240.1	304.78	-64.68
2	Arunachal Pradesh	0	0.00	0.00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	Assam	39.95	36.53	3.42	41.95	38.56	3.39	44.04	37.39	6.65	46.25	84.16	-37.91	48.56	132.22	-83.66
4	Bihar	178.29	162.15	16.14	187.21	186.91	0.30	196.57	261.96	-65.39	206.4	319.81	-113.41	216.72	494.44	-277.72
5	Chhattisgarh	59.29	65.72	-6.43	62.25	82.23	-19.98	65.37	88.39	-23.02	68.63	85.37	-16.74	72.07	112.75	-40.68
6	Goa	7.25	8.34	-1.09	7.62	9.00	-1.38	8	10.14	-2.14	8.4	14.96	-6.56	8.82	14.69	-5.87
7	Gujarat	201.13	237.58	-36.45	211.18	319.89	-108.71	221.74	301.58	-79.84	232.83	325.13	-92.30	244.47	313.86	-69.39
8	Haryana	226.57	133.12	93.45	237.9	203.24	34.66	249.79	302.03	-52.24	262.28	629.35	-367.07	275.4	567.42	-292.02
9	Himachal Pradesh	2.26	3.00	-0.74	2.37	5.50	-3.13	2.49	7.34	-4.85	2.61	7.26	-4.65	2.74	7.69	-4.95
10	Jammu & Kashmir	14.12	20.00	-5.88	14.83	35.00	-20.17	15.57	45.00	-29.43	16.34	49.00	-32.66	17.16	56.00	-38.84
11	Jharkhand	17.75	86.91	-69.16	18.64	126.50	-107.86	19.57	129.89	-110.32	20.55	184.73	-164.18	21.58	251.85	-230.27
12	Karnataka	122.03	65.42	56.61	128.13	76.67	51.46	134.53	66.36	68.17	141.26	68.58	72.68	148.32	89.28	59.04
13	Kerala	87.35	120.24	-32.89	91.71	107.82	-16.11	96.3	159.92	-63.62	101.11	139.53	-38.42	106.17	155.33	-49.16
14	Madhya Pradesh	178.48	194.19	-15.71	187.41	196.35	-8.94	196.78	223.33	-26.55	206.62	260.19	-53.57	216.95	298.45	-81.50
15	Maharashtra	158.2	477.59	-319.39	166.11	493.17	-327.06	174.42	400.42	-226.00	183.14	615.04	-431.90	192.3	646.56	-454.26
16	Manipur	18.88	11.97	6.91	19.82	9.26	10.56	20.81	8.26	12.55	21.85	31.94	-10.09	22.95	34.95	-12.00
17	Meghalaya	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00
18	Mizoram	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00
19	Nagaland	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00
20	Orissa	113.71	104.36	9.35	119.4	120.99	-1.59	125.37	169.48	-44.11	131.64	243.93	-112.29	138.22	249.44	-111.22
21	Punjab	331.92	369.03	-37.11	348.52	326.41	22.11	365.94	361.95	3.99	384.24	456.01	-71.77	403.45	506.33	-102.88
22	Rajasthan	156.38	137.61	18.77	172.83	141.58	31.25	191.39	144.91	46.48	204.7	178.01	26.69	218.99	215.81	3.18
23	Sikkim	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00
24	Tamil Nadu	129.41	133.62	-4.21	135.88	152.36	-16.48	142.67	187.97	-45.30	149.81	242.56	-92.75	157.3	284.56	-127.26
25	Tripura	0.38	0.00	0.38	0.4	0.00	0.40	0.42	0.00	0.42	0.44	0.00	0.44	0.46	0.00	0.46
26	Uttar Pradesh	432.14	716.21	-284.07	453.75	1006.66	-552.91	476.43	1199.56	-723.13	500.26	1343.80	-843.54	525.27	1609.85	-1084.58
27	Uttaranchal	129.97	108.23	21.74	136.47	115.17	21.30	143.3	124.10	19.20	150.46	156.68	-6.22	157.98	178.18	-20.20
28	West Bengal	141.06	133.32	7.74	148.11	188.44	-40.33	155.51	154.20	1.31	163.29	242.29	-79.00	171.45	326.71	-155.26
	All States	2944.05	3547.29	-603.24	3099.90	4203.13	-1103.23	3264.79	4635.74	-1370.95	3431.78	5944.34	-2512.56	3607.43	6851.15	-3243.72

Table 7 (a)

(Rs. Crore)

						(Per Cent)
S.No.	State	2005-06	2006-07	2007-08	2008-09 (RE)	2009-10 (BE)
1	Andhra Pradesh	12.5	26.0	15.5	16.3	26.9
2	Arunachal Pradesh	0.0	0.0	0.0	0.0	0.0
3	Assam	(8.6)	(8.1)	(15.1)	82.0	172.3
4	Bihar	(9.1)	(0.2)	33.3	54.9	128.1
5	Chhattisgarh	10.8	32.1	35.2	24.4	56.4
6	Goa	15.0	18.1	26.8	78.1	66.5
7	Gujarat	18.1	51.5	36.0	39.6	28.4
8	Haryana	(41.2)	(14.6)	20.9	140.0	106.0
9	Himachal Pradesh	32.9	132.2	195.0	178.0	180.8
10	Jammu & Kashmir	41.6	136.0	189.0	199.9	226.3
11	Jharkhand	389.6	578.6	563.7	798.9	1067.1
12	Karnataka	(46.4)	(40.2)	(50.7)	(51.5)	(39.8)
13	Kerala	37.7	17.6	66.1	38.0	46.3
14	Madhya Pradesh	8.8	4.8	13.5	25.9	37.6
15	Maharashtra	201.9	196.9	129.6	235.8	236.2
16	Manipur	(36.6)	(53.3)	(60.3)	46.2	52.3
17	Meghalaya	0.0	0.0	0.0	0.0	0.0
18	Mizoram	0.0	0.0	0.0	0.0	0.0
19	Nagaland	0.0	0.0	0.0	0.0	0.0
20	Orissa	(8.2)	1.3	35.2	85.3	80.5
21	Punjab	11.2	(6.3)	(1.1)	18.7	25.5
22	Rajasthan	(12.0)	(18.1)	(24.3)	(13.0)	(1.5)
23	Sikkim	0.0	0.0	0.0	0.0	0.0
24	Tamil Nadu	3.3	12.1	31.8	61.9	80.9
25	Tripura	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)
26	Uttar Pradesh	65.7	121.9	151.8	168.6	206.5
27	Uttaranchal	(16.7)	(15.6)	(13.4)	4.1	12.8
28	West Bengal	(5.5)	27.2	(0.8)	48.4	90.6
	All States	20.5	35.6	42.0	73.2	89.9

#### Percent Deviation from Projected Values of Maintenance Expenditure on Major and Medium Irrigation (Per Cent)

Figures within parentheses denote (-) sign

#### Maintenance Expenditure on Minor Irrigation (Comparison)

<b>C N</b>	01.11		2005-06			2006-07			2007-08			2008-09		2009-10		
S.No.	State	Projected	Actual	Deviation	Projected	Actual	Deviation	Projected	Actual	Deviation	Projected	(RE)	Deviation	Projected	(BE)	Deviation
1	Andhra Pradesh	87.61	31.79	55.82	91.99	34.90	57.09	96.59	36.22	60.37	101.42	40.39	61.03	106.49	44.72	61.77
2	Arunachal Pradesh	6.1	6.56	-0.46	6.41	8.14	-1.73	6.73	17.15	-10.42	7.06	30.27	-23.21	7.42	27.97	-20.55
3	Assam	111.62	99.86	11.76	117.2	129.62	-12.42	123.06	144.68	-21.62	129.22	222.06	-92.84	135.68	259.37	-123.69
4	Bihar	118.42	94.44	23.98	124.34	109.60	14.74	130.56	123.68	6.88	137.09	246.10	-109.01	143.94	319.35	-175.41
5	Chhattisgarh	10.17	11.77	-1.60	10.68	11.63	-0.95	11.21	12.95	-1.74	11.77	12.83	-1.06	12.36	12.83	-0.47
6	Goa	6.23	9.37	-3.14	6.54	9.76	-3.22	6.87	11.73	-4.86	7.21	15.34	-8.13	7.57	19.65	-12.08
7	Gujarat	62.41	51.81	10.60	65.53	60.34	5.19	68.81	57.26	11.55	72.25	55.36	16.89	75.86	54.30	21.56
8	Haryana	49.71	3.66	46.05	52.2	4.14	48.06	54.81	4.34	50.47	57.55	5.88	51.68	60.42	8.52	51.90
9	Himachal Pradesh	56.59	73.69	-17.10	59.42	123.46	-64.04	62.39	162.39	-100.00	65.51	170.64	-105.13	68.78	176.27	-107.49
10	Jammu & Kashmir	75.48	84.00	-8.52	79.26	121.00	-41.74	83.22	130.00	-46.78	87.38	148.00	-60.62	91.75	182.00	-90.25
11	Jharkhand	23.36	28.80	-5.44	24.53	35.79	-11.26	25.76	33.34	-7.58	27.05	51.16	-24.11	28.4	62.71	-34.31
12	Karnataka	125.61	85.29	40.32	131.89	119.94	11.95	138.48	89.97	48.51	145.41	114.24	31.17	152.68	107.62	45.06
13	Kerala	107.86	72.89	34.97	113.25	61.87	51.38	118.91	90.09	28.82	124.86	106.18	18.68	131.1	112.77	18.33
14	Madhya Pradesh	67.71	52.19	15.52	71.09	55.76	15.33	74.65	76.59	-1.94	78.38	62.23	16.15	82.3	74.85	7.45
15	Maharashtra	139.24	182.00	-42.76	146.2	235.32	-89.12	153.51	203.02	-49.51	161.19	264.91	-103.72	169.25	270.79	-101.54
16	Manipur	6.88	7.25	-0.37	7.22	6.16	1.06	7.59	4.65	2.94	7.96	13.28	-5.32	8.36	14.97	-6.61
17	Meghalaya	7.08	7.45	-0.37	7.44	8.32	-0.88	7.81	9.03	-1.22	8.2	9.10	-0.90	8.61	13.59	-4.98
18	Mizoram	0.79	0.62	0.17	0.83	0.73	0.10	0.88	1.08	-0.20	0.92	1.56	-0.64	0.97	1.86	-0.89
19	Nagaland	6.99	7.03	-0.04	7.34	7.12	0.22	7.71	8.21	-0.50	8.09	9.61	-1.52	8.5	10.42	-1.92
20	Orissa	42.13	45.89	-3.76	44.24	45.16	-0.92	46.45	66.79	-20.34	48.77	88.76	-39.99	51.21	100.38	-49.17
21	Punjab	117.72	82.18	35.54	123.61	43.66	79.95	129.79	48.13	81.66	136.28	65.59	70.69	143.09	67.62	75.47
22	Rajasthan	74.4	61.32	13.08	78.12	67.65	10.47	82.02	75.60	6.42	86.13	99.99	-13.86	90.43	118.16	-27.73
23	Sikkim	1.38	1.30	0.08	1.45	1.21	0.24	1.52	1.24	0.28	1.6	1.91	-0.31	1.68	1.78	-0.10
24	Tamil Nadu	66.76	39.72	27.05	70.1	42.35	27.75	73.61	42.04	31.57	77.29	55.09	22.20	81.15	58.01	23.14
25	Tripura	17.91	17.39	0.52	18.8	11.65	7.15	19.74	9.81	9.93	20.73	21.24	-0.51	21.76	27.40	-5.64
26	Uttar Pradesh	544.31	128.93	415.38	571.52	318.16	253.36	600.1	505.06	95.04	630.1	581.28	48.82	661.61	601.02	60.59
27	Uttaranchal	32.18	44.90	-12.72	33.79	36.76	-2.97	35.48	39.06	-3.58	37.26	62.00	-24.74	39.12	50.67	-11.55
28	West Bengal	252.86	261.95	-9.09	265.5	268.00	-2.50	278.78	274.82	3.96	292.72	301.27	-8.55	307.35	407.67	-100.32
	All States	2219.51	1594.07	625.44	2330.49	1978.22	352.27	2447.04	2278.93	168.11	2569.40	2856.28	-286.88	2697.84	3207.28	-509.44

(Rs. Crore)

## Table 8 (a)

S.No.	State	2005-06	2006-07	2007-08	2008-09 (RE)	2009-10 (BE)
1	Andhra Pradesh	(63.7)	(62.1)	(62.5)	(60.2)	(58.0)
2	Arunachal Pradesh	7.6	26.9	154.9	328.8	277.0
3	Assam	(10.5)	10.6	17.6	71.8	91.2
4	Bihar	(20.2)	(11.9)	(5.3)	79.5	121.9
5	Chhattisgarh	15.7	8.9	15.5	9.0	3.8
6	Goa	50.3	49.3	70.8	112.8	159.6
7	Gujarat	(17.0)	(7.9)	(16.8)	(23.4)	(28.4)
8	Haryana	(92.6)	(92.1)	(92.1)	(89.8)	(85.9)
9	Himachal Pradesh	30.2	107.8	160.3	160.5	156.3
10	Jammu & Kashmir	11.3	52.7	56.2	69.4	98.4
11	Jharkhand	23.3	45.9	29.4	89.1	120.8
12	Karnataka	(32.1)	(9.1)	(35.0)	(21.4)	(29.5)
13	Kerala	(32.4)	(45.4)	(24.2)	(15.0)	(14.0)
14	Madhya Pradesh	(22.9)	(21.6)	2.6	(20.6)	(9.1)
15	Maharashtra	30.7	61.0	32.3	64.3	60.0
16	Manipur	5.4	(14.6)	(38.7)	66.8	79.0
17	Meghalaya	5.2	11.8	15.6	11.0	57.8
18	Mizoram	(22.0)	(12.4)	22.9	69.5	91.8
19	Nagaland	0.6	(3.0)	6.5	18.8	22.6
20	Orissa	8.9	2.1	43.8	82.0	96.0
21	Punjab	(30.2)	(64.7)	(62.9)	(51.9)	(52.7)
22	Rajasthan	(17.6)	(13.4)	(7.8)	16.1	30.7
23	Sikkim	(5.8)	(16.6)	(18.4)	19.4	6.2
24	Tamil Nadu	(40.5)	(39.6)	(42.9)	(28.7)	(28.5)
25	Tripura	(2.9)	(38.0)	(50.3)	2.5	25.9
26	Uttar Pradesh	(76.3)	(44.3)	(15.8)	(7.7)	(9.2)
27	Uttaranchal	39.5	8.8	10.1	66.4	29.5
28	West Bengal	3.6	0.9	(1.4)	2.9	32.6
	All States	(28.2)	(15.1)	(6.9)	11.2	18.9

## Percent Deviation from Projected Values of Maintenance Expenditure on Minor Irrigation

Figures within parentheses denote (-) sign

Tab	le <sup>q</sup>	9 (a	)
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												l able 9	/ (a)			
						Total Re	evenue Rece	ipts from Irri	gation (Co	mparison)						(Rs. Crore)
S.No.	State		2005-06			2006-07			2007-08		2	008-09 (RE	.)	20	009-10 (B	E)
3.110.	State	Projected	Actual	Deviation	Projected	Actual	Deviation	Projected	Actual	Deviation	Projected	Actual	Deviation	Projected	Actual	Deviation
1	Andhra Pradesh	142.57	49.80	92.77	179.64	70.43	109.21	220.059	44.52	175.54	264.072	78.44	185.63	311.931	93.09	218.84
2	Arunachal Pradesh	3.05	0.03	3.02	3.846	0.02	3.83	4.711	0.01	4.70	5.648	0.00	5.65	6.678	0.00	6.68
3	Assam	75.785	0.38	75.41	95.49	0.62	94.87	116.97	0.70	116.27	140.376	1.05	139.33	165.816	0.80	165.02
4	Bihar	148.355	12.86	135.50	186.93	14.31	172.62	228.991	27.00	201.99	274.792	11.50	263.29	324.594	12.08	312.51
5	Chhattisgarh	34.73	46.70	-11.97	43.758	115.32	-71.57	53.606	124.63	-71.03	64.32	170.91	-106.59	75.987	186.00	-110.01
6	Goa	6.74	11.80	-5.06	8.496	3.71	4.79	10.409	4.14	6.26	12.488	9.60	2.89	14.751	10.94	3.81
7	Gujarat	131.77	253.27	-121.50	166.026	337.94	-171.92	203.385	463.25	-259.87	244.064	472.83	-228.77	288.297	510.94	-222.64
8	Haryana	138.14	64.24	73.90	174.06	87.49	86.57	213.22	72.40	140.82	255.864	122.11	133.75	302.238	130.31	171.93
9	Himachal Pradesh	29.425	0.98	28.45	37.074	0.69	36.38	45.416	0.68	44.74	54.496	1.04	53.46	64.368	1.14	63.22
10	Jammu & Kashmir	44.8	2.95	41.85	56.454	3.39	53.07	69.153	5.97	63.18	82.976	4.11	78.87	98.019	4.30	93.72
11	Jharkhand	20.555	11.34	9.22	25.902	51.78	-25.88	31.731	171.92	-140.19	38.08	31.10	6.98	44.982	35.77	9.22
12	Karnataka	123.82	29.66	94.16	156.012	28.12	127.89	191.107	38.34	152.76	229.336	30.88	198.45	270.9	42.68	228.22
13	Kerala	97.605	6.33	91.28	122.976	6.75	116.22	150.647	7.13	143.52	180.776	8.39	172.39	213.543	8.95	204.59
14	Madhya Pradesh	123.095	37.32	85.77	155.1	38.75	116.35	190.001	50.82	139.18	228	64.97	163.03	269.325	69.73	199.59
15	Maharashtra	148.72	437.86	-289.14	187.386	503.11	-315.72	229.551	674.28	-444.73	275.464	776.70	-501.23	325.395	850.01	-524.62
16	Manipur	12.88	2.05	10.83	16.224	7.91	8.31	19.88	8.74	11.14	23.848	9.60	14.25	28.179	10.56	17.62
17	Meghalaya	3.54	0.03	3.51	4.464	0.09	4.37	5.467	0.07	5.40	6.56	0.06	6.50	7.749	0.06	7.69
18	Mizoram	0.395	0.03	0.37	0.498	0.00	0.50	0.616	0.00	0.62	0.736	0.01	0.72	0.873	0.01	0.86
19	Nagaland	3.495	0.01	3.49	4.404	0.00	4.40	5.397	0.01	5.39	6.472	0.01	6.46	7.65	0.01	7.64
20	Orissa	77.92	43.84	34.08	98.184	54.21	43.97	120.274	48.69	71.59	144.328	87.45	56.88	170.487	90.07	80.41
21	Punjab	224.82	26.35	198.47	283.278	20.27	263.01	347.011	22.51	324.50	416.416	24.56	391.86	491.886	24.56	467.33
22	Rajasthan	115.39	65.21	50.18	150.57	75.94	74.63	191.387	71.52	119.86	232.664	89.33	143.33	278.478	87.96	190.52
23	Sikkim	0.69	0.31	0.38	0.87	0.19	0.68	1.064	0.10	0.96	1.28	0.10	1.18	1.512	0.12	1.40
24	Tamil Nadu	98.085	17.06	81.02	123.588	30.08	93.51	151.396	20.81	130.58	181.68	46.50	135.18	214.605	23.09	191.51
25	Tripura	9.145	0.30	8.85	11.52	0.25	11.27	14.112	0.10	14.02	16.936	0.31	16.63	19.998	0.32	19.68
26	Uttar Pradesh	488.225	198.71	289.51	615.162	181.65	433.52	753.571	353.22	400.35	904.288	229.11	675.18	1068.192	166.81	901.38
27	Uttarakhand	81.075	7.13	73.94	102.156	6.89	95.27	125.146	9.16	115.99	150.176	10.54	139.64	177.39	12.02	165.37
28	West Bengal	196.96	24.40	172.56	248.166	25.86	222.31	304.003	26.49	277.51	364.808	31.29	333.52	430.92	35.98	394.94
	All States	2581.78	1350.93	1230.85	3258.23	1665.76	1592.48	3998.28	2247.21	1751.07	4800.94	2312.48	2488.47	5674.74	2408.31	3266.43

Note: (-) sign denotes excess of recovery of cost over projected NPRR.

# Table 9 (b)

S.No.	State	2005-06	2006-07	2007-08	2008-09 (RE)	2009-10 (BE)
1	Andhra Pradesh	(65.1)	(60.8)	(79.8)	(70.3)	(70.2)
2	Arunachal Pradesh	(99.0)	(99.6)	(99.8)	(100.0)	(100.0)
3	Assam	(99.5)	(99.3)	(99.4)	(99.3)	(99.5)
4	Bihar	(91.3)	(92.3)	(88.2)	(95.8)	(96.3)
5	Chhattisgarh	34.5	163.6	132.5	165.7	144.8
6	Goa	75.1	(56.3)	(60.2)	(23.2)	(25.8)
7	Gujarat	92.2	103.5	127.8	93.7	77.2
8	Haryana	(53.5)	(49.7)	(66.0)	(52.3)	(56.9)
9	Himachal Pradesh	(96.7)	(98.1)	(98.5)	(98.1)	(98.2)
10	Jammu & Kashmir	(93.4)	(94.0)	(91.4)	(95.1)	<b>(9</b> 5.6 <b>)</b>
11	Jharkhand	(44.8)	99.9	441.8	(18.3)	(20.5)
12	Karnataka	(76.0)	(82.0)	(79.9)	(86.5)	(84.2)
13	Kerala	(93.5)	(94.5)	(95.3)	(95.4)	(95.8)
14	Madhya Pradesh	(69.7)	(75.0)	(73.3)	(71.5)	(74.1)
15	Maharashtra	194.4	168.5	193.7	182.0	161.2
16	Manipur	(84.1)	(51.2)	(56.0)	(59.7)	(62.5)
17	Meghalaya	(99.2)	(98.0)	(98.8)	(99.1)	(99.2)
18	Mizoram	(93.4)	(99.8)	(100.0)	(98.4)	(98.7)
19	Nagaland	(99.7)	(99.9)	(99.9)	(99.8)	(99.9)
20	Orissa	(43.7)	(44.8)	(59.5)	(39.4)	(47.2)
21	Punjab	(88.3)	(92.8)	(93.5)	(94.1)	<b>(9</b> 5.0 <b>)</b>
22	Rajasthan	(43.5)	(49.6)	(62.6)	(61.6)	(68.4)
23	Sikkim	(55.1)	(78.2)	(90.6)	(92.2)	(92.3)
24	Tamil Nadu	(82.6)	(75.7)	(86.3)	(74.4)	(89.2)
25	Tripura	(96.7)	(97.8)	(99.3)	(98.2)	(98.4)
26	Uttar Pradesh	(59.3)	(70.5)	(53.1)	(74.7)	(84.4)
27	Uttarakhand	(91.2)	(93.3)	(92.7)	(93.0)	(93.2)
28	West Bengal	(87.6)	(89.6)	(91.3)	(91.4)	(91.7)
	All States	(47.7)	(48.9)	(43.8)	(51.8)	(57.6)

# Percentage Deviation from Projected Values for Revenue Receipts from Irrigation

Note: Figures within parentheses denote (-) sigr.

#### Rate of Recovery from Irrigation (Comparison)

(Rs.	Crore)

Table 10

			2005-06			2006-07			2007-08		2008-09 (RE)			2009-10 (BE)		
S.No.	State			ROR			ROR			ROR		. ,	ROR		. ,	ROR
		NPRE	NPRR	(%)	NPRE	NPRR	(%)	NPRE	NPRR	(%)	NPRE	NPRR	(%)	NPRE	NPRR	(%)
1	Andhra Pradesh	253.93	49.80	19.61	296.32	70.43	23.77	287.76	44.52	15.47	306.39	78.44	25.60	349.50	93.09	26.64
2	Arunachal Pradesh	6.56	0.03	0.46	8.14	0.02	0.18	17.15	0.01	0.06	30.27	0.00	0.00	27.97	0.00	0.00
3	Assam	136.40	0.38	0.28	168.18	0.62	0.37	182.07	0.70	0.38	306.22	1.05	0.34	391.59	0.80	0.20
4	Bihar	256.59	12.86	5.01	296.52	14.31	4.82	385.64	27.00	7.00	565.91	11.50	2.03	813.79	12.08	1.48
5	Chhattisgarh	77.49	46.70	60.26	93.87	115.32	122.86	101.35	124.63	122.98	98.20	170.91	174.04	125.58	186.00	148.11
6	Goa	17.70	11.80	66.67	18.76	3.71	19.77	21.87	4.14	18.95	30.30	9.60	31.67	34.34	10.94	31.87
7	Gujarat	289.39	253.27	87.52	380.24	337.94	88.88	358.84	463.25	129.10	380.50	472.83	124.27	368.16	510.94	138.78
8	Haryana	136.78	64.24	46.96	207.38	87.49	42.19	306.37	72.40	23.63	635.23	122.11	19.22	575.92	130.31	22.63
9	Himachal Pradesh	76.70	0.98	1.28	128.96	0.69	0.54	169.73	0.68	0.40	177.90	1.04	0.58	183.96	1.14	0.62
10	Jammu & Kashmir	104.00	2.95	2.83	156.00	3.39	2.17	175.00	5.97	3.41	197.00	4.11	2.08	238.63	4.30	1.80
11	Jharkhand	115.71	11.34	9.80	162.29	51.78	31.91	163.23	171.92	105.32	235.89	31.10	13.18	314.56	35.77	11.37
12	Karnataka	150.72	29.66	19.68	196.61	28.12	14.30	156.33	38.34	24.53	182.82	30.88	16.89	196.90	42.68	21.67
13	Kerala	193.13	6.33	3.28	169.69	6.75	3.98	250.01	7.13	2.85	245.71	8.39	3.41	268.10	8.95	3.34
14	Madhya Pradesh	246.38	37.32	15.15	252.11	38.75	15.37	299.93	50.82	16.94	322.41	64.97	20.15	373.30	69.73	18.68
15	Maharashtra	659.60	437.86	66.38	728.49	503.11	69.06	603.44	674.28	111.74	879.95	776.70	88.27	917.23	850.01	92.67
16	Manipur	19.23	2.05	10.66	15.43	7.91	51.27	12.91	8.74	67.70	45.21	9.60	21.23	49.92	10.56	21.15
17	Meghalaya	7.45	0.03	0.40	8.32	0.09	1.08	9.03	0.07	0.73	9.10	0.06	0.66	13.59	0.06	0.44
18	Mizoram	0.62	0.03	4.22	0.73	0.00	0.12	1.08	0.00	0.00	1.56	0.01	0.77	1.86	0.01	0.59
19	Nagaland	7.03	0.01	0.14	7.12	0.00	0.06	8.21	0.01	0.08	9.61	0.01	0.10	10.42	0.01	0.10
20	Orissa	150.25	43.84	29.18	166.15	54.21	32.63	236.27	48.69	20.61	332.70	87.45	26.29	349.82	90.07	25.75
21	Punjab	451.21	26.35	5.84	370.08	20.27	5.48	410.08	22.51	5.49	521.60	24.56	4.71	573.97	24.56	4.28
22	Rajasthan	198.93	65.21	32.78	209.22	75.94	36.29	220.52	71.52	32.43	278.00	89.33	32.13	333.51	87.96	26.37
23	Sikkim	1.30	0.31	23.85	1.21	0.19	15.70	1.24	0.10	8.07	1.91	0.10	5.24	1.78	0.12	6.55
24	Tamil Nadu	173.34	17.06	9.84	194.71	30.08	15.45	230.01	20.81	9.05	617.19	46.50	7.53	342.57	23.09	6.74
25	Tripura	17.39	0.30	1.71	11.65	0.25	2.17	9.81	0.10	0.98	21.24	0.31	1.44	27.40	0.32	1.17
26	Uttar Pradesh	845.14	198.71	23.51	1324.82	181.65	13.71	1704.62	353.22	20.72	1925.08	229.11	11.90	2210.68	166.81	7.55
27	Uttaranchal	153.13	7.13	4.66	151.93	6.89	4.53	163.16	9.16	5.61	218.68	10.54	4.82	228.85	12.02	5.25
28	West Bengal	395.27	24.40	6.17	456.44	25.86	5.67	429.02	26.49	6.17	543.56	31.29	5.76	734.38	35.98	4.90
	All States	5141.35	1350.93	26.28	6181.34	1665.76	26.95	6914.67	2247.21	32.50	9120.15	2312.48	25.36	10058.28	2408.31	23.94

## Irrigation Potentials - 2006-07 - Ministry of Water Resources

									and hectares)
		IPC					Un	utilized Potent	ial
					IPU			(IPC-IPU)	
State	MMI	MI	Total	MMI	MI	Total	MMI	MI	Total
Andhra Pradesh	3742.66	3121.98	6864.64	3337.23	2867.57	6204.80	405.43	254.41	659.84
Bihar	2959.00	4758.78	7717.78	1896.18	3793.33	5689.51	1062.82	965.45	2028.27
Chhattisgarh	1810.68	692.93	2503.61	1281.52	554.34	1835.86	529.16	138.59	667.75
Goa	37.65	24.51	62.16	25.91	20.99	46.90	11.74	3.52	15.26
Gujarat	2218.50	2023.42	4241.92	1813.11	1895.74	3708.85	405.39	127.68	533.07
Haryana	2191.36	1637.67	3829.03	1909.69	1583.50	3493.19	281.67	54.17	335.84
Jharkhand	203.30	1591.34	1794.64	184.09	1546.60	1730.69	19.21	44.74	63.95
Karnataka	2127.75	679.86	2807.61	1849.91	635.63	2485.54	277.84	44.23	322.07
Kerala	1090.47	2298.13	3388.60	783.23	2183.08	2966.31	307.24	115.05	422.29
Madhya Pradesh	1451.90	600.62	2052.52	917.88	413.20	1331.08	534.02	187.42	721.44
Maharashtra	3494.15	3305.60	6799.75	2313.09	2848.12	5161.21	1181.06	457.48	1638.54
Orissa	1989.97	1636.70	3626.67	1900.39	1467.61	3368.00	89.58	169.09	258.67
Punjab	2604.67	3430.08	6034.75	2530.02	3368.20	5898.22	74.65	61.88	136.53
Rajasthan	2890.35	2467.90	5358.25	2611.60	2378.44	4990.04	278.75	89.46	368.21
Tamil Nadu	1561.06	2134.48	3695.54	1556.92	2128.40	3685.32	4.14	6.08	10.22
Uttar Pradesh	8781.35	23576.4	32357.8	6926.00	18861.2	25787.2	1855.35	4715.19	6570.54
West Bengal	1769.81	4053.65	5823.46	1583.36	3307.02	4890.38	186.45	746.63	933.08
Arunachal Pradesh	1.20	117.88	119.08	0.79	92.09	92.88	0.41	25.79	26.20
Assam	312.90	635.48	948.38	219.21	519.60	738.81	93.69	115.88	209.57
Himachal Pradesh	15.45	171.09	186.54	8.89	146.37	155.26	6.56	24.72	31.28
Jammu & Kashmir	603.97	453.89	1057.86	440.70	423.92	864.62	163.27	29.97	193.24
Manipur	103.05	94.19	197.24	82.39	77.30	159.69	20.66	16.89	37.55
Meghalaya	0.00	61.76	61.76	0.00	55.94	55.94	0.00	5.82	5.82
									contd /-

(In thousand hostaros)

Table 11

.....contd./-

#### Table 11 (continued)

State		IPC			IPU			IPC-IPU	
	MMI	MI	Total	MMI	MI	Total	MMI	MI	Total
Mizoram	0.00	18.08	18.08	0.00	15.23	15.23	0.00	2.85	2.85
Nagaland	1.00	93.17	94.17	0.65	78.92	79.57	0.35	14.25	14.60
Sikkim	0.00	33.43	33.43	0.00	26.62	26.62	0.00	6.81	6.81
Tripura	18.70	139.98	158.68	13.47	120.35	133.82	5.23	19.63	24.86
Uttarakhand	289.65	516.54	806.19	191.49	413.24	604.73	98.16	103.30	201.46
All States	42270.6	60369.6	102640.1	34377.7	51822.6	86200.3	7892.8	8547.0	16439.8

Irrigation Potential Created - IPC, Irrigation Potential Ut	Irrigation Potential Created - IPC, Irrigation Potential Utilized -IPU							
Irrigation Potential Unutilized = IPC-IPU	Major and Medium Irrigation - MMI, Minor Irrigation - MI							

Inflation ad	justed Norms based Estimates for Maintenance Ex	penditure -2009-10

						(Rs.	Crore)
		MMI			MI		Grand
	Utilized	Unutilized	Total	Utilized	Unutilized	Total	Total
Andhra Pradesh	258.30	15.69	273.99	110.97	0.00	110.97	384.97
Bihar	146.76	41.13	187.90	146.80	0.00	146.80	334.70
Chhattisgarh	99.19	20.48	119.67	21.45	0.00	21.45	141.12
Goa	2.01	0.45	2.46	0.81	0.00	0.81	3.27
Gujarat	140.33	15.69	156.02	73.37	0.00	73.37	229.39
Haryana	147.81	10.90	158.71	61.28	0.00	61.28	219.99
Jharkhand	14.25	0.74	14.99	59.85	0.00	59.85	74.85
Karnataka	143.18	10.75	153.94	24.60	0.00	24.60	178.53
Kerala	60.62	11.89	72.51	84.49	0.00	84.49	157.00
Madhya Pradesh	71.04	20.67	91.71	15.99	0.00	15.99	107.70
Maharashtra	179.03	45.71	224.74	110.22	0.00	110.22	334.96
Orissa	147.09	3.47	150.56	56.80	0.00	56.80	207.35
Punjab	195.82	2.89	198.71	130.35	0.00	130.35	329.06
Rajasthan	202.14	10.79	212.93	92.05	0.00	92.05	304.97
Tamil Nadu	120.51	0.16	120.67	82.37	0.00	82.37	203.03
Uttar Pradesh	536.07	71.80	607.87	729.93	0.00	729.93	1337.80
West Bengal	122.55	7.22	129.77	127.98	0.00	127.98	257.75
Arunachal Pradesh	0.08	0.02	0.10	4.63	0.00	4.63	4.73
Assam	22.06	4.71	26.77	26.14	0.00	26.14	52.91
Himachal Pradesh	0.89	0.33	1.22	7.36	0.00	7.36	8.59
Jammu & Kashmir	44.34	8.21	52.56	21.33	0.00	21.33	73.88
Manipur	8.29	1.04	9.33	3.89	0.00	3.89	13.22
Meghalaya	0.00	0.00	0.00	2.81	0.00	2.81	2.81
Mizoram	0.00	0.00	0.00	0.77	0.00	0.77	0.77
Nagaland	0.07	0.02	0.08	3.97	0.00	3.97	4.05
Sikkim	0.00	0.00	0.00	1.34	0.00	1.34	1.34
Tripura	1.36	0.26	1.62	6.05	0.00	6.05	7.67
Uttarakhand	19.27	4.94	24.21	20.79	0.00	20.79	45.00
All States	2683.07	309.96	2993.03	2028.40	0.00	2028.40	5021.43

Major & Medium Irrigation - MMI, Minor Irrigation- MI

•		<u>(2010 -</u>	<u>- 2015)</u>	•		
						(Rs. Crore)
	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15
Andhra Pradesh	384.97	404.22	424.43	445.65	467.93	491.33
Bihar	334.70	351.43	369.00	387.45	406.83	427.17
Chhattisgarh	141.12	148.18	155.59	163.37	171.53	180.11
Goa	3.27	3.44	3.61	3.79	3.98	4.18
Gujarat	229.39	240.86	252.90	265.55	278.82	292.76
Haryana	219.99	230.99	242.54	254.67	267.40	280.77
Jharkhand	74.85	78.59	82.52	86.64	90.98	95.52
Karnataka	178.53	187.46	196.83	206.68	217.01	227.86
Kerala	157.00	164.85	173.09	181.74	190.83	200.37
Madhya Pradesh	107.70	113.09	118.74	124.68	130.91	137.46
Maharashtra	334.96	351.71	369.30	387.76	407.15	427.51
Orissa	207.35	217.72	228.61	240.04	252.04	264.64
Punjab	329.06	345.51	362.79	380.93	399.98	419.98
Rajasthan	304.97	320.22	336.23	353.04	370.69	389.23
Tamil Nadu	203.03	213.19	223.85	235.04	246.79	259.13
Uttar Pradesh	1337.80	1404.69	1474.93	1548.68	1626.11	1707.42
West Bengal	257.75	270.64	284.17	298.38	313.30	328.96
Arunachal Pradesh	4.73	4.97	5.22	5.48	5.75	6.04
Assam	52.91	55.56	58.33	61.25	64.31	67.53
Himachal Pradesh	8.59	9.02	9.47	9.94	10.44	10.96
Jammu & Kashmir	73.88	77.58	81.46	85.53	89.81	94.30
Manipur	13.22	13.88	14.57	15.30	16.07	16.87
Meghalaya	2.81	2.96	3.10	3.26	3.42	3.59
Mizoram	0.77	0.80	0.84	0.89	0.93	0.98
Nagaland	4.05	4.26	4.47	4.69	4.93	5.17
Sikkim	1.34	1.41	1.48	1.55	1.63	1.71
Tripura	7.67	8.06	8.46	8.88	9.33	9.79
Uttarakhand	45.00	47.25	49.61	52.09	54.69	57.43
All States	5021.43	5272.50	5536.13	5812.94	6103.58	6408.76

 Table 13

 Inflation adjusted norms based Total Projected Maintenance Expenditure for Irrigation

 (2010 - 2015)

# Comparison of Estimates with inflation adjusted norms with 2009-10 (BE) and Projection made by the Twelfth Finance Commission for 2009-10

(Rs. Crore)

	2009-10 (Estimates		
State	with inflation	2009-10 (BE)	2009-10(TFC)
	adjustment)		
Andhra Pradesh	384.97	349.50	346.59
Bihar	334.70	813.79	360.66
Chhattisgarh	141.12	125.58	84.43
Goa	3.27	34.34	16.39
Gujarat	229.39	368.16	320.33
Haryana	219.99	575.92	335.82
Jharkhand	74.85	314.56	49.98
Karnataka	178.53	196.90	301.00
Kerala	157.00	268.10	237.27
Madhya Pradesh	107.70	373.30	299.25
Maharashtra	334.96	917.23	361.55
Orissa	207.35	349.82	189.43
Punjab	329.06	573.97	546.54
Rajasthan	304.97	333.51	309.42
Tamil Nadu	203.03	342.57	238.45
Uttar Pradesh	1337.80	2210.87	1186.88
West Bengal	257.75	734.38	478.80
Arunachal Pradesh	4.73	27.97	7.42
Assam	52.91	391.59	184.24
Himachal Pradesh	8.59	183.96	71.52
Jammu & Kashmir	73.88	238.63	108.91
Manipur	13.22	49.92	31.31
Meghalaya	2.81	13.59	8.61
Mizoram	0.77	1.86	0.97
Nagaland	4.05	10.42	8.50
Sikkim	1.34	1.78	1.68
Tripura	7.67	27.40	22.22
Uttarakhand	45.00	228.85	197.10
All States	5021.43	10058.28	6305.27

								(Rs. Crore)
SI. No.	State	2009-10 (Estimates) *	2010-11	2011-12	2012-13	2013-14	2014-15	Total (2010 - 2015)
1	Andhra Pradesh	584.56	613.78	644.47	676.70	710.53	746.06	3391.55
2	Arunachal Pradesh	28.12	29.53	31.00	32.55	34.18	35.89	163.16
3	Assam	391.59	411.17	431.73	453.31	475.98	499.78	2271.97
4	Bihar	813.79	854.48	897.20	942.06	989.17	1038.63	4721.54
5	Chhattisgarh	214.29	225.00	236.25	248.06	260.47	273.49	1243.27
6	Goa	34.34	36.06	37.86	39.75	41.74	43.83	199.24
7	Gujarat	425.26	446.53	468.85	492.29	516.91	542.75	2467.33
8	Haryana	660.45	693.48	728.15	764.56	802.79	842.92	3831.89
9	Himachal Pradesh	183.96	193.16	202.82	212.96	223.60	234.78	1067.32
10	Jammu & Kashmir	238.63	250.56	263.09	276.24	290.06	304.56	1384.51
11	Jharkhand	314.56	330.29	346.80	364.14	382.35	401.47	1825.05
12	Karnataka	341.37	358.43	376.35	395.17	414.93	435.68	1980.57
13	Kerala	283.62	297.80	312.69	328.32	344.74	361.98	1645.52
14	Madhya Pradesh	373.30	391.97	411.56	432.14	453.75	476.44	2165.85
15	Maharashtra	917.23	963.09	1011.25	1061.81	1114.90	1170.64	5321.69
16	Manipur	49.92	52.42	55.04	57.79	60.68	63.71	289.63
17	Meghalaya	13.59	14.27	14.98	15.73	16.52	17.34	78.85
18	Mizoram	1.86	1.95	2.05	2.15	2.26	2.37	10.79
19	Nagaland	10.55	11.07	11.63	12.21	12.82	13.46	61.19
20	Orissa	349.82	367.31	385.68	404.96	425.21	446.47	2029.63
21	Punjab	704.28	739.49	776.47	815.29	856.06	898.86	4086.17
22	Rajasthan	463.09	486.24	510.55	536.08	562.89	591.03	2686.79
23	Sikkim	2.03	2.14	2.24	2.35	2.47	2.60	11.80
24	Tamil Nadu	409.63	430.12	451.62	474.20	497.91	522.81	2376.66
25	Tripura	29.86	31.35	32.92	34.56	36.29	38.11	173.23
26	Uttar Pradesh	2717.77	2853.66	2996.34	3146.16	3303.47	3468.64	15768.27
27	Uttarakhand	228.85	240.29	252.31	264.92	278.17	292.08	1327.77
28	West Bengal	734.38	771.10	809.65	850.14	892.64	937.28	4260.81
	Total	11520.69	12096.73	12701.56	13336.64	14003.48	14703.65	66842.06

#### Total Projected Maintenance Expenditure for Irrigation (2010 - 2015) based on MoWR suggested Norms

\*Total of estimated NPRE (Irrigation) for the base year, i.e., 2009-10 after comparing the MoWR suggested norms based NPRE with 2009-10 (BE) of the respective states under 2700/2701 & 2702 and adopting higher of the two.

#### Table 15 (b)

								(Rs. Crore)
S.No.	State	2009-10 (Estimates)*	2010-11	2011-12	2012-13	2013-14	2014-15	Total (2010 - 2015)
1	Andhra Pradesh	416.05	436.85	458.69	481.63	505.71	530.99	2413.86
2	Arunachal Pradesh	0.15	0.16	0.17	0.18	0.18	0.19	0.88
3	Assam	132.22	138.83	145.77	153.06	160.71	168.75	767.13
4	Bihar	494.44	519.16	545.12	572.38	600.99	631.04	2868.70
5	Chhattisgarh	181.71	190.80	200.34	210.35	220.87	231.92	1054.27
6	Goa	14.69	15.42	16.20	17.01	17.86	18.75	85.23
7	Gujarat	313.86	329.55	346.03	363.33	381.50	400.57	1820.99
8	Haryana	567.40	595.77	625.56	656.84	689.68	724.16	3292.01
9	Himachal Pradesh	7.69	8.07	8.48	8.90	9.35	9.81	44.62
10	Jammu & Kashmir	56.30	59.12	62.07	65.17	68.43	71.85	326.65
11	Jharkhand	251.85	264.44	277.66	291.55	306.13	321.43	1461.21
12	Karnataka	233.75	245.43	257.70	270.59	284.12	298.32	1356.17
13	Kerala	155.33	163.10	171.25	179.81	188.80	198.24	901.21
14	Madhya Pradesh	298.45	313.37	329.04	345.49	362.77	380.91	1731.58
15	Maharashtra	646.44	678.76	712.70	748.34	785.75	825.04	3750.59
16	Manipur	34.95	36.70	38.53	40.46	42.48	44.61	202.78
17	Meghalaya	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18	Mizoram	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19	Nagaland	0.13	0.13	0.14	0.15	0.15	0.16	0.73
20	Orissa	249.44	261.91	275.01	288.76	303.20	318.36	1447.23
21	Punjab	506.35	531.67	558.25	586.16	615.47	646.25	2937.80
22	Rajasthan	323.32	339.49	356.46	374.28	393.00	412.65	1875.87
23	Sikkim	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24	Tamil Nadu	284.56	298.79	313.73	329.41	345.88	363.18	1650.99
25	Tripura	2.46	2.58	2.71	2.84	2.99	3.14	14.26
26	Uttar Pradesh	1609.40	1689.87	1774.36	1863.08	1956.24	2054.05	9337.60
27	Uttarakhand	178.18	187.09	196.44	206.27	216.58	227.41	1033.78
28	West Bengal	326.71	343.05	360.20	378.21	397.12	416.97	1895.54
	Total	7285.82	7650.11	8032.61	8434.24	8855.96	9298.75	42271.68

# Projected Maintenance Expenditure for Major and Medium Irrigation (2010 - 2015) based on MoWR suggested Norms (Rs. Crore)

\* Estimated NPRE (Irrigation) for the base year, i.e., 2009-10 after comparing the MoWR suggested norms based NPRE under MH 2700/2701 with that provided in 2009-10 (BE) of the respective states and adopting higher of the two.

								(Rs. Crore)
SI. No.	State	2009-10 (Estimates)*	2010-11	2011-12	2012-13	2013-14	2014-15	Total (2010- 2015)
1	Andhra Pradesh	168.51	176.94	185.78	195.07	204.83	215.07	977.69
2	Arunachal Pradesh	27.97	29.37	30.84	32.38	34.00	35.70	162.28
3	Assam	259.37	272.34	285.96	300.25	315.27	331.03	1504.84
4	Bihar	319.35	335.32	352.08	369.69	388.17	407.58	1852.84
5	Chhattisgarh	32.58	34.20	35.91	37.71	39.60	41.58	189.00
6	Goa	19.65	20.63	21.66	22.75	23.88	25.08	114.01
7	Gujarat	111.40	116.97	122.82	128.96	135.41	142.18	646.35
8	Haryana	93.05	97.71	102.59	107.72	113.11	118.76	539.89
9	Himachal Pradesh	176.27	185.08	194.34	204.05	214.26	224.97	1022.70
10	Jammu & Kashmir	182.33	191.45	201.02	211.07	221.62	232.70	1057.86
11	Jharkhand	62.71	65.85	69.14	72.59	76.22	80.04	363.84
12	Karnataka	107.62	113.00	118.65	124.58	130.81	137.35	624.40
13	Kerala	128.29	134.70	141.44	148.51	155.93	163.73	744.31
14	Madhya Pradesh	74.85	78.59	82.52	86.65	90.98	95.53	434.27
15	Maharashtra	270.79	284.33	298.55	313.47	329.15	345.60	1571.10
16	Manipur	14.97	15.72	16.50	17.33	18.20	19.11	86.85
17	Meghalaya	13.59	14.27	14.98	15.73	16.52	17.34	78.85
18	Mizoram	1.86	1.95	2.05	2.15	2.26	2.37	10.79
19	Nagaland	10.42	10.94	11.49	12.06	12.67	13.30	60.46
20	Orissa	100.38	105.40	110.67	116.20	122.01	128.11	582.40
21	Punjab	197.93	207.83	218.22	229.13	240.59	252.62	1148.38
22	Rajasthan	139.77	146.76	154.09	161.80	169.89	178.38	810.92
23	Sikkim	2.03	2.14	2.24	2.35	2.47	2.60	11.80
24	Tamil Nadu	125.07	131.33	137.89	144.79	152.03	159.63	725.67
25	Tripura	27.40	28.77	30.21	31.72	33.30	34.97	158.97
26	Uttar Pradesh	1108.37	1163.79	1221.98	1283.08	1347.23	1414.59	6430.67
27	Uttarakhand	50.67	53.20	55.86	58.66	61.59	64.67	293.98
28	West Bengal	407.67	428.05	449.46	471.93	495.53	520.30	2365.27
	Total	4234.88	4446.62	4668.95	4902.40	5147.52	5404.89	24570.38

#### Projected Maintenance Expenditure for Minor Irrigation (2010 - 2015) based on MoWR suggested Norms

\* Estimated NPRE (Irrigation) for the base year, i.e., 2009-10 after comparing the MoWR suggested norms based NPRE under MH 2702 with that provided in 2009-10 (BE) of the respective states and adopting higher of the two.

SI. No.	Name of State	Number of WUAs	Area Covered
		Formed	(Thousand Hectare)
1.	Andhra Pradesh	10790	4800.00
2.	Arunachal Pradesh	2	1.47
3.	Assam	37	24.09
4.	Bihar	37	105.80
5.	Chhattisgarh	945	NA
6.	Goa	42	5.00
7.	Gujarat	576	96.68
8.	Haryana	2800	200.00
9.	Himachal Pradesh	875	35.00
10.	Jammu and Kashmir	1	1.00
11.	Karnataka	2279	1052.41
12.	Kerala	3930	148.48
13.	Madhya Pradesh	1470	1501.45
14.	Maharashtra	1299	444.00
15.	Manipur	62	49.27
16.	Meghalaya	99	NA
17.	Nagaland	25	NA
18.	Orissa	11020	907.00
19.	Punjab	957	116.95
20.	Rajasthan	506	219.65
21.	Tamil Nadu	7725	474.28
22.	Uttar Pradesh	24	10.55
23.	West Bengal	10000	37.00
Total		55501	10230.08

## Eleventh Five Year Plan State-wise Number of WUAs Formed and Irrigated Area Covered

Source: Eleventh Plan Document.

## Sharing of Water charges between WUAs and State Governments in Andhra Pradesh, Maharashtra, and Uttar Pradesh

S.No.	State	Water charges levied by	Collection	Sharing of Water Charges	Remarks
1	Andhra Pradesh	State Government	WUAs pay water charges to the State Government through Panchayat or Revenue Department.	All receipts from water charges are all retained by the State Government with nothing refunded to WUAs.	A specified percentage of water charges collected are supposed to be returned to the WUAs. However, the State Government does not pay back to the WUAs. Receipts from water charges are used for works identified by the Irrigation Department. Though the irrigation policy of the State stipulates that minor irrigation systems should receive refund of 90% of water charges payment, no such refund takes place in practice.
2	Maharashtra		Collected by the WUA and paid through Project Level Associations (PLA) to the Irrigation Department.	Irrigation Department returns to the PLA water charges in certain proportion of collection which, in turn, further transfers certain share to WUAs.	Returned to PLAs and WUAs in a fixed ratio. WUAs are encouraged to establish an ISF system that covers not only what they pay to the Irrigation Department and PLA, but also with a percentage to be retained by the WUA for operation and maintenance of their irrigation system.
3	Uttar Pradesh	State Government	WUAs pay water charges to the State Government through Revenue Department.	All receipts from water charges are all retained by the State Government with nothing refunded to WUAs.	WUAs are also not collecting additional water charges for O&M of the system.

State -wise Achievement of Irrigation Potential Utilized to Irrigation Potential Created (Cumulative)\*

SI. No.	State	1984 - 85	1989-90	1991-92	1996-97	2001 <i>-</i> 02 (&)	2006-07
1	AndhraPradesh	93.29	93.85	93.76	93.68	92.25	90.39
2	Arunachal Pradesh	85.07	88.69	86.05	78.57	77.77	78.00
3	Assam	82.62	78.68	76.93	78.87	78.87	77.90
4	Bihar	86.36	87.16	87.04	74.74	74.01	73.72
5	Chhattisgarh				80.16	76.84	73.33
6	Goa	88.89	69.68	91.40	88.97	79.48	75.45
7	Gujarat	82.63	86.19	88.68	92.52	92.64	87.43
8	Haryana	93.84	92.50	92.00	92.06	91.90	91.23
9	Himachal Pradesh	89.43	88.16	84.52	83.27	83.63	83.23
10	Jammu & Kashmir	89.59	90.06	93.61	92.78	95.26	81.73
11	Jharkhand				74.24	74.37	96.44
12	Karnataka	93.73	93.88	92.00	92.60	91.38	88.53
13	Kerala	92.42	89.89	90.94	92.21	93.05	87.54
14	Madhya Pradesh	82.09	83.79	83.36	84.15	83.04	64.85
15	Maharashtra	69.53	71.70	72.38	74.29	76.11	75.90
16	Manipur	74.68	80.78	84.01	83.63	81.16	80.96
17	Meghalaya	91.43	88.13	87.49	88.58	92.82	90.58
18	Mizoram	90.68	86.62	85.67	88.14	84.36	84.24
19	Nagaland	92.16	86.77	85.91	86.15	85.72	84.50
20	Orissa	93.99	92.09	92.38	91.58	94.88	92.87
21	Punjab	99.02	98.37	98.05	97.96	98.05	97.74
22	Rajasthan	94.30	94.42	95.80	94.25	94.86	93.13
23	Sikkim	71.43	77.85	76.93	78.46	79.58	79.63
24	Tamil Nadu	100.00	99.66	99.74	99.89	99.89	99.72
25	Tripura	86.21	90.28	90.43	90.99	87.81	84.33
26	Uttar Pradesh	90.44	89.61	89.98	81.76	80.02	79.69
27	Uttarakhand				74.52	75.03	75.01
28	West Bengal	92.45	85.48	86.49	83.70	84.47	83.98
	Total States	90.19	89.63	89.85	85.96	85.24	83.98

(In % at the end of the year)

\* - Figures for 1984-85, 1989-90 and 1991-92 are based on State-wise figures on IPC and IPU as per CWC and remaining data based on information from MoWR. # - Ratio of all States IPU to IPC worked out in the study report based on Ministry of Water Resources figures. & - Anticipated Achievement figures for IPC and IPU available under Minor Irrigation.

## <u>Total Projected NPRE, Normal NPRE and proposed grants-in-aid for major head 2700, 2701 and 2702 during the</u> <u>Thirteenth Finance Commission award period</u>

	1	1						(Rs. Crore)
SI. No.	State	Items	2010-11	2011-12	2012-13	2013-14	2014-15	Total (2010-15)
		Normal Expenditure	613.78	644.47	676.70	710.53	746.06	3391.54
1	Andhra Pradesh	Grant	0.00	161.12	169.18	177.63	186.52	694.44
		Total NPRE	613.78	805.59	845.88	888.16	932.58	4085.98
		Normal Expenditure	29.53	31.00	32.55	34.18	35.89	163.15
2	Arunachal Pradesh	Grant	0.00	7.75	8.14	8.55	8.97	33.41
		Total NPRE	29.53	38.75	40.69	42.73	44.86	196.56
		Normal Expenditure	411.17	431.73	453.31	475.98	499.78	2271.97
3	Assam	Grant	0.00	107.93	113.33	119.00	124.95	465.20
		Total NPRE	411.17	539.66	566.64	594.98	624.73	2737.17
		Normal Expenditure	854.48	897.20	942.06	989.17	1038.63	4721.54
4	Bihar	Grant	0.00	224.30	235.52	247.29	259.66	966.77
		Total NPRE	854.48	1121.50	1177.58	1236.46	1298.29	5688.31
		Normal Expenditure	225.00	236.25	248.06	260.47	273.49	1243.27
5	Chhattisgarh	Grant	0.00	59.06	62.02	65.12	68.37	254.57
		Total NPRE	225.00	295.31	310.08	325.59	341.86	1497.84
		Normal Expenditure	36.06	37.86	39.75	41.74	43.83	199.24
6	Goa	Grant	0.00	9.47	9.94	10.44	10.96	40.80
		Total NPRE	36.06	47.33	49.69	52.18	54.79	240.04
		Normal Expenditure	446.53	468.85	492.29	516.91	542.75	2467.33
7	Gujarat	Grant	0.00	117.21	123.07	129.23	135.69	505.20
		Total NPRE	446.53	586.06	615.36	646.14	678.44	2972.53
		Normal Expenditure	693.48	728.15	764.56	802.79	842.92	3831.90
8	Haryana	Grant	0.00	182.04	191.14	200.70	210.73	784.61
		Total NPRE	693.48	910.19	955.70	1003.49	1053.65	4616.51
		Normal Expenditure	193.16	202.82	212.96	223.60	234.78	1067.32
9	Himachal Pradesh	Grant	0.00	50.71	53.24	55.90	58.70	218.54
		Total NPRE	193.16	253.53	266.20	279.50	293.48	1285.86
		Normal Expenditure	250.56	263.09	276.24	290.06	304.56	1384.51
10	Jammu & Kashmir	Grant	0.00	65.77	69.06	72.52	76.14	283.49
		Total NPRE	250.56	328.86	345.30	362.58	380.70	1668.00
		Normal Expenditure	330.29	346.80	364.14	382.35	401.47	1825.05
11	Jharkhand	Grant	0.00	86.70	91.04	95.59	100.37	373.69
		Total NPRE	330.29	433.50	455.18	477.94	501.84	2198.74
		Normal Expenditure	358.43	376.35	395.17	414.93	435.68	1980.56
12	Karnataka	Grant	0.00	94.09	98.79	103.73	108.92	405.53
		Total NPRE	358.43	470.44	493.96	518.66	544.60	2386.09
		Normal Expenditure	297.80	312.69	328.32	344.74	361.98	1645.53
13	Kerala	Grant	0.00	78.17	82.08	86.19	90.50	336.93
		Total NPRE	297.80	390.86	410.40	430.93	452.48	1982.46
		Normal Expenditure	391.97	411.56	432.14	453.75	476.44	2165.86
14	Madhya Pradesh	Grant	0.00	102.89	108.04	113.44	119.11	443.47
-		Total NPRE	391.97	514.45	540.18	567.19	595.55	2609.33

Table-19 (Contd.)

## Total Projected NPRE, Normal NPRE and proposed grants-in-aid for major head 2700, 2701 and 2702 during the Thirteenth Finance Commission award period

						_		(Rs. Crore)
SI. No.	State	Items	2010-11	2011-12	2012-13	2013-14	2014-15	Total (2010-15)
		Normal Expenditure	963.09	1011.25	1061.81	1114.90	1170.64	5321.69
15	Maharashtra	Grant	0.00	252.81	265.45	278.73	292.66	1089.65
		Total NPRE	963.09	1264.06	1327.26	1393.63	1463.30	6411.34
		Normal Expenditure	52.42	55.04	57.79	60.68	63.71	289.64
16	Manipur	Grant	0.00	13.76	14.45	15.17	15.93	59.31
		Total NPRE	52.42	68.80	72.24	75.85	79.64	348.95
		Normal Expenditure	14.27	14.98	15.73	16.52	17.34	78.84
17	17 Meghalaya	Grant	0.00	3.75	3.93	4.13	4.34	16.14
		Total NPRE	14.27	18.73	19.66	20.65	21.68	94.98
		Normal Expenditure	1.95	2.05	2.15	2.26	2.37	10.78
18	Mizoram	Grant	0.00	0.51	0.54	0.57	0.59	2.21
		Total NPRE	1.95	2.56	2.69	2.83	2.96	12.99
		Normal Expenditure	11.07	11.63	12.21	12.82	13.46	61.19
19	Nagaland	Grant	0.00	2.91	3.05	3.21	3.37	12.53
		Total NPRE	11.07	14.54	15.26	16.03	16.83	73.72
		Normal Expenditure	367.31	385.68	404.96	425.21	446.47	2029.63
20	Orissa	Grant	0.00	96.42	101.24	106.30	111.62	415.58
		Total NPRE	367.31	482.10	506.20	531.51	558.09	2445.21
		Normal Expenditure	739.49	776.47	815.29	856.06	898.86	4086.17
21	Punjab	Grant	0.00	194.12	203.82	214.02	224.72	836.67
		Total NPRE	739.49	970.59	1019.11	1070.08	1123.58	4922.84
		Normal Expenditure	486.24	510.55	536.08	562.89	591.03	2686.79
22	Rajasthan	Grant	0.00	127.64	134.02	140.72	147.76	550.14
		Total NPRE	486.24	638.19	670.10	703.61	738.79	3236.93
		Normal Expenditure	2.14	2.24	2.35	2.47	2.60	11.80
23	Sikkim	Grant	0.00	0.56	0.59	0.62	0.65	2.42
		Total NPRE	2.14	2.80	2.94	3.09	3.25	14.22
		Normal Expenditure	430.12	451.62	474.20	497.91	522.81	2376.66
24	Tamil Nadu	Grant	0.00	112.91	118.55	124.48	130.70	486.64
		Total NPRE	430.12	564.53	592.75	622.39	653.51	2863.30
		Normal Expenditure	31.35	32.92	34.56	36.29	38.11	173.23
25	Tripura	Grant	0.00	8.23	8.64	9.07	9.53	35.47
		Total NPRE	31.35	41.15	43.20	45.36	47.64	208.70
	Uttar	Normal Expenditure	2853.66	2996.34	3146.16	3303.47	3468.64	15768.27
26	Pradesh	Grant	0.00	749.09	786.54	825.87	867.16	3228.65
	Tradosir	Total NPRE	2853.66	3745.43	3932.70	4129.34	4335.80	18996.92
		Normal Expenditure	240.29	252.31	264.92	278.17	292.08	1327.77
27	Uttarakhand	Grant	0.00	63.08	66.23	69.54	73.02	271.87
		Total NPRE	240.29	315.39	331.15	347.71	365.10	1599.64
		Normal Expenditure	771.10	809.65	850.14	892.64	937.28	4260.81
28	West Bengal	Grant	0.00	202.41	212.54	223.16	234.32	872.43
		Total NPRE	771.10	1012.06	1062.68	1115.80	1171.60	5133.24
		Normal Expenditure	12096.74	12701.55	13336.60	14003.49	14703.66	66842.04
	Total	Grant	0.00	3175.39	3334.15	3500.87	3675.92	13686.33
		Total NPRE	12096.74	15876.94	16670.75	17504.36	18379.58	80528.37