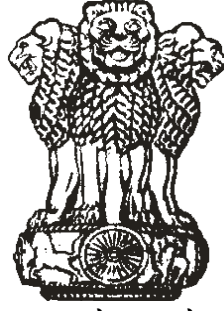




# REPORT ON BENCHMARKING OF IRRIGATION PROJECTS IN MAHARASHTRA STATE 2007- 2008



**WATER RESOURCES DEPARTMENT  
GOVERNMENT OF MAHARASHTRA  
MARCH 2009**



सत्यमेव जयते

**REPORT ON  
BENCHMARKING OF IRRIGATION PROJECTS  
IN MAHARASHTRA STATE  
2007-08**

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**WATER RESOURCES DEPARTMENT  
GOVERNMENT OF MAHARASHTRA, INDIA  
MARCH 2009**

## FOREWORD

In compliance to commitment in State Water policy about transparency in water use and to identify the areas of problems in seeking objective set in the project planning, benchmarking of selected 262 projects in the State is in practice since last 5 years.

Benchmarking is a systematic process for securing continual improvement through comparison with relevant and achievable internal or external norms & standards. To achieve this every indicator is compared with last five year average, year (2006-07) & (2007-08), this enables to compare the performance with predecessors as well as own performance of the last year.

Use of benchmarking has conferred success in elevating the performance level of irrigation projects. Increase in potential utilization from 1.708 Mha to 2.764 Mha and revenue recovery from Rs. 252 crores to 627 crores is significant achievement of Water Resources Department during last five years.

More improvement in project performance can be attained if results of benchmarking are systematically utilised for framing and implementing the projectwise action plan.

In near future, there will be a shift of irrigation Water Management from Water Resources Department to Water Users Associations. Naturally, benchmarking of WUA will be also helpful for performance evaluation and creating awareness amongst water management staff and office bearers of WUA's.

Lastly, I appeal all project authorities to use benchmarking as an effective management tool to improve the current performance level of the irrigation projects.

I appreciate sincere efforts taken by Shri R.B. Shukla, Chief Engineer, MWRDC, Aurangabad and his team for preparation of this report.

I would like to express thanks to The Director General, WALMI, Aurangabad for getting this report printed at Aurangabad.

Comments & suggestions on this report will be appreciated.

**E. B. Patil**  
**Secretary (CAD)**

## **Maharashtra Water Resources Development Centre, Aurangabad**

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## ABBREVIATIONS

|                        |  |
|------------------------|--|
| Avg Per                | Average performance  |
| BCM                    | Billion Cubic Metre  |
| CAD                    | Command Area Development   |
| CBIP                   | Central Board of Irrigation & Power  |
| CCA                    | Culturable Command Area  |
| CRT                    | Converted Regular Temporary  |
| DIRD                   | Directorate of Irrigation Research & Development                               |
| FAO                    | Food & Agriculture Organisation  |
| FY Avg                 | Five years average   |
| GCA                    | Gross Command Area   |
| GOI                    | Government of India  |
| GOM                    | Government of Maharashtra  |
| ha                     | Hectare  |
| HW                     | Hot weather  |
| ICID                   | International Commission on Irrigation & Drainage                              |
| IMD                    | Indian Meteorological Department   |
| INCID                  | Indian National Committee on Irrigation & Drainage                             |
| IPTRID                 | International Programme for Technology and Research in Irrigation and Drainage |
| IWMI                   | International Water Management Institute                                       |
| m                      | Metre  |
| M cum/ Mm <sup>3</sup> | Million Cubic metre  |
| Mha                    | Million Hectare  |
| MKVDC                  | Maharashtra Krishna Valley Development Corporation                             |
| MWSIP                  | Maharashtra Water Sector Improvement programme                                 |
| MMISF ACT              | Maharashtra Management of Irrigation System by farmers Act 2005.               |
| mm                     | Millimeter   |
| MWIC                   | Maharashtra Water & Irrigation Commission                                      |
| NLBC                   | Neera Left Bank Canal  |
| NRBC                   | Neera Right Bank Canal   |
| O & M                  | Operation & Maintenance  |
| Past Max               | Maximum value observed in Past   |
| Past Min               | Minimum value observed in Past   |
| PIM                    | Participatory Irrigation Management  |
| PIP                    | Preliminary Irrigation Programme   |
| PLBC                   | Paithan Left Bank Canal  |
| PRBC                   | Paithan Right Bank Canal   |
| PWD                    | Public Works Department  |
| Sq km                  | Square Kilometre   |
| State Tar              | State target   |
| WALMI                  | Water and Land Management Institute, Aurangabad                                |

|                 |  |
|-----------------|--|
| WRD             | Water Resources Department                       |
| WUA             | Water Users' Association                         |
| ISP             | Irrigation system performance                    |
| AIC Akola       | Akola Irrigation Circle, Akola                   |
| BIPC Buldhana   | Buldhana Irrigation Project Circle, Buldhana     |
| CADA A'bad      | Command Area Development Authority, Aurangabad   |
| CADA Beed       | Command Area Development Authority, Beed         |
| CIPC Chandrapur | Chandrapur Irrigation Project Circle, Chandrapur |
| JIPC Jalgaon    | Jalgaon Irrigation Project circle, Jalgaon       |
| KIC Ratnagiri   | Konkan Irrigation Circle, Ratnagiri              |
| NIC Nagpur      | Nagpur Irrigation Circle, Nagpur                 |
| NIC Nanded      | Nanded Irrigation Circle, Nanded                 |
| NIPC Dhule      | Nashik Irrigation Project Circle, Dhule          |
| NKIPC Thane     | North Konkan Irrigation Project Circle, Thane    |
| PIC Pune        | Pune Irrigation Circle, Pune                     |
| SIC Sangli      | Sangli Irrigation Circle, Sangli                 |
| TIC Thane       | Thane Irrigation Circle, Thane                   |
| UWPC Amravati   | Upper Wardha Project Circle, Amravati            |
| YIC Yeotmal     | Yeotmal Irrigation Circle, Yeotmal               |

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## Executive Summary

The methodology and main performance Indicators for Benchmarking are adopted as per the guidelines issued by Indian National Committee on Irrigation & Drainage (INCID) in 2002.

The year wise indicators selected for benchmarking since 2001-02 along with their Domain are enlisted below:-

| <b>Year</b>    | <b>Domain</b>                | <b>Performance Indicator</b>  |
|----------------|------------------------------|---|
| <b>2001-02</b> | 1. System Performance        | i) Annual irrigation water supply per unit irrigated area   |
|                | 2. Agricultural Productivity | i) Output per unit irrigated area,<br>ii) Output per unit irrigation supply   |
|                | 3. Financial Aspects         | i) Cost Recovery Ratio<br>ii) Total O&M cost per unit area<br>iii) Revenue per unit volume of water supplied<br>iv) Maintenance cost to revenue ratio<br>v) Mandays for O&M per unit area<br>vi) Total O&M cost per unit volume of water supplied |
|                | 4. Environmental Aspects     | i) Land damage index  |
| <b>2002-03</b> | 1. Deleted Indicator         | Maintenance Cost to Revenue Ratio   |
|                | 2. Additional Indicators     | 1. Potential Created and Utilised<br>Equity Performance   |
| <b>2003-04</b> | Additional Indicator         | Assessment Recovery Ratio<br>a. Irrigation<br>b. Non-irrigation   |
| <b>2004-05</b> | No Change                    |   |
| <b>2006-07</b> | 1 Deleted                    | Mandays per unit area   |
| <b>2007-08</b> | No Change                    |   |

Initially, the exercise was conducted for 84 projects in 2001-02 with 10 indicators. The number of projects increased to 254 in 2002-03 with 11 indicators. Instead of presenting the data of all these projects individually, an irrigation circle was considered as a unit for evaluation of performance. Here also, it was observed that some of the characteristics of projects under a circle are not identical and to make the comparison still on better grounds, from the year 2003-04, projects under a circle in a sub basin are grouped together and comparison is made with other projects in a particular plan group.

In carrying out the Benchmarking exercise, following categorization of irrigation schemes into similar types have been done for comparison.



|    |   |   |
|----|---|---|
| a) | Type of control for Supply of water             | Fixed proportional division, manual control, automatic control<br>“Manual Control” is applicable in this Benchmarking Exercise. |
| b) | Method of allocation and distribution of water. | Supply-oriented arranged-demand, on demand<br>The method applicable in this case is “on-demand.”                                |
| c) | Water Availability                              | Abundant, Scarce.<br>Highly deficit to Abundant.  |
| d) | Water Source                                    | Surface water, groundwater or both.<br>Surface water is applicable  |
| e) | Size  | Major, Medium, Minor.<br>All sizes applicable   |

This is the seventh consecutive report of benchmarking of irrigation projects in the State with 262 projects and 12 indicators. The plan group wise number of projects selected for benchmarking during 2007-08 is as follows.

| Sr. No | Plan Group     | Nagpur, Amravati Region |           |           | Pune, Konkan Region |           |           | Aurangabad, Nashik Region |           |           |            |
|--------|----------------|-------------------------|-----------|-----------|---------------------|-----------|-----------|---------------------------|-----------|-----------|------------|
|        |                | Major                   | Medium    | Minor     | Major               | Medium    | Minor     | Major                     | Medium    | Minor     |            |
| 1      | Highly Deficit | --                      | --        | --        | 1                   | 11        | 3         | -                         | 16        | 4         | 35         |
| 2      | Deficit        | 4                       | 10        | 13        | --                  | --        | --        | 10                        | 44        | 18        | 99         |
| 3      | Normal         | 4                       | 13        | 5         | 6                   | 1         | 2         | 10                        | 16        | 8         | 65         |
| 4      | Surplus        | 3                       | 22        | 4         | --                  | --        | --        | --                        | --        | --        | 29         |
| 5      | Abundant       | 2                       | 2         | 1         | 8                   | 10        | 11        | --                        | --        | --        | 34         |
|        | <b>Total</b>   | <b>13</b>               | <b>47</b> | <b>23</b> | <b>15</b>           | <b>22</b> | <b>16</b> | <b>20</b>                 | <b>76</b> | <b>30</b> | <b>262</b> |

**Grand Total: 262**

Out of 12 indicators as mentioned above, one indicator regarding “Mandays Per Unit Area” was deleted and only 11 indicators are selected now.

### **Methodology**

The data presented in this report is based on information collected from each of the circle in-charge of the project.

The following process was used in development of this report.

- For achieving consistency in monitoring & evaluation, same projects which are considered for benchmarking during 2006-07 and 2007-08.
- The data about water use and area irrigated is correlated with water accounts (2007-08) of relevant projects.

- The presentation for every indicator is done with past-past (5 year average), recent past (2006-07) and present year (2007-08) in order to compare the performance with predecessors as well as own performance of last year.

Based on performance for 2007-08, indicator wise average performance is found out for the plan group of circles under consideration, setting aside the exceptionally high/low values.

. For financial indicator of output per unit irrigated area and output per unit irrigation water supply, fixed prices of 1998-99 are considered to obviate effect of price rise.

There are 2777 completed minor irrigation projects in the State. Therefore, it has been decided to carryout benchmarking and monitoring of minor projects at circle level itself. To get an idea about performance of minor projects, some sample schemes which were considered in last year's report are analysed and included in this report.

### **Benchmarking of WUA**

Till June 2007, potential to the tune of 4.331 Mha has been created on state level projects.

In view of the huge capital cost investment in construction of projects as well as in rehabilitation of canal systems along with intention of securing the advantage of benchmarking, benchmarking of WUAs was felt necessary. Accordingly the issue of Benchmarking of WUA was under consideration for last two years.

To initialise the process, 9 Indicators feasible to determine the performance of individual WUA are designed and data in prescribed proforma was called from selected 11 WUA's on 7 Major projects. Out of these 11 WUA'S, MMISF Act- 2005 is applicable to 3 WUA's on Waghad and Mula projects.

The details about objectives of Benchmarking of WUA's, Proformae used for calling the data along with indicator wise, WUA wise analysis has been given as a case study in a separate chapter (Chapter 6) in this report.

### **Indicator wise Performance of Maharashtra State for the Years 2002-03 to 2007-08**

#### **Indicator – I: Annual Irrigation Water Supply Per Unit Irrigation Area:**

Annual Irrigation water supplied for major projects in Maharashtra state is lower in 2007-08 i.e. 8289 cum/ha as compared to the same in the year 2006-07 i.e. 10977 cum/ha. And same for medium project it is higher in the years 2007-08

compared to previous year 2006-07. For minor project the water use is less in the year 2003-04 i.e. 5945 cum/ha. and maximum in the year 2005-06 i.e. 9738 cum/ha and for the year 2007-08 it is on higher side i.e. 6910 cum/ha.

**Indicator –II: Potential created and utilised:**

For Major Projects the maximum utilised potential was in the year 2006-07 the utilised potential is increasing yearly from 0.46 in the year 2002-03 to 0.91 in the year 2006-07 water use is marginally less (0.88) for current year. For medium projects the ratio in the year 2007-08 is 0.73. For minor Projects utilised potential was 0.42 in the year 2003-04 and it is improving for last four years and 0.89 in the year 2006-07, it has slightly decreased for the current year i.e., 0.71.

**Indicator-III: Output Per Unit Irrigated Area:**

For Major Projects agricultural output shows variations in last five years. Maximum agricultural output of Rs. 36348/ha is in the year 2007-08 and minimum of Rs. 26758/ha is in the year 2003-04. For medium project the agricultural output of Rs.42613/ha was maximum in 2005-06 and minimum of Rs 25358/ha in the year 2004-05. For Minor Projects agricultural output is maximum of Rs. 36176/ha in 2007-08 and minimum of Rs. 21015/ha in the year 2006-07.

**Indicator – IV: Out Put Per Unit Irrigation Water Supply:**

For Major Project the output per cum was Rs. 2.93/cum in the year 2002-03 and went on increasing year by year and reached to a maximum of Rs 5.01/cum in the year 2007-08. For Medium Projects maximum output of Rs. 4.78/cum is in the year 2007-08. For minor projects the output of Rs 5.00/Cum is on higher side for the current year and minimum of Rs. 3.75/cum in the year 2006-07.

**Indicator –V: Cost Recovery Ratio:**

For major projects the ratio for the year 2007-08 is 1.00. For medium projects the ratio was in between 0.30 to 0.43 for last five years, for current year the ratio is maximum i.e., 0.64. In case of Minor Projects ratio was in between 0.28 to 0.35 for four years. But in 2005-06 the ratio was maximum i.e., 0.83, for this year the ratio is 0.34

**Indicator-VI: O&M Cost Per Unit Irrigated Area:**

For Major Projects the O & M Cost Per Unit Area is on higher side of state target for previous years it was nearly three times the state target except in the year 2006-07, it is maximum of Rs 4620/ha in the current year. It is due to excess expenditure on maintenance. In Medium Project O & M expenditure increased from

the year 2002-03 to 2007-08 consistently, For Minor Projects the O & M Cost Per Unit Area was minimum of Rs. 981/ha in the year 2002-03 and increased year by year to a maximum of Rs. 5035/ha in the year 2005-06.

**Indicator – VII: O & M Cost Per Unit Water Supply:**

For Major Projects O & M Cost per Unit Water Supply ranges between Rs. 0.18/cum to Rs. 0.36/cum from year 2002-03 but for the current year it is maximum of Rs. 0.40 /cum. For Medium Projects excessive O & M expenditure resulted in poor performance for last five years. It has improved to Rs.0.22/cum for current year. For Minor projects the O & M Cost per Unit Water Use was in between Rs. 0.16cum to Rs. 0.9 for five years. This year it is Rs. 0.35/cum.

**Indicator – VIII: Revenue Per Unit Water Supply:**

For Major Project in Maharashtra State, Revenue Per Unit Water Supply, for last five years, ranged from Rs. 0.20/cum to Rs. 0.23/cum. This year it has slightly increased to Rs.0.24/cum. For medium project the revenue was Rs. 0.07/cum in the year 2002-03 and went on increasing to Rs. 0.15/cum in the year 2005-06. In 2006-07 it comes to Rs. 0.13/cum, it has further increased to Rs 0.14/cum for current year. For Minor Projects revenue per unit water use was in between Rs. 0.04/cum to Rs. 0.11/cum. For current year the ratio is Rs 0.05/cum.

**Indicator – XII: Assessment Recovery Ratio (Irrigation):**

For Major Project Assessment Recovery Ratio was minimum in the year 2005-06 i.e. Rs. 0.22. But in the year 2006-07 it increased to 0.49 due to improvement in recovery of irrigation water charges. It has slightly decreased to 0.40 for the year 2007-08. For Medium Projects ratio shows ups and downs year wise. It was 0.22 in the year 2003-04 and increases to 0.67 in 2005-06. In 2006-07 less amount of recovery reduced the ratio to 0.43, but for the current year it is 0.51. For Minor Project Assessment Recovery Ratio was in between 0.43 to 0.52 for four years but in 2005-06 it was 0.8, for the current year it is 0.51.

**Indicator – XII: Assessment Recovery Ratio (Non Irrigation):**

For Major projects the ratio for the last six years is between 0.81 to 1.09, for the current year it is 0.88. For medium projects the ratio is between 0.64 to 1.85, for the current year it is 0.86. In minor projects the ratio is in between 0.40 to 1.07, for the current year it is 0.97.

## CHAPTER - 1

### INTRODUCTION

**1.0.0** Benchmarking is a very powerful management .tool for analysing and improving the performance of water resources projects. It is widely accepted all over the World. IPTRID, IWMI, ICID, World Bank & FAO advocate use of benchmarking – since 2000.

For evaluation and improvement in performance of water resources projects, Government of Maharashtra has undertaken the benchmarking exercise in the State since 2000-01. The first Benchmarking Report was published in 2001-02.

Considering a shift in Irrigation Water Management from Water Resources Department to Water User's Associations to secure the advantages of benchmarking, benchmarking of WUA'S was under consideration for last two years. To set an example before the Project Authority, an attempt in the form of benchmarking of selected 11 WUA'S on 7 major projects under different 5 Irrigation circle has been done in this year. Details about objectives, indicators selected, proforma framed for calling information of WUA, indicator values procured etc is given in detail in chapter 6 of this report. This will be helpful to Project Authority and office bearers of WUA's for improving the performances of their WUA'S.

Maharashtra is the first State in India, which has introduced the Benchmarking technique for Irrigation Projects & now with our experience and CWC's follow-up other States are also adopting it.

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| d) | Water Source                                    | Surface water, groundwater or both.<br>Surface water is applicable  |
| e) | Size  | Major, Medium, Minor.<br>All sizes applicable   |

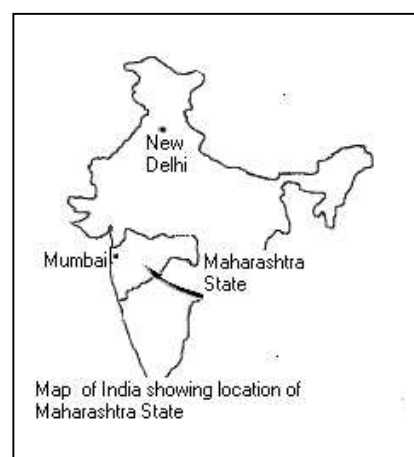
Details of year wise benchmarking done for irrigation projects are mentioned as below.

| Year:   | No. of Projects. |        |       |       | No. of Indicators | Year of publication |
|---------|------------------|--------|-------|-------|-------------------|---------------------|
|         | Major            | Medium | Minor | Total |                   |                     |
| 2001-02 | 30               | 26     | 28    | 84    | 10                | March 2003          |
| 2002-03 | 49               | 142    | 63    | 254   | 11                | March 2004          |
| 2003-04 | 49               | 143    | 69    | 261   | 12                | March 2005          |
| 2004-05 | 49               | 144    | 69    | 262   | 12                | February 2006       |
| 2005-06 | 49               | 144    | 69    | 262   | 12                | March 2007          |
| 2006-07 | 49               | 144    | 69    | 262   | 11                | March 2008          |
| 2007-08 | 48               | 145    | 69    | 262   | 11                | March 2009          |

**Note:** RajaNala Project which was previously included in Major Project is now included as Medium Project as per Project Authority report.

### 1.1.0 Maharashtra at a glance

Maharashtra occupies main portion of the Indian Sub-continent. The geographical location of Maharashtra is bounded between latitude 16.4° to 22.1° N and longitude 72.6° to 80.9° E and has an area of 307.71 thousand sq km, which is about 9.4 percent of the total geographical area of India. Maharashtra stands first amongst the major states in India in income & growth rate. The State has 720 km



long coastline along Arabian Sea. The western hill ranges are almost parallel to this coastline. The State is divided into two physiographic regions of Konkan and rest of the State (Deccan Plateau). The Deccan Plateau spread over on the east side of *Ghat* has west-east slope. In general, the altitude of the plateau varies between 300 to 600 m. Maharashtra is bounded by Gujarat on north-west, Madhya Pradesh on north, Chhattisgadh on east and Andhra Pradesh, Karnataka and Goa on south.

### 1.2.0 Physiography

The State is divided into five major regions physiographically:

i) Konkan strip on western side (ii) Sahyadri ranges (iii) Plateau on eastern side (iv) Hilly ranges of Satpuda and adjacent area on north and (v) Hilly and forest region of north-south Wainganga basin on East side of State.

1) Konkan Strip

The narrow strip of land extending from Damanganga basin in north to the border of Goa State in south is the Konkan. It has Sahyadri ranges on east and Arabian Sea on west. The Konkan strip is about 53 to 60 km wide and 500 km long along north-south. The widest stretch is about 100 km. Width decreases as one proceeds towards south. The region becomes hilly and altitude increases from the depressed coastline towards east.

2) Sahyadri Ranges

These continuous mountain ranges extend almost parallel to the western coastline. It is known as Western *Ghat*. The average height of Sahyadri in Maharashtra is 900 m. It is more in the north and diminishes towards south.

3) Eastern Plateau Region (Deccan Plateau)

The height of this plateau goes on diminishing from 600 m on western side to 300 m in the Wainganga basin on east. This region is formed from lava of igneous rocks. All the districts of Khandesh<sup>1</sup>, Marathwada<sup>2</sup>, Western Maharashtra and the western districts of Vidarbha<sup>3</sup> fall in this region.

4) Satpuda Ranges and Tapi – Purna basin on North

Satpuda hill ranges lie on the northern boundary of the State. This region is spread over in the districts of Amravati, Akola, Jalgaon and Dhule.

5) Eastern Region Consisting of Wainganga basin

Eastern region comprises of eastern side of the State and flat paddy field region lies along both the banks of the river at an elevation of about 300 m. On the eastern side of this flat region along the Maharashtra - Chhattisgarh boundary are the hills of different geological formations other than the Deccan Trap. Many eastern tributaries of Wainganga originate from this hill range. The height of this hilly plateau is around 800 m.

Detailed information with regard to river basins, availability of water resources, climate, rainfall, agro climatic zones, etc of Maharashtra is given in Appendix-VII

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<sup>1</sup> Khandesh includes Dhule, Nandurbar & Jalgaon districts

<sup>2</sup> Marathwada includes Aurangabad, Jalna, Parbhani, Nanded, Osmanabad, Latur, Hingoli & Beed districts

<sup>3</sup> Vidarbha includes Akola, Washim, Amravati, Yeotmal, Wardha, Nagpur, Bhandara, Gondia, Chandrapur, Buldhana & Gadchiroli districts.



## **Rainfall during 2007-08**

Rainfall during 2007-08 for the state was received from South West monsoon from 13<sup>th</sup> June 2007 which remained active in Konkan, Middle Maharashtra, and Vidarbha gap in rainfall was observed till 21<sup>st</sup> June 2007.

Nanded District received the lowest percentage of rainfall i.e., 73%. Out of 33 districts, 23 districts have more than 100% and 9 districts have 80-90%. As mentioned above Nanded is the only district having less than 80%.

52 talukas out of total 355 talukas have average scanty rainfall of (41% to 80%) and in 189 talukas there is rainfall from 81% to 119%, whereas in 114 talukas it is more than 120%.

### **1.4.0 Irrigation Development during Post-independence Period**

Maharashtra State as of today came into existence in 1960. The increasing population was facing shortage of food grains. This has led to the need of increasing agricultural production. By giving priority to agricultural development, attempt has been made to achieve irrigation development in a planned manner.

Hardly, 0.274 Mha, irrigation potential was created in the State during pre-plan period i.e. before 1950. Agriculture has been the prominent occupation to provide food and fiber to the growing population of the State. Adequate, timely and guaranteed water supply is of paramount importance in agriculture production and irrigation development plays a key role in alleviating rural poverty. The State has created 5.656 Mha irrigation potential using surface water resources by June 2007 through **54** major, **222** medium and **2726** state sector minor irrigation projects. The ultimate irrigation potential, through surface water and ground water resources, has been estimated as 12.6 Mha.

#### **1.4.1 Supply System**

Generally supply of water for irrigation is through distribution network of canals off-taking either from dam or from pick-up-weir. The distribution network consists of main canal, branch canal, distributory, minor and field channels. The open canals are either lined or unlined, but mostly the systems are unlined.

Water is supplied to irrigators via distribution network through outlets. In addition, there are individual, co-operative, Govt. owned lifts on reservoirs, rivers and

canals. Normally there is major area under gravity irrigation and small part under lift irrigation in most of the projects. Some projects are specially lift irrigation projects with storage reservoir or storage reservoirs in the form of series of Kolhapur type weirs downstream of reservoir. In most of the major & medium irrigation projects, water reserved for non irrigation (domestic and industrial) use varies from 15 % to 25 %. While in deficit years the non-irrigation use in projects goes even up to 50%.

The supply of water for domestic and industrial purpose is mostly made through pipeline either from reservoir, main canal or from river.

The projects selected for benchmarking are having major area under flow irrigation with small percent under lift irrigation. The lifts are on main canals as well as reservoirs. Most of the medium projects selected supply irrigation water for eight months i.e. monsoon Kharif and Rabi and very small proportion for Hot Weather or for perennial crops. There is a tendency amongst farmers to use the water saved in Kharif and Rabi season for Hot weather or Perennial crops.

#### **1.4.2 Present Organisational Set up**

The organisational set up for irrigation management comprises of section office at the lowest level looking for an area of about 3000 to 4000 ha. The section office is headed by a sectional officer having staff for O & M of the area. The subdivision dealing with four to five sections is headed by AE-I, Sub divisional Officer/Engineer and works under the control of division. Thus the division is looking after four to five subdivisions with sixteen to twenty five sections and headed by the Executive Engineer in charge of the irrigation projects. The management circle headed by the Superintending Engineer controls three to four divisions. The regional head of the Superintending Engineers (four to five circles) is either Chief Engineer or the Chief Administrator in case of CAD projects.

The Superintending Engineers in-charge of irrigation circles are responsible for full utilisation of the water stored in reservoir and maintenance of public utilisation system, as well as recovery of water charges through their subordinate offices. The organisation chart of department is enclosed herewith on page no 12.

### 1.4.3 Crops Irrigated

Variation in the crops grown is significant within the regions as well as projects under region. Details of principle crops grown in different regions are categorised plan group wise and shown as below.

| Region              | Plan group         | Principle crops grown  |
|---------------------|--------------------|--|
| Eastern Vidarbha    | Abundant & Surplus | Kharif Paddy, HW Paddy   |
| Western Vidarbha    | Normal             | Cotton, Wheat, Gram, Sunflower, Orange   |
| Marathwada          | Normal & Deficit   | Cotton, Wheat, Gram, Sunflower, G.nut, Sugarcane, Banana                       |
| Central Maharashtra | Normal             | Rabi Jawar, Maize, Wheat, Bajara, Cotton, Vegetable, Grapes, Sugarcane, Banana |
| Western Maharashtra | Normal & Abundant  | Maize, Wheat, Vegetable, Sugarcane,  |
| Konkan              | Abundant           | Paddy, Vegetable   |

### 1.4.4 Management of Systems

The irrigation systems are constructed and mostly managed by the GOM. Operation and maintenance of irrigation projects is looked after by irrigation divisions, which are administratively controlled by circle office. GOM has taken a policy decision to supply water for irrigation through Water Users' Associations only. Accordingly the MMISF Act was passed by the Government in year 2005. Formation of Water Users' Associations in command areas of irrigation projects is in progress. Irrigation management of area under their jurisdiction is being transferred to them. Recently, a major project Waghad in North Maharashtra region is handed over to Federation of WUAs for irrigation management.

The National Productivity Council, New Delhi under Ministry of Commerce and Industries, GOI has awarded National Productivity Award for 2000-01 & 2001-02 to Waghad & Katepurna projects in the State. Similarly Pench & Shekdari projects were awarded the National Productivity Award for 2002-03 & 2003-04.

To corroborate the process of handing over the culturable command area (668850 ha) of selected 286 projects to the WUAs within stipulated time frame, Maharashtra Water Services Improvement Project has been taken up with the help of World Bank

### 1.4.5 Area under modern irrigation methods

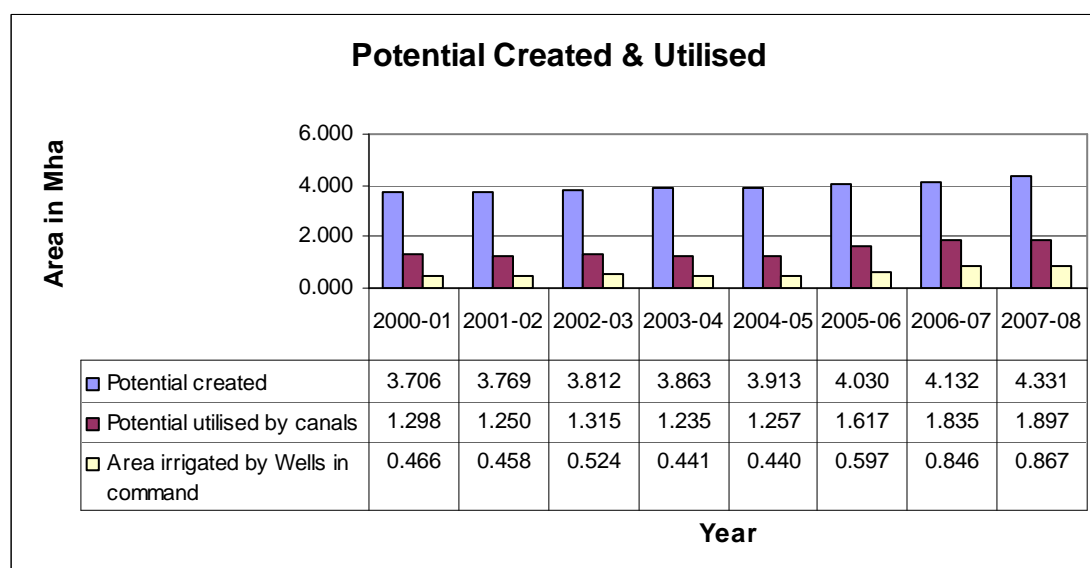
Area under drip & sprinkler irrigation in the State by March 2008 was 4.35 Lakh ha. and 1.99 lakh ha. respectively. The region wise area under drip irrigation is as follows:

| Sr.No.            | Region     | Area under Drip irrigation in ha.<br>(up to March 2008) | Percentage |
|-------------------|------------|---|------------|
| 1                 | Konkan     | 11201   | 3          |
| 2                 | Nashik     | 179415  | 41         |
| 3                 | Pune       | 107506  | 25         |
| 4                 | Aurangabad | 74747   | 17         |
| 5                 | Amravati   | 49346   | 11         |
| 6                 | Nagpur     | 11762   | 3          |
| Maharashtra State |            | 434977  | 100        |

Out of 434977 ha under drip irrigation, maximum area is in Nashik (41%). Drip irrigation is applied to Banana, Grapes, Sugarcane, Oranges, Pomegranate, Cotton, Mango & Vegetable crops. Out of total 434977 ha under drip irrigation, the area under Banana (86282ha) & grapes, (74757ha) is remarkably high.

### 1.5.0 Present Status of Irrigation Utilisation

In spite of various measures taken so far, there is a gap between potential created and actual utilised.



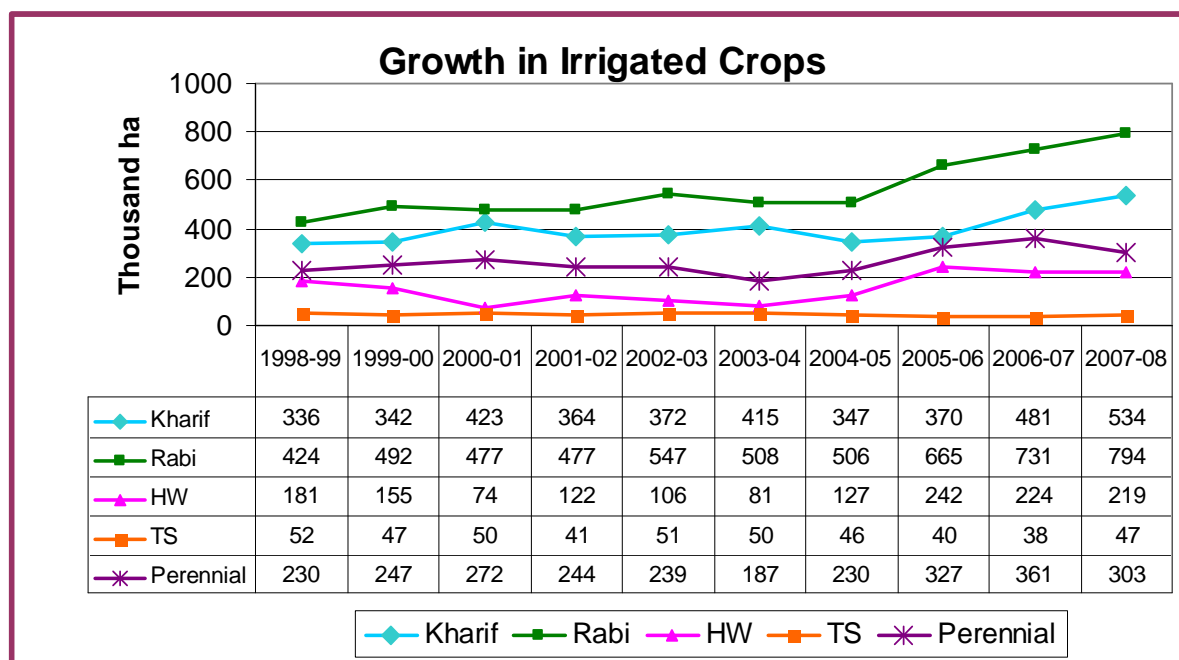
The overall reasons for less utilisation are as follows:

- i) Low water yield in the reservoirs
- ii) Diversion of irrigation water to non-irrigation uses
- iii) Tendency of farmers to grow cash crops which are highly water

intensive like sugarcane, banana iv) Low utilisation during kharif (Rainy) season v) Reduction in storage capacity due to silting vi) Lapses in assessment of the irrigated area in the command vii) Non accounting of irrigated area outside the command (influence area) viii) Poor maintenance of the infrastructure due to financial constraints ix) Non participation of beneficiaries in irrigation management.

Year wise data of potential created and actual utilisation is exhibited in graphical form above. From this information, it is clear that till the year 2004-05, actual maximum utilisation (canal+wells) was 48% of the potential created. Under utilisation has always remained a point of concern. Therefore, based on past experience, a special drive was taken at State level during the year 2006-07, in which circle wise targets for potential utilisation were fixed. Project Authority tried their level best to achieve the set goals. As a result, total actual potential utilization in the year 2006-07 has improved to 2.681 Mha (65% of potential created). In the year 2007-08 it has further improved to 2.764 Mha

Details of year wise, Season wise area irrigated are given below.



From the above table, it is observed that, due to satisfactory rainfall in most of the parts in the State, area irrigated in Kharif & Rabi season has increased as compared to last year (2006-07). Slight decrease in area is seen under HW & perennial crops at State level.

### **1.6.0 Participation of Beneficiaries in Water Resources Management**

National Water Policy 2002 and Maharashtra State Water Policy advocate Participatory Irrigation Management. In view of these, water users associations were setup in command areas of various projects in different parts of the State. By the end of 2006-07 in all 1100 WUAs were in full operation with operational area of 3.55 lakh ha. Besides this the number of WUAs which have been registered and entered into agreement during 2006-07 was 1304 covering an area of about 4.84 lakh ha.

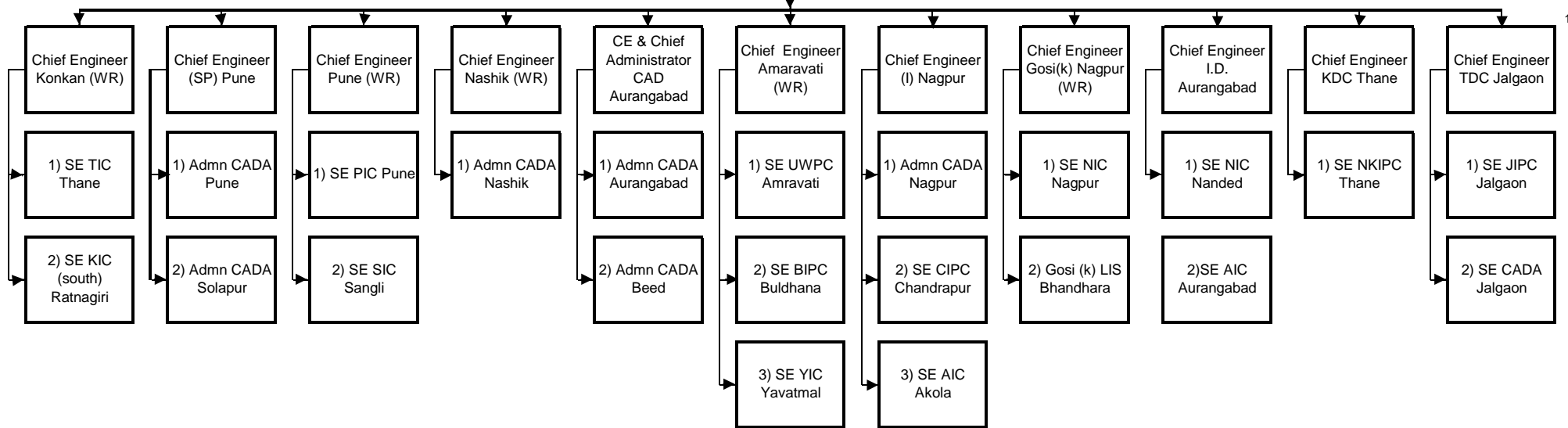
Looking at the slow pace of PIM in last decade and to bridge the gap between irrigation potential created and its actual utilization and to optimise the benefits by ensuring proper use of surface & ground water by increased efficiency in distribution, delivery, application and drainage of irrigation systems and for achieving this objective, to give statutory recognition to the constitution & operation of WUAs, an act has been passed by the State legislature. The act is known as "Maharashtra Management of Irrigation Systems by Farmers Act, 2005".

As per this act, all the beneficiaries in the command of a distributaries / minor will become the members of WUA, once the area is notified under the act.

MAP SHOWING LOCATION OF IRRIGATION CIRCLES



## Organisation Chart of Irrigation Management Secretary (CAD)





## CHAPTER - 2

### Benchmarking of Irrigation Projects

Benchmarking can be defined as a systematic process for securing continual improvement through comparison with relevant and achievable internal or external norms and standards.

#### 2.1.0 Background

This is the fifth consecutive report of benchmarking of irrigation projects in the State with 262 projects and 12 indicators. The plan group wise number of projects selected for benchmarking during 2007-08 is as follows.

| Sr. No | Plan Group     | Nagpur, Amravati Region |           |           | Pune, Konkan Region |           |           | Aurangabad, Nashik Region |           |           | Total Projects |
|--------|----------------|-------------------------|-----------|-----------|---------------------|-----------|-----------|---------------------------|-----------|-----------|----------------|
|        |                | Major                   | Medium    | Minor     | Major               | Medium    | Minor     | Major                     | Medium    | Minor     |                |
| 1      | Highly Deficit | --                      | --        | --        | 1                   | 11        | 3         | -                         | 16        | 4         | 35             |
| 2      | Deficit        | 4                       | 10        | 13        | --                  | --        | --        | 10                        | 44        | 18        | 99             |
| 3      | Normal         | 4                       | 13        | 5         | 6                   | 1         | 2         | 10                        | 16        | 8         | 65             |
| 4      | Surplus        | 3                       | 22        | 4         | --                  | --        | --        | --                        | --        | --        | 29             |
| 5      | Abundant       | 2                       | 2         | 1         | 8                   | 10        | 11        | --                        | --        | --        | 34             |
|        | <b>Total</b>   | <b>13</b>               | <b>47</b> | <b>23</b> | <b>15</b>           | <b>22</b> | <b>16</b> | <b>20</b>                 | <b>76</b> | <b>30</b> | <b>262</b>     |

**Grand Total: 262**

#### 2.2.0 About this report

Following 11 indicators are selected for benchmarking in 2007-08.

| Sr No                            | Indicator No | Title Of Indicator  |
|----------------------------------|--------------|---|
| <b>System Performance</b>        |              |   |
| 1                                | 1            | Annual Irrigation Water Supply Per Unit Irrigated Area            |
| 2                                | 2            | Potential Created And Utilised                                    |
| <b>Agricultural Productivity</b> |              |   |
| 3                                | 3            | Output (Agricultural Production) Per Unit Irrigated Area          |
| 4                                | 4            | Output (Agricultural Production) Per Unit Irrigation Water Supply |
| <b>Financial Aspects</b>         |              |   |
| 5                                | 5            | Cost Recovery Ratio   |
| 6                                | 6            | Total O&M Cost Per Unit Area                                      |
| 7                                | 7            | Total O&M Cost Per Unit Volume Of Water Supplied                  |

| <b>Sr No</b> | <b>Indicator No</b> | <b>Title Of Indicator</b>                   |
|--------------|---------------------|---|
| 8            | 8                   | Revenue Per Unit Volume Of Water Supplied   |
| 9            | 12(I)               | Assessment Recovery Ratio<br>Irrigation     |
|              | 12(NI)              | Assessment Recovery Ratio<br>Non Irrigation |
|              |                     | <b>Environmental Aspects</b>                |
| 10           | 10                  | Land Damage Index                           |
|              |                     | <b>Social Aspects</b>                       |
| 11           | 11                  | Equity Performance                          |

The report is available on websites [www.mahagovind.org](http://www.mahagovind.org) & [www.mwrdc.org](http://www.mwrdc.org)

### **2.3.0 Methodology**

The data presented in this report is based on information collected from each of the circle in-charge of the project.

The following process was used in development of this report.

- Irrigation projects are selected, representing the main geographical regions of State and of categories viz. major (CCA more than 10000 ha), medium (CCA more than 2000 ha and below 10000 ha) and minor (CCA less than 2000 ha).
- For achieving consistency in monitoring & evaluation, same projects which are considered for benchmarking during 2006-07 and 2007-08.
- Data is collected in revised spreadsheet containing 30 columns from the concern Project Authority and analysed in MWRDC office. An explanatory note containing detailed instructions about working out the figures of different indicators was issued to field officer. This is appended in appendix VI.
- The data about water use and area irrigated is correlated with water accounts (2007-08) of relevant projects.
- The presentation for every indicator is done with past-past (5 year average), recent past (2006-07) and present year (2007-08) in order to compare the performance with predecessors as well as own performance of last year.
- The draft report is scrutinised in MWRDC & Mantralaya, Mumbai.
- Reasons for deviation from last year's performance and State norm are called from each circle.

Looking at the large number of projects, for better monitoring, the analysis is carried out considering irrigation circle as a unit and projects therein with similar plan groups of sub basins. Performance of projects in a circle against each indicator is collective performance as given in Chapter 4.

- Based on performance during the year 2007-08, indicator wise average performance is evaluated for the plan group of circles under consideration, setting aside the exceptionally high/low values.
- State targets for indicator No III & IV are set as per plan group. However for other Indicators, state target value is common for all plan groups. The targets are different for major, medium & minor projects for indicator no. I, VI, VII, & VIII.
- For benchmarking of projects at circle level, each circle has defined its own targets considering specific conditions of project areas, crop type, condition of canal system etc.
- Target values are revised with experience gained in the process.
- For financial indicator of output per unit irrigated area and output per unit irrigation water supply, fixed prices of 1998-99 are considered to obviate effect of price rise.
- Some circles are not having major, medium or minor projects; therefore, only relevant circles are shown in graphs of each indicator. Thus total of circles may not tally to 21 in each graph, for example for major projects category, there are only 15 circles.
- At a glance evaluation of performance of all projects in Maharashtra State with respect to each indicator is also given in Chapter 4.
- There are 2777 completed minor irrigation projects in the State. Therefore, it has been decided to carryout benchmarking and monitoring of minor projects at circle level itself. To get an idea about performance of minor projects, some sample schemes which were considered in last year's report are analysed and included in this report.
- Actions taken by GOM for improvement of performance are included in Chapter 5.

#### **2.4.0 Overview of Irrigation Projects**

An overview showing details such as sub basin, designed and actual storage during the year, command area, crops grown, etc. is enclosed as **Appendix No.III**

#### **2.5.0 Benchmarking of WUA**

Till June 2007, potential to the tune of 4.331 Mha has been created on state level projects. National Water Policy and Maharashtra Water and Irrigation Commission (1999) have recommended the active participation of farmers in Irrigation Water Management. Water Resources Department has also concentrated its efforts in that direction.

In response to above recommendations, an act namely MMISF (Maharashtra Management of Irrigation System by Farmers) - 2005 has been passed in the State assembly. Against the total potential creation of 4.331 Mha, Potential to the tune of 0.386 Mha is handed over to 1115 WUAs.

At present, 286 projects (0.67Mha area) selected under MWSIP to which the act is made applicable, are financially aided by the World Bank. The cost of the project is about 1700 crores.

In view of the huge capital investment in construction of projects as well as in rehabilitation of canal systems along with intention of securing the advantage of benchmarking, benchmarking of WUAs was felt necessary. Accordingly the issue of Benchmarking of WUA was under consideration for last two years.

To initialise the process, 9 Indicators feasible to determine the performance of individual WUA are designed and data in prescribed proforma was called from selected 11 WUA's on 7 Major projects. Out of these 11 WUA'S, MMISF Act- 2005 is applicable to 3 WUA's on Waghad and Mula projects.

## Chapter - 3

### Performance Indicators

**3.0.0** As stated earlier, Chapter 2 of this report provides an idea about indicators relevant with the five key activities, mentioned below.

- a. System Performance
- b. Agricultural Productivity
- c. Financial Aspects
- d. Environmental Aspects
- e. Social Aspects

#### **3.1.0 System Performance**

Providing facility of water for irrigation and other purposes is the main function of the project authorities. The water distribution system is influenced by physical, climatic, economic and other factors. In particular, the prevailing climatic conditions largely determine both, the available water resources and the crop water requirements in any season. The main task of the project in-charge is to manage the system so as to optimise the use of available resources in order to meet sanctioned quota in an effective and efficient manner.

#### **3.1.1 Annual Irrigation Water Supply per Unit Irrigated Area**

Annual irrigation water supply per unit irrigated area is the total quantity of water supplied for irrigation in all the seasons of a year compared to the total area irrigated in Kharif, Rabi, HW on canal, reservoir & river during irrigation year.

Annual irrigation water supply per unit irrigated area varies with water availability, cropping pattern, climate, soil type, system conditions, system management etc.

As a measure of efficiency of irrigation system, a target of 7692 m<sup>3</sup>/ha is set for major and medium projects and 6667 m<sup>3</sup>/ha for minor projects.

#### **3.1.2 Potential Utilised & Created**

This is the ratio of potential utilised (crop area measured) to created irrigation potential of the project. Crop area irrigated on canal, reservoir, wells, river in the command area is considered as potential utilisation.

The irrigation potential created through large investments should be fully utilised. However the utilisation is governed by the availability of water in the

reservoirs. Therefore, reduction in created irrigation potential is effected proportionate to availability of water for irrigation.

### **3.2.0 Agricultural Productivity**

In Maharashtra, 58% population depends on agriculture, thus production per unit area as well as per unit water is vital for State economy.

The indicators chosen for benchmarking are

- 1) Output per unit irrigated area.
- 2) Output per unit irrigation water supply.

#### **3.2.1 Output per Unit Irrigated Area**

Output per unit irrigated area is the output in rupees of agricultural production from irrigated area from total irrigated area. Here the area irrigated means potential utilised.

As the population grows, the land holding per capita goes on reducing. Secondly there are some constraints to bring additional lands under irrigation. Thus it is important that the output per unit area has to be increased with efficient water and land management, improved seeds and adoption of latest technology.

The efforts have to be made to increase output by diversification of cropping pattern, better farm practices and judging the market needs. However, water is the only input in agriculture on which service provider has control. Therefore to have an idea about trend of production in the command, which depends upon timely supply of water in adequate quantity, this indicator has been adopted. The yield data for the year of various crops is collected from agriculture department. The market prices are obtained from Agricultural Produce Market Committees located in each taluka. In respect of sugarcane, prices are obtained from sugar factories in the command area and for cotton, from Cotton Federation. The prices of 1998-99 are considered as base price for all the remaining years & output is worked out accordingly. The plan group wise targets set for different categories of projects are given in **Appendix-II**.

#### **3.2.2 Output per Unit Irrigation Water Supply**

Output per unit irrigation water supply is value in rupees of agricultural production from irrigated area compared to total quantity of water supplied for irrigation. The output per unit irrigation water supply is an indicator of optimal use of water.

### **3.3 Financial Performance**

Any system is to be termed as economically self-sustainable if the yearly O & M expenditure incurred on the project is met from its own revenue.

In Maharashtra, it is proposed to levy the water charges to all uses, including irrigation & non-irrigation use on volumetric basis so as to encourage efficient water use. Presently the practice of volumetric supply is in use for WUAs, Domestic and Industrial water supply.

The indicators chosen for financial performance are given below.

- 1) Cost Recovery Ratio. (Irrigation & Non irrigation)
- 2) Total O & M Cost per unit area (Irrigation & Non Irrigation)
- 3) Total O & M Cost per unit Volume of Water Supplied. (Irrigation & Non-irrigation)
- 4) Revenue per unit water supplied.
- 5) Assessment Recovery Ratio

#### **3.3.1 Cost Recovery Ratio**

It is the ratio of recovery of water charges to the cost of providing the service. Recovery of water charges and O & M cost incurred during the period of irrigation year i.e. first July (2007) to 30<sup>th</sup> June (2008) is considered. Secondly the operation cost includes the salary of technical & ministerial staff working on irrigation management irrespective of its establishment type (i.e. RT/CRT/WC/Daily). It is imperative to devise water rates and mechanism for recovery of water charges for irrigation use in such a manner to meet, at least, annual cost of management, O & M of system and recovery of some portion of capital investment on the projects in order to make the system self sustainable. Theoretically the cost recovery ratio should be at least equal to one.

Due to the efforts taken at all levels the recovery of water charges has improved and the O & M cost has come down. This resulted in enhancing the cost recovery ratio more than one. As most of the major projects are multipurpose projects supplying water for irrigation as well as non-irrigation uses, the analysis is carried out separately for irrigation use & non-irrigation use. Similarly combined analysis is also carried out to enable comparing the performance with the past.

### **3.3.2 Total O & M Cost per Unit Area**

Total O & M cost per unit area is the ratio of total O & M cost incurred for management of the system and area irrigated (potential utilised) during the irrigation year. The total O & M cost includes cost of maintenance as well as all types of establishment charges. The annual maintenance cost incurred does not include cost of modernisation. Establishment charges include salary paid to staff working up to a management section.

The O & M cost per unit area should be as minimum as possible.

GoM has prescribed yearly O & M norms per ha. excluding establishment cost. The O & M cost per unit area is increased in projects where there is less irrigation compared to Projected Area.

### **3.3.3 Total O & M Cost Per Unit Water Supplied**

Total O & M cost per unit water supplied is obtained by dividing total O & M cost by total quantity of water supplied for irrigation and non-irrigation use during the year.

Total O & M cost per unit of volume of water supplied should be as minimum as possible to achieve economy in supply.

### **3.3.4 Revenue per Unit Water Supplied**

It is the ratio of total revenue and quantity of water supplied for irrigation & non irrigation use during the irrigation year.

Revenue per unit volume of water supplied is very important measure as every drop of water is to be used efficiently and economically. The ratio also gives idea about revenue realised against actual water supplied. The indicator will have more importance once the water is supplied on volumetric basis.

### **3.3.5 Assessment Recovery Ratio**

This indicator is split up into two components viz

- a) Irrigation
- b) Non Irrigation

In case of both the uses, there are arrears of water charges in many projects due to some or other reasons, one of the reasons being postponement of recovery during draught years.



It is the ratio of recovery of water charges during the irrigation year 2007-08 and assessment of charges for Kharif & Rabi of 2007-08 for irrigation and for hot weather of 2006-07. For non-irrigation purpose assessment for water used during the year 2007-08 is considered.

The purpose of introducing this indicator is to check whether the water charges assessed during the irrigation year (1 July to 30 June) are totally recovered or not. For this indicator, arrears are not considered.

### **3.4 Environmental Aspects**

#### **3.4.1 Land Damage Index**

Land damage index is expressed as percentage of land damaged to irrigable command area of the project.

The lands under irrigation become saline or waterlogged due to excessive use of water resulting in low productivity. This problem is faced in areas where high water intensive crops are grown year after year with unscientific methods of irrigation like flooding. Water logging and salinity occur in soils with poor drainability. In Maharashtra, black cotton soil, which is highly impervious, is found on extensive area. Directorate Irrigation Research & Development, Pune is regularly monitoring & taking remedial measures for reclamation of damaged lands in commands of projects.

### **3.5 Social Aspects**

#### **3.5.1 Equity Performance**

Most of the schemes are gravity systems with canals and distribution system. The command area is divided equally as head, middle & tail reaches. Equity performance means ratio of sum of actual area irrigated in all three seasons (Canal flow and lifts on canal) to projected irrigable command area in head, middle and tail reaches. It is expressed as percentage. This indicator gives clear picture as to whether the irrigation facility is provided equitably to head; middle & tail reach farmers in command area.

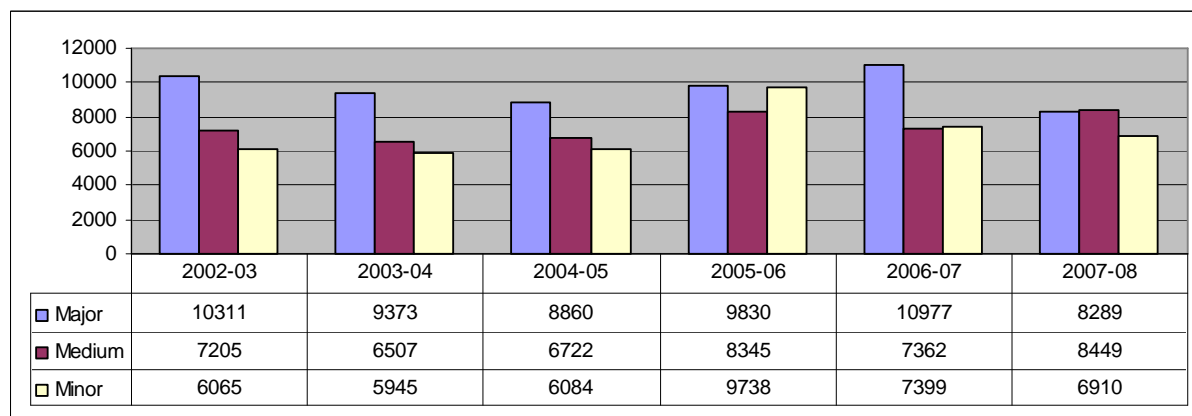
The benefit of irrigation should be given to the beneficiaries in head, middle & tail reach equitably. Ideally for equity, this ratio should be equal to one for head, middle as well as tail reaches.

## Chapter- IV

### Overall status of Benchmarked projects in Maharashtra Indicator wise Performance of Maharashtra State for the Years 2002-03 to 2007-08

#### Indicator – I: Annual Irrigation Water Supply per Unit Irrigation Area:

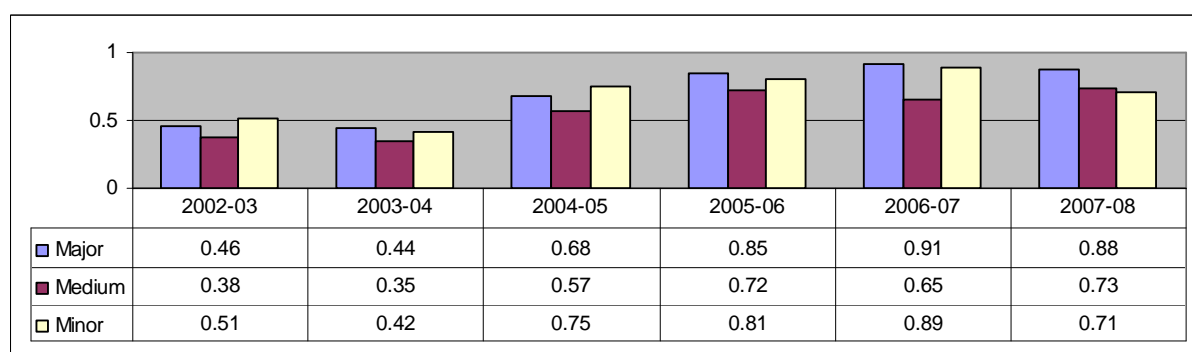
Unit: Cum/ha



Annual Irrigation water supplied for major projects in Maharashtra state is lower in 2007-08 i.e. 8289 cum/ha as compared to the same in the year 2006-07 i.e. 10977 cum/ha. And same for medium project it is higher in the years 2007-08 compared to previous year 2006-07. For minor project the water use is less in the year 2003-04 i.e. 5945 cum/ha. and maximum in the year 2005-06 i.e. 9738 cum/ha and for the year 2007-08 it is on higher side i.e. 6910 cum/ha.

#### Indicator –II: Potential created and utilised:

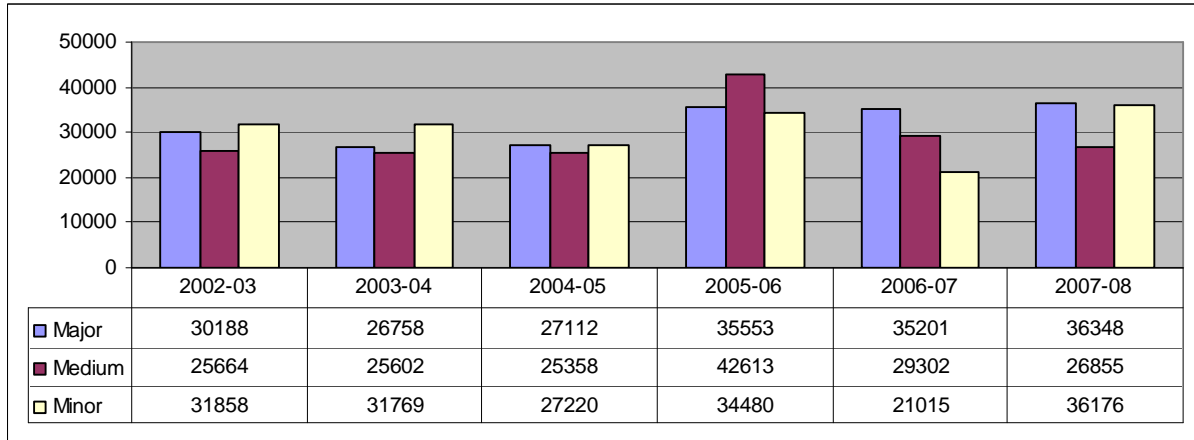
Unit: Ratio



For Major Projects the maximum utilised potential was in the year 2006-07 the utilised potential is increasing yearly from 0.46 in the year 2002-03 to 0.91 in the year 2006-07 water use is marginally less (0.88) for current year. For medium projects the ratio in the year 2007-08 is 0.73. For minor Projects utilised potential was 0.42 in the year 2003-04 and it is improving for last four years and 0.89 in the year 2006-07, it has slightly decreased for the current year i.e.,0.71.

**Indicator-III : Output per Unit Irrigated Area :**

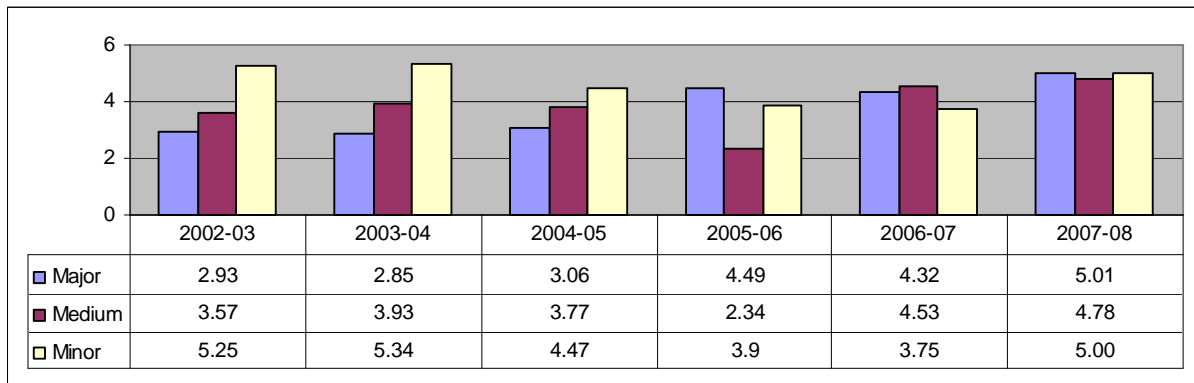
**Unit: Rs/ha**



For Major Projects agricultural output shows variations in last five years. Maximum agricultural output of Rs. 36348/ha is in the year 2007-08 and minimum of Rs. 26758/ha is in the year 2003-04. For medium project the agricultural output of Rs.42613/ha was maximum in 2005-06 and minimum of Rs 25358/ha in the year 2004-05. For Minor Projects agricultural output is maximum of Rs. 36176/ha in 2007-08 and minimum of Rs. 21015/ha in the year 2006-07.

**Indicator – IV : Out Put per Unit Irrigation Water Supply :**

**Unit : Rs/Cum**

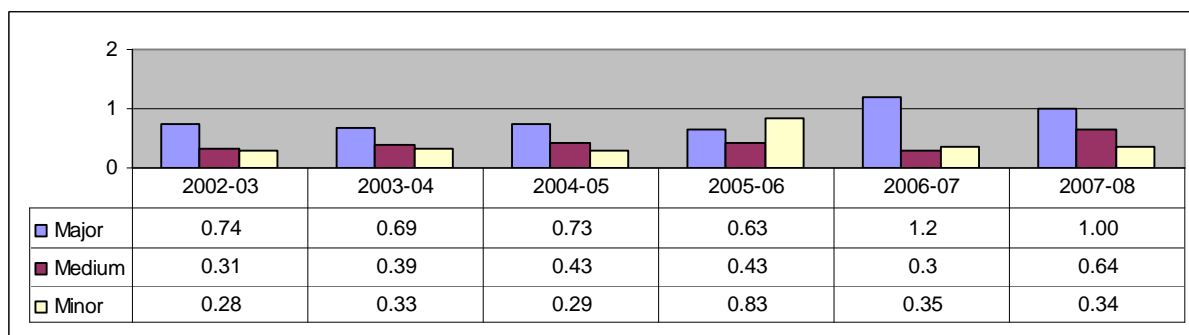


For Major Project the output per cum was Rs. 2.93/cum in the year 2002-03 and went on increasing year by year and reached to a maximum of Rs 5.01/cum in the year 2007-08. For Medium Projects maximum output of Rs. 4.78/cum is in the year 2007-08.

For minor projects the output of Rs 5.00/Cum is on higher side for the current year and minimum of Rs. 3.75/cum in the year 2006-07.

**Indicator –V: Cost Recovery Ratio:**

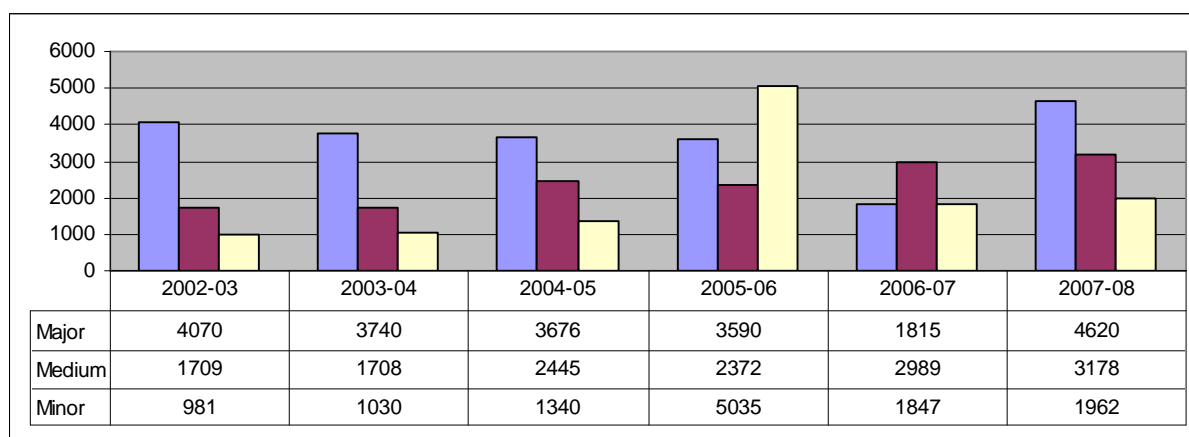
**Unit: Ratio**



For major projects the ratio for the year 2007-08 is 1.00. For medium projects the ratio was in between 0.30 to 0.43 for last five years, for current year the ratio is maximum i.e., 0.64. In case of Minor Projects ratio was in between 0.28 to 0.35 for four years. But in 2005-06 the ratio was maximum i.e., 0.83, for this year the ratio is 0.34.

**Indicator-VI: O & M Cost Per Unit Irrigated Area:**

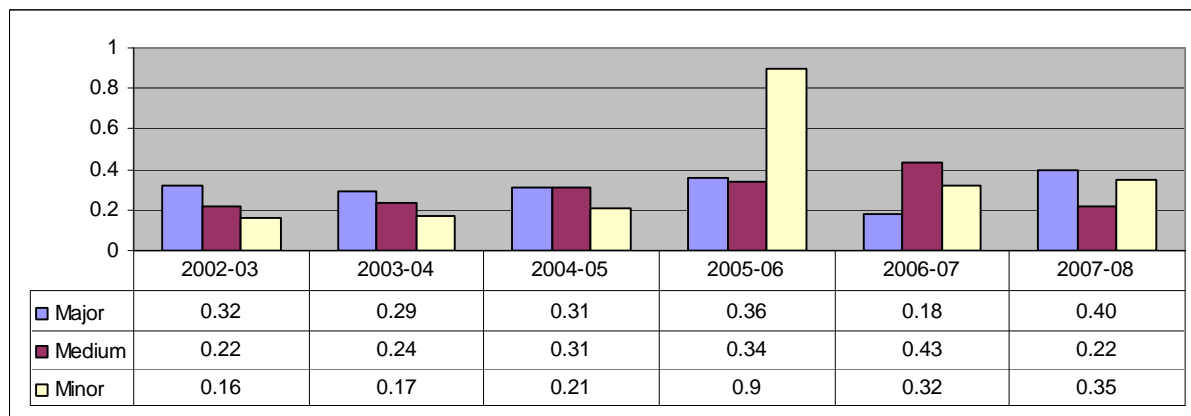
**Unit : Rs/ha**



For Major Projects the O & M Cost Per Unit Area is on higher side of state target for previous years it was nearly three times the state target except in the year 2006-07, it is maximum of Rs 4620/ha in the current year. It is due to excess expenditure on maintenance. In Medium Project O & M expenditure increased from the year 2002-03 to 2007-08 consistently, . For Minor Projects the O & M Cost Per Unit Area was minimum of Rs. 981/ha in the year 2002-03 and increased year by year to a maximum of Rs. 5035/ha in the year 2005-06.

**Indicator – VII: O & M Cost Per Unit Water Supply:**

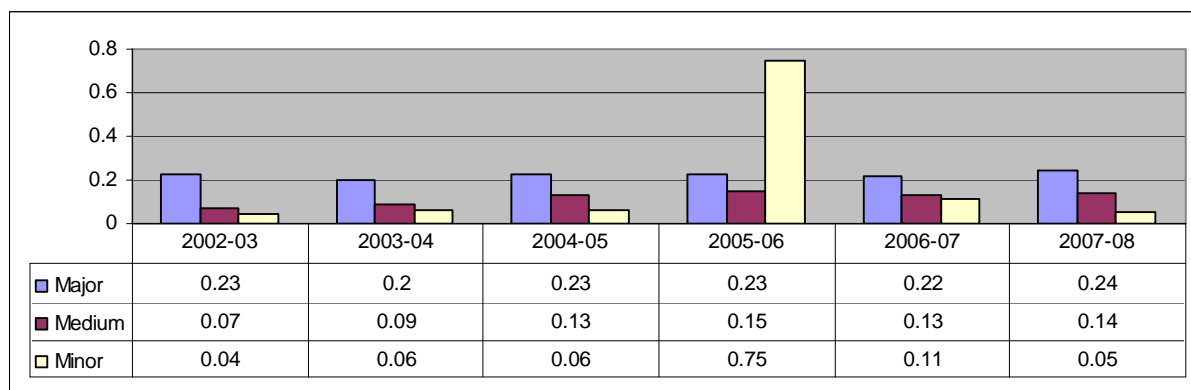
**Unit: Rs/Cum**



For Major Projects O & M Cost per Unit Water Supply ranges between Rs. 0.18/cum to Rs. 0.36/cum from year 2002-03 but for the current year it is maximum of Rs. 0.40 /cum. For Medium Projects excessive O & M expenditure resulted in poor performance for last five years. It has improved to Rs.0.22/cum for current year. For Minor projects the O & M Cost per Unit Water Use was in between Rs. 0.16cum to Rs. 0.9 for five years. This year it is Rs. 0.35/cum.

**Indicator – VIII : Revenue Per Unit Water Supply :**

**Unit : Rs/cum**

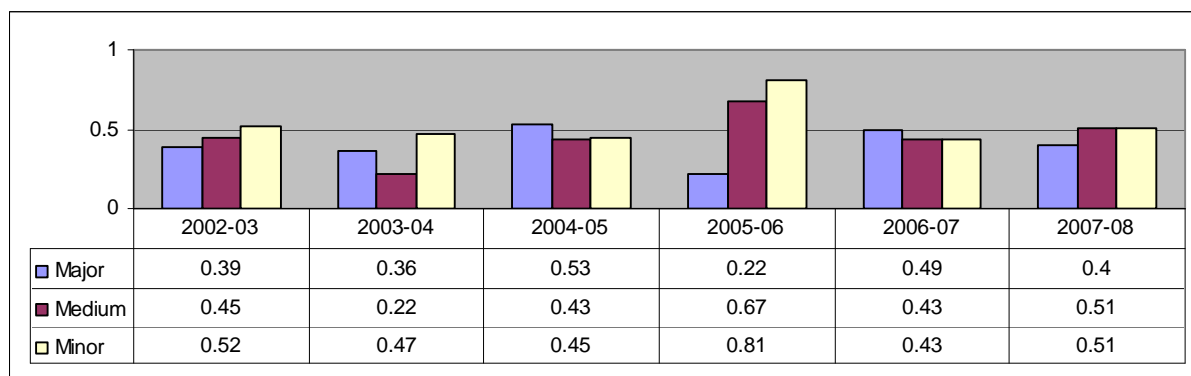


For Major Project in Maharashtra State, Revenue Per Unit Water Supply, for last five years, ranged from Rs. 0.20/cum to Rs. 0.23/cum. This year it has slightly increased to Rs.0.24/cum. For medium project the revenue was Rs. 0.07/cum in the year 2002-03 and went on increasing to Rs. 0.15/cum in the year 2005-06. In 2006-07 it comes to Rs. 0.13/cum, it has further increased to Rs 0.14/cum for current year. For Minor Projects

revenue per unit water use was in between Rs. 0.04/cum to Rs. 0.11/cum. For current year the ratio is Rs 0.05/cum

**Indicator – XII : Assessment Recovery Ratio (Irrigation) :**

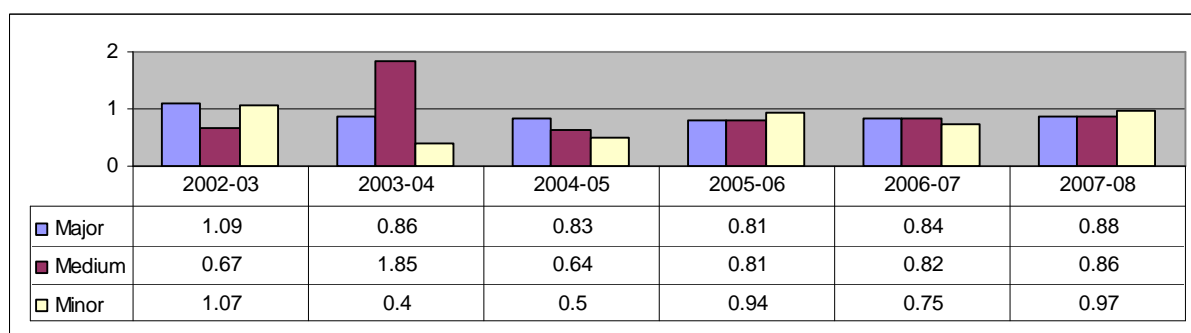
**Unit : Ratio**



For Major Project Assessment Recovery Ratio was minimum in the year 2005-06 i.e. Rs. 0.22. But in the year 2006-07 it increased to 0.49 due to improvement in recovery of irrigation water charges. It has slightly decreased to 0.40 for the year 2007-08. For Medium Projects ratio shows ups and downs year wise. It was 0.22 in the year 2003-04 and increases to 0.67 in 2005-06. In 2006-07 less amount of recovery reduced the ratio to 0.43, but for the current year it is 0.51. For Minor Project Assessment Recovery Ratio was in between 0.43 to 0.52 for four years but in 2005-06 it was 0.8, for the current year it is 0.51.

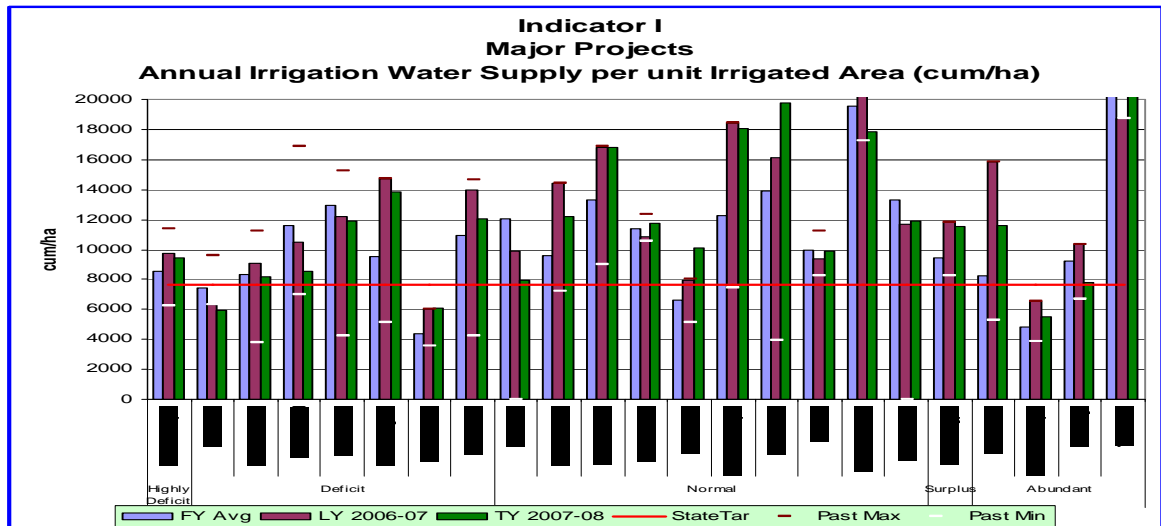
**Indicator – XII : Assessment Recovery Ratio (Non Irrigation) :**

**Unit : Ratio**



For Major projects the ratio for the last six years is between 0.81 to 1.09, for the current year it is 0.88. For medium projects the ratio is between 0.64 to 1.85, for the current year it is 0.86. In minor projects the ratio is in between 0.40 to 1.07, for the current year it is 0.97.

# **Indicator of Major Project**



| Plan group     | Circle          | FY Avg | 2006-07 | 2007-08 | Past Max | Past Min | Avg Per |
|----------------|-----------------|--------|---------|---------|----------|----------|---------|
| Highly Deficit | CADA Solapur    | 8537   | 9734    | 9474    | 11397    | 6228     | 9474    |
| Deficit        | AIC Akola       | 7452   | 6324    | 5972    | 9622     | 6324     | 9520    |
|                | BIPC Buldhana   | 8305   | 9097    | 8210    | 11197    | 3759     |         |
|                | CADA Abad       | 11562  | 10518   | 8541    | 16899    | 7013     |         |
|                | CADA Beed       | 12904  | 12186   | 11918   | 15240    | 4227     |         |
|                | CADA Jalgaon    | 9526   | 14749   | 13846   | 14749    | 5146     |         |
|                | CADA Nashik     | 4405   | 5990    | 6119    | 5990     | 3586     |         |
|                | NIC Nanded      | 10904  | 13970   | 12035   | 14624    | 4250     |         |
| Normal         | AIC Akola       | 12052  | 9894    | 7951    | 21110    | No Water | 13636   |
|                | CADA Jalgaon    | 9607   | 14433   | 12194   | 14433    | 7201     |         |
|                | CADA Nagpur     | 13335  | 16840   | 16837   | 16840    | 8996     |         |
|                | CADA Nashik     | 11363  | 10837   | 11767   | 12341    | 10553    |         |
|                | CADA Pune       | 6592   | 7937    | 10122   | 8034     | 5158     |         |
|                | CIPC Chandrapur | 12256  | 18444   | 18081   | 18444    | 7422     |         |
|                | NIC Nanded      | 13893  | 16156   | 19785   | 24682    | 3927     |         |
|                | PIC Pune        | 9933   | 9376    | 9894    | 11261    | 8286     |         |
|                | UWPC Amravati   | 19560  | 20665   | 17830   | 21005    | 17268    |         |
|                | YIC Yavatmal    | 13281  | 11700   | 11898   | 24600    | No Water |         |
| Surplus        | CADA Nagpur     | 9444   | 11806   | 11514   | 11806    | 8232     | 11514   |
| Abundant       | CADA Pune       | 8220   | 15806   | 11585   | 15806    | 5298     | 11987   |
|                | CIPC Chandrapur | 4858   | 6578    | 5474    | 6578     | 3870     |         |
|                | SIC Sangli      | 9200   | 10367   | 7788    | 10367    | 6662     |         |
|                | TIC Thane       | 34033  | 18712   | 23099   | 53612    | 18712    |         |

Note: 1) Figures in red indicate values exceeding range of graph.

2) Figures in blue are excluded from Avg Per.

3) 'No Water' indicates reservoirs are not filled in that year.



## Observations and conclusions

### Major Projects

#### Indicator I: Annual Irrigation Water Supply per Unit Irrigation Area (cum/ha)

##### Highly Deficit:

**CADA Solapur:** In Bhima (Ujani) project, (9474cum/ha.) The overall performance is moderate, however, it is slightly more than the state norm of 7692 cum/ha compared to last year water use 9734 cum/ha, less water use in this year.

##### Deficit:

**AIC Akola:** Annual irrigation water use on projects (Katepurna & Nalganga) under Akola Irrigation Circle was 5972 cum/ha. If Katepurna and Nalganga projects are considered individually, water use per unit area irrigated is 5751 cum/ha and 6308 cum/ha respectively which is low than the state norm and its past average five years performance. On Katepurna project above water use is with 4 rotations in Rabbi Season. On Nalganga project, Water use appears to be unsatisfactory though area is handed over to WUA's to which water supply is on volumetric basis.

**BIPC Buldhana:** Wan project is the only major project under BIPC Buldhana under this plan group. Water use per unit area irrigated is 8210 cum/ha which is about 7% more than the state norm. There is slight improvement over its last year's performance. Excess water use over state norm is on account of less response to night irrigation. Field officers are required to adhere strictly to the guide lines issued about irrigation management.

**CADA Jalgaon:** In Girna project, though the water use per unit irrigated area is lowered from 14749 cum/ha (2006-07) to 13846 cum/ha (2007-08), still it is 1.8 times more than the state norms. The field officers are required to take efforts for improvement in performance.

**CADA Nashik:** In Chankapur project, the annual water use per unit irrigated area is 6119 cum/ha. Though it is on higher side of five years average value & last year value, it is close to the state norm.

**CADA Beed:** In Majalgaon project the water use per hectare is reduced from 16217 to 12824 cum/ha as compared to last year. But it is far away from State norm. It is mainly due to 59% perennial crops are irrigated requiring more water. The field officers are required to pay more attention for improvement in performance by adopting cropping pattern.

In Manjra project the water use per hectare has reduced from 9933 to 8208 cum/ha, as compared to last year. But it is still ahead of State norms. It may be due to 67% perennial crops are irrigated.

In Lower Terna project the water use has reduced from 7159 to 6619 cum/ha But it is well within the State norms.

**CADA Aurangabad & CADA Beed:** In Jayakwadi project Stage-I (PLBC) the water use per unit irrigated area has decreased from 10518 to 8541 cum/ha. Compared to last year though it is higher than State norms, efforts are required at field level to restrict the water use within the stipulated norms to achieve State target.

In Jayakwadi project Stage-I (PRBC) the water use per unit irrigated area has increased from 11833 to 15976 cum/ha, as compared to last year, and is very higher than the State norms. Efforts are required at field level to achieve the State norms by proper controlling on water use.

**NIC Nanded:** In Manar project the water use per unit irrigated area is increased from 8139 to 8631 cum/ha this is mainly due to decrease in irrigated area from 15304 to 12988 ha, as compared to last year.

In Vishnupuri project the water use has increased from 7261 to 7978 cum/ha, and is slightly higher than the State norms.

In Purna project the water use has decreased from 18390 to 15705 cum/ha. As compared to last year, but still it is 2.0 times more than the State norms. As per field officer's report that embankment work of the canal was carried out with available material and without hearting zone resulting heavy leakages through bankwork and from structures also, about 25 to 30% of released water in canal thus indirectly regenerate the wells & nallas in command area of the project increasing total irrigated area.

#### **Normal Plan Group:**

**AIC Akola:** In case of Pus Project, water use per unit irrigated area is 7951 cum/ha which is 3% more than state norm. But there is improvement, over its last year performance which was exceptionally high (9894 cum/ha).

**UWPC Amarwati:** On Upper Wardha project, the rate of water use per unit area irrigated was (17830 cum/ha) is considerably improved than last year (20665cum/ha) As compared to the state norm, it is 132 %. According to field officers, apathy of formers to-wards night irrigation & scattered area irrigated at tail portion alongwith untrained, insufficient field staff is the main reasons for the low performance. Also, Canal and Distribution system requires major repairs. But it is equally true that, for economic water use project authorities are required to pay more attention to wards planning & monitoring of irrigation management at circle level along with mandatory repairs to curb transit losses.

**YIC Yeotmal:** Water use in Arunavati project is high (11898cum/ha.)As compared to the state norm (155%) According to field officers, excessive Leakages through H.R., outlets and irrigation in tail reaches are responsible For more water use than anticipated.

**CADA Nagpur:** On Lower Wunna Project water use (16837 cum/ha.) during the irrigation year is the same as compared to year's performance (16840 cum/ha), which is 210 % of the state norm. Field officers are expected to explore the reasons for optimum water use and take suitable action to bring it to the state norms.

**CIPC Chandrapur:** Actual water use per unit area irrigated on Bor project is 18081 cum/ha, which is 235% of the state norm. There is no major change in Performance level as compared to last year performance. (18440 cum/ha) According to field officers, old canal system of Bor Project requires major repairs and is responsible for more transit losses.

**CADA Jalgaon:** In Hatnur project, though the water use per unit irrigated area is lowered from 14433 cum/ha (2006-07) to 12194 cum/ha (2007-08) it is 1.5 times more than the state norms. The field officers are required to take efforts for improvement in the performance duly preparing the action plan

**CADA Nashik:** In Bhandardara project, the water use per unit irrigated area has increased from 10494 cum/ha (2006-07) to 12048 cum/ha (2007-08), which is higher than the state norms. As per field officers, though this project is for eight monthly cropping patterns, it is obligatory to fulfill the demand of water for sugar cane. Also efforts are being taken by field officers to reduce water use per ha duly taking necessary remedial measures i.e. desilting of canal, increasing height of banks, minimising leakages and supply of water by volumetric basis to duly forming Water Users Associations.

In Kadawa project, the water use is consistently more than the state target. As per field officers, more water use/ha is due to excessive conveyance losses in the canal system. Remedial measures are being taken in hand such as selective lining, pitching to improve the performance.

In Mula project, the water use/ha is 12105 cum/ha, which is on higher side of state norm. As per field officers, though this project, at present, is having eight monthly cropping patterns, it is obligatory to supply the water to sugar cane as per demand of cultivators as there are four sugar factories in the command. Efforts are being made by the field officers to lower the water use/ha by persuading the farmers to reduce the sugarcane and also to avoid flood irrigation.

In Waghad project, the water use/ha is 8853 cum/ha, which is reduced than that of last year (10317 cum/ha) but still it is on higher than the state norm. As water is supplied fully on volumetric basis on this project, more efforts are required at field level to use the water economically.

In Gangapur project, the water use per unit area is lower than the state norms (6959) cum/ha. The field officer has utilized the water for irrigation precisely.

In Darna project, the water use per unit irrigated area is 4741 cum/ha. The field officer has utilized the water for irrigation precisely.

**NIC Nanded:** In Upper Penganga Project the water use per unit irrigated area has increased from 16156 to 19785cum/ha as compared to last year. Out of 21188 ha. of total irrigated area, 5150 ha. (.25%) crops such as Sugar cane, Banana, H.W. ground nut, Vegetable & other perennials were sown. These crops require more water. The field officers are required to take more efforts to improve the performance by judicious use of water and canvassing for suitable cropping pattern.

**CADA Pune:** In Kukdi Project the annual irrigation water supply per unit area is 10514 cum/ha. The water utilization has remarkably increased this year as compared to state norms. In Ghod Project the water utilization for irrigation is 8491 cum/ha. There is slight increase in value as compare to last year value of 7628 cum/ha. It is also above the state norms.

**PIC Pune:** In Khadakwasla Project the water utilization is 9352 cum /Ha. This is better than the last year's 21583 cum/ha. Performance in N.L.B.C. the water utilization is 15448 cum/ha. This is on higher side of last year and state target performance. It is due to heavy leakage through masonry structures on canals. In NRBC the performance improved as compared to last year and state target. The improvement is achieved because of repairs of canal system and rainfall during irrigation rotation period. In Pawna Project the water utilization is 6010 cum/ha. Which is on higher side of last year performance (4901 cum/ha).

### **Surplus:**

**CADA Nagpur:** The performance of Pench Project (13219 cum/ha.) and Itiadh project (10357 cum/ha) has been decreased over to its last two year's performance (12834 cum/ha. and 13254 cum/ha.). However, water use on Bagh (8043 cum/ha) though close to state target has been low than it was during the year 2005-06 (8283 cum/ha). But improved in comparison with year 2006-07 (7163 (cum /ha) Though Pench, Bagh, Itiadh projects are kharif dominating projects, on Itiadh project H.W. paddy which requires more water as compared to other HW seasonal crops was irrigated and hence water use on Itiadh project may be more than the state norm.

### **Abundant:**

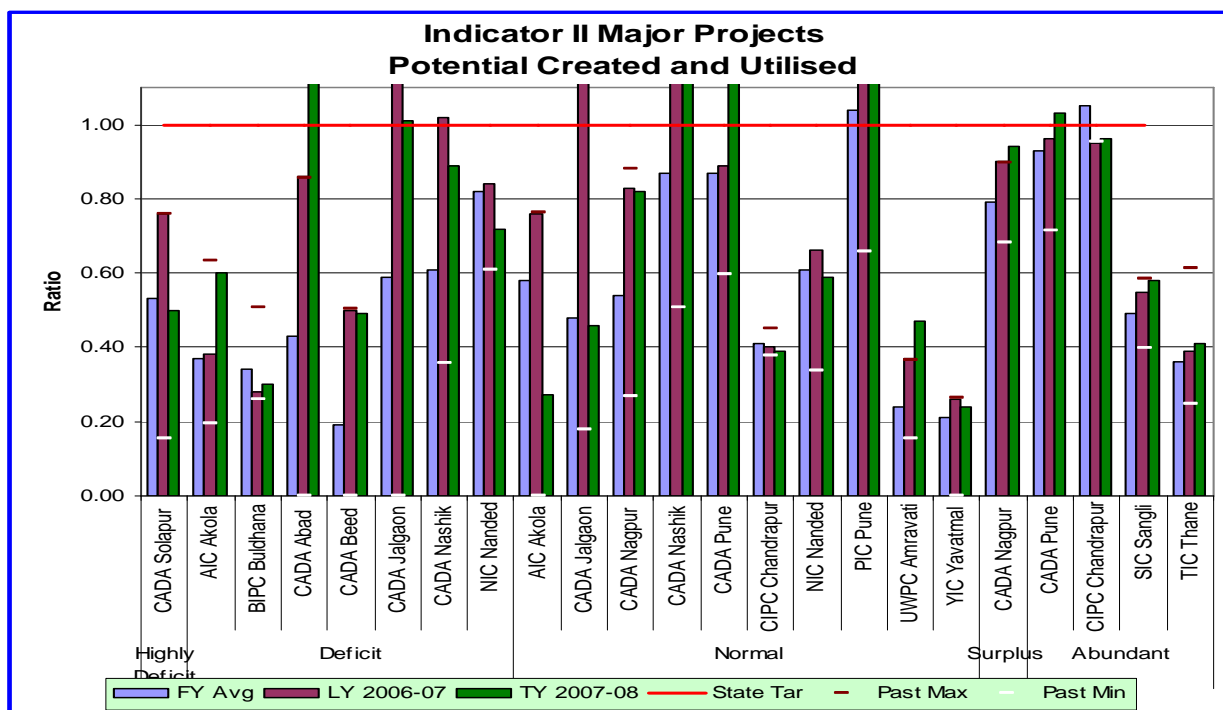
**CIPC Chandrapur:** Ninety percent of total water use on Asolamendha & Dina projects under CIPC Chandrapur is for kharif paddy crops. These projects lie in assured rainfall zone, obviously irrigation is in the form of protective irrigation.

However water use per unit area irrigated on Asolamendha was 7198 cum/ha, which was less than its last year's use (7254 cum/ha.) On Dina project, water use for irrigation is 4474 cum/ha, which is less than its last year's use of 5943 cum/ha. Project authorities are instructed to sort out the reasons for more water use per ha on Asolamendha than Dina, when both projects lie in the same Agro climatic zone.

**CADA Pune:** In Krishna Project the water utilization for irrigation is 11585 cum/ha. It is decreased than last year 15806 cum/ha. The water utilization is more than state norms. The Field Officers are advised to do needful to reduce the water utilization per unit area.

**SIC Sangli :** Water use for irrigation in different projects under this circle against State norm (7692 cum/ha) are as under; overall average water use on Radhanagri, Tulsi, Warna , & Dhudhganga is (7788). Over all water use on all the projects are comparatively more than the State norm. Comments on more water use stated by field officers are, on this project irrigation has been done by lifting of water from river. Due to irregular supply of electricity, at nighttime there are frequent operations of starting and stopping which results in loss of water. Accurate measurement of water lifted for irrigation is not possible.

**TIC Thane:** Water use for irrigation in different projects under this circle against State norm (7692 cum/ha) are as under; Over all water use on Bhatsa, Kal-Amba, & Surya is (23099), it is more than double the state norm. Reasons for more water use, put forth by field officer, are as under.-Steep Geographical topography, water loss is more.-Mostly rice crop is taken, & water requirement for rice crop is 5 to 6 times more.-Efforts are being made to reduce rate of water use by promoting farmers by developing horticulture in command area.



| Plan group      | Circle          | FY Avg    | 2006-07 | 2007-08 | Past Max | Past Min | Avg Per |
|-----------------|-----------------|-----------|---------|---------|----------|----------|---------|
| Highly Deficit  | CADA Solapur    | 0.53      | 0.76    | 0.50    | 0.76     | 0.15     | 0.50    |
| Deficit         | AIC Akola       | 0.37      | 0.38    | 0.60    | 0.63     | 0.20     | 0.75    |
|                 | BIPC Buldhana   | 0.34      | 0.28    | 0.30    | 0.51     | 0.26     |         |
|                 | CADA Abad       | 0.43      | 0.86    | 1.27    | 0.86     | No Irr   |         |
|                 | CADA Beed       | 0.19      | 0.50    | 0.49    | 0.50     | No Irr   |         |
|                 | CADA Jalgaon    | 0.59      | 1.19    | 1.01    | 1.19     | No Irr   |         |
|                 | CADA Nashik     | 0.61      | 1.02    | 0.89    | 6.14     | 0.36     |         |
|                 | NIC Nanded      | 0.82      | 0.84    | 0.72    | 1.33     | 0.61     |         |
|                 | Normal          | AIC Akola | 0.58    | 0.76    | 0.27     | 0.76     | No Irr  |
| CADA Jalgaon    |                 | 0.48      | 1.25    | 0.46    | 1.77     | 0.18     |         |
| CADA Nagpur     |                 | 0.54      | 0.83    | 0.82    | 0.88     | 0.27     |         |
| CADA Nashik     |                 | 0.87      | 1.56    | 1.43    | 1.56     | 0.51     |         |
| CADA Pune       |                 | 0.87      | 0.89    | 1.15    | 1.55     | 0.60     |         |
| CIPC Chandrapur |                 | 0.41      | 0.40    | 0.39    | 0.45     | 0.38     |         |
| NIC Nanded      |                 | 0.61      | 0.66    | 0.59    | 4.00     | 0.34     |         |
| PIC Pune        |                 | 1.04      | 1.48    | 1.87    | 1.48     | 0.66     |         |
| UWPC Amravati   |                 | 0.24      | 0.37    | 0.47    | 0.37     | 0.15     |         |
| YIC Yavatmal    |                 | 0.21      | 0.26    | 0.24    | 0.26     | No Irr   |         |
| Surplus         | CADA Nagpur     | 0.79      | 0.90    | 0.94    | 0.90     | 0.68     | 0.94    |
| Abundant        | CADA Pune       | 0.93      | 0.96    | 1.03    | 1.29     | 0.71     | 0.75    |
|                 | CIPC Chandrapur | 1.05      | 0.95    | 0.96    | 1.44     | 0.95     |         |
|                 | SIC Sangli      | 0.49      | 0.55    | 0.58    | 0.58     | 0.40     |         |
|                 | TIC Thane       | 0.36      | 0.39    | 0.41    | 0.61     | 0.25     |         |

Note: 1) Figures in red indicate values exceeding range of graph.  
2) Figures in blue are excluded from Avg Per.  
3) 'No Irr' indicates the utilised potential in that year is nil.

## **Indicator II: Potential created and utilized**

### **Highly deficit:**

**CADA Solapur:** In Bhima (Ujjani) Project, utilized irrigation potential is 50%. Performance is 26% less than last year. Large percentage of the potential utilized, is from river lifts, and reservoir lifts. More efforts are needed to utilize the potential of canals.

### **Deficit Plan Group:**

**AIC Akola:** Actual potential utilization on Katepurna and Nalganga project was just 59% and 62% respectively. According to field officers there was low water demand for irrigation.

**BIPC Buldhana:** In case of Wan Project, potential utilization is 30% of effective potential created. There appears to be no improvement over its last year's performance (28%). Reasons for low potential utilization compared to state norm & its past year performance needs to be explored by the field officers.

**CADA Jalgaon:** In Girna project, full effective potential is utilized since last year.

**CADA Nashik:** In Chankapur project, full effective potential was utilized in last year. However in this year the utilization is reduced to 89%.

**CADA Beed:** In all three major projects viz. Majalgaon, Manjra & Lower Terna the over all ratio is low. The average value of indicator is 0.49 which has slightly reduced over last year's value (0.50). Proper planning is required at project level to increase irrigated area so that improvement in performance can be possible.

**CADA Aurangabad & CADA Beed:** In Jayakwadi project (PLBC) under CADA Aurangabad the ratio has increased from 0.86 to 1.27 where as for PRBC under CADA Beed the ratio has decreased from 0.39 to 0.33 as compared to last year. The performance of PRBC is poor as compared to PLBC though both the canals (originating from the same reservoir) have command area of similar characteristics. One of reason for decreased ratio of PRBC compared to PLBC may be irrigation on reservoir lift, though the field officers are required to be more vigilant for improving the performance.

**NIC Nanded:** In all three projects Manar, Vishnupuri & Purna the ratio is decreased from 0.84 to 0.72

### **Normal Plan Group:**

**AIC Akola:** Actual potential utilization on Pus project was (27%) It appears to be very low performance compared to last year performance (76%) & than past five years average performance (58%).

**UWPC Amaravati:** Potential utilization during year 2007-08 was 47%. However during the year 2006-07 potential utilisation was 37 %. Good improvement this year.

**YIC Yeotmal:** Actual potential utilization on Arunavati project (24%) during the year 2007-08 is more or less same as it was during the irrigation year 2006-07 (26%) Proper action to utilize full created irrigation potential is necessary at project level.

**CADA Nagpur:** There is no improvement on Lower Wunna project under the circle as compared to its last year's performance of (84%). However the current Potential utilization (82%) as compared to state norms is appreciable. It is better as compared to other projects under this circle.

**CIPC Chandrapur:** On Bor Project, there is slight decrease in potential utilization (39%). During 2005-06 actual potential utilization was (42%). There is low potential utilization in rabbi & H.W. compared to project planning. Reasons for under potential utilization must be sorted out at project level.

**CADA Jalgaon:** In Hatnur project, full effective potential was utilized since last two years. However the utilization is lowered to 0.46 in this year.

**CADA Nashik:** All major projects except Darna have achieved the state norm.

**NIC Nanded:** In Upper Penganga Project the ratio has decreased from 0.66 to 0.59. Low ratio is due to 33% unutilized water & only 28% of PIP achievement, field officers is required to be more vigilant for improving the performance by planning full utilization of available water.

**CADA Pune:** In Kukadi Project the utilized potential is 100% shows increase in performance since last year by 21% In Ghod Project the ratio utilized irrigated potential with effective created potential comes to one.

**PIC Pune:** In Khadakwasla Project the ratio comes to 1.00 shows increase in performance than 0.48 of last year. In N.R.B.C. the ratio comes to 1.00 as compare to 0.85 of last year value. In Pawana Project the ratio increased from 0.27 of last year to 0.44 this year still it is below the state norms. The field officers are advised to take efforts for improvement.



### **Surplus Plan Group:**

**CADA Nagpur:** Actual potential utilization on all the three projects [Bagh (100%), Itiadh (100%) & Pench (80%)] under this circle is better than their past five year's average performance [Bagh (74%), Itiadh (83%) & Pench (62%)]. Principle area on all these three projects is kharif paddy with appreciable area under HW paddy on Itiadh project. Kharif Irrigation on agreement may be the prime reason for getting 100% potential utilization.

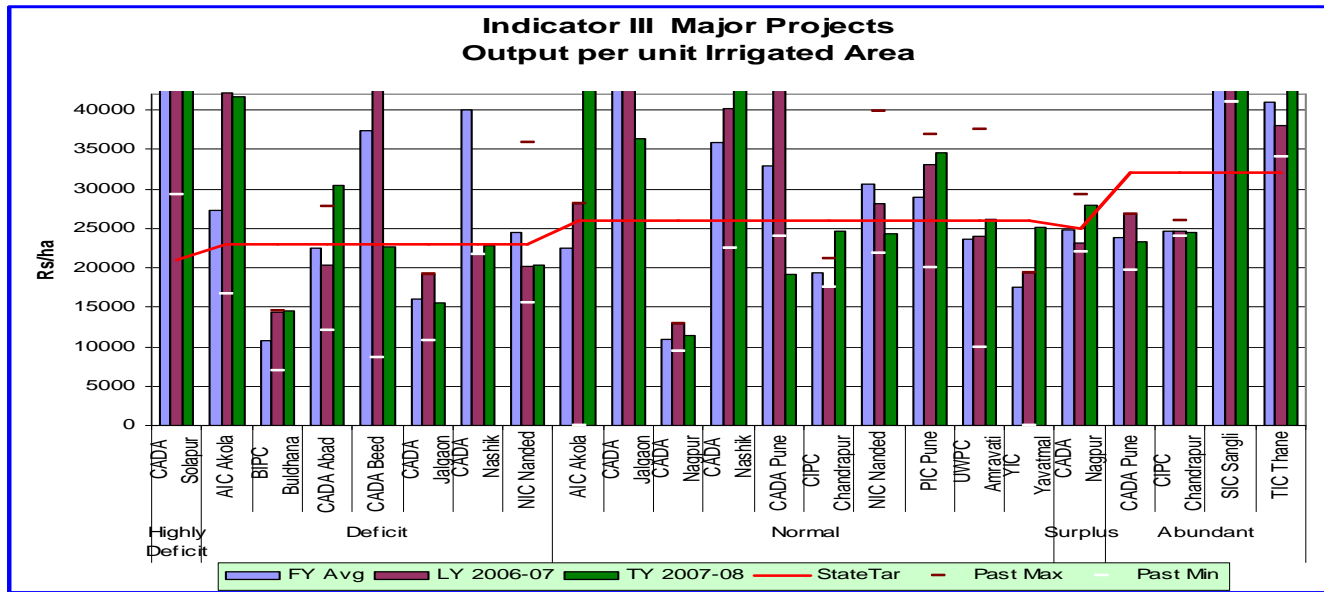
### **Abundant Plan Group:**

**CIPC Chandrapur:** On both Asolamendha and Dina Project, kharif paddy is the principle crop, which requires water in the form of protective irrigation. Actual potential utilization on the project is 96% of the created potential, which is very close to the state norm. In case of Dina Project potential utilization is 101% of created irrigation potential, which is 92% on Asolamendha project.

**CADA Pune:** In Krishna Project the ratio comes to 1.00 this year which is increased as is increased compare to last year value 0.96.

**SIC Sangli :** The average ratio figure of utilized irrigation potential to effective created potential in different projects under this circle (0.58), project are Radhanagri, Tulsi, Warna , & Dhudhganga .On Dhudhganga project canal system under progress, hence potential ratio is lower. Compared with last year, Little improvement in utilization of potential created is observed to some extent.

**TIC Thane:** The average Ratio figure of utilized irrigation potential to effective created potential in different projects under this circle are is (0.41). Major projects are Bhatsa, Kal-Amba, & Surya. The ratio is increased 2%, Overall performance is below State norm, sincere efforts & improvement, is observed to some extent, in this regard.



| Plan group     | Circle          | FY Avg | LY 2006-07 | TY 2007-08 | Past Max | Past Min | Avg Per | St.Tar |
|----------------|-----------------|--------|------------|------------|----------|----------|---------|--------|
| Highly Deficit | CADA Solapur    | 44267  | 52374      | 44770      | 52374    | 29203    | 44770   | 21000  |
| Deficit        | AIC Akola       | 27214  | 42150      | 41632      | 42150    | 16658    | 23985   | 23000  |
|                | BIPC Buldhana   | 10806  | 14393      | 14619      | 14575    | 6979     |         |        |
|                | CADA Abad       | 22467  | 20282      | 30463      | 27729    | 12090    |         |        |
|                | CADA Beed       | 37356  | 47369      | 22571      | 47369    | 8580     |         |        |
|                | CADA Jalgaon    | 16016  | 19250      | 15465      | 19250    | 10806    |         |        |
|                | CADA Nashik     | 40045  | 21710      | 22827      | 54857    | 21710    |         |        |
|                | NIC Nanded      | 24457  | 20111      | 20320      | 35801    | 15545    |         |        |
| Normal         | AIC Akola       | 22498  | 28028      | 60864      | 28028    | 0        | 33165   | 26000  |
|                | CADA Jalgaon    | 77580  | 77415      | 36315      | 148519   | 48351    |         |        |
|                | CADA Nagpur     | 10940  | 12892      | 11485      | 12892    | 9409     |         |        |
|                | CADA Nashik     | 35929  | 40213      | 68973      | 47030    | 22548    |         |        |
|                | CADA Pune       | 32958  | 45757      | 19262      | 45757    | 23941    |         |        |
|                | CIPC Chandrapur | 19345  | 17535      | 24650      | 21137    | 17535    |         |        |
|                | NIC Nanded      | 30590  | 28108      | 24312      | 39808    | 21803    |         |        |
|                | PIC Pune        | 28890  | 33127      | 34583      | 36834    | 20062    |         |        |
|                | UWPC Amravati   | 23678  | 24058      | 26050      | 37535    | 9886     |         |        |
|                | YIC Yavatmal    | 17493  | 19377      | 25153      | 19377    | 0        |         |        |
| Surplus        | CADA Nagpur     | 24827  | 23158      | 27902      | 29214    | 22058    | 27902   | 25000  |
| Abundant       | CADA Pune       | 23883  | 26705      | 23352      | 26705    | 19599    | 36804   | 32000  |
|                | CIPC Chandrapur | 24601  | 24602      | 24500      | 25904    | 24021    |         |        |
|                | SIC Sangli      | 51874  | 64516      | 56190      | 64516    | 40936    |         |        |
|                | TIC Thane       | 41080  | 38006      | 43172      | 48919    | 34046    |         |        |

Note: 1) Figures in red indicate values exceeding range of graph.  
2) Figures in blue and red excluded from Avg Per.

### **Indicator III: Output per Unit Irrigated Area (Rs./ha)**

#### **Highly Deficit Plan Group:**

**CADA Solapur:** In Bhima project, Agricultural output is Rs 44770/ha, overall performance is very good, Due to sugarcane crop percentage in this project is more than state norm.

#### **Deficit Plan Group:**

**AIC Akola:** Output on Katepurna Project is Rs.47049/ha which is too high although the percentage of oil seeds and perennial crops is 5.5% of the total area irrigated. On Nalganga Project, percentage of cash crops is up to 15%. Still the out put rate achieved was Rs 34319 which is also high than the state norm. Field officers are required to assess the performance considering the realistic data.

**BIPC Buldhana:** In spite of irrigating crops like oil seeds, cash crops, perennial crops on Wan Project(19%) output per unit area irrigated is low (Rs14619).

**CADA Jalgaon:** In Girna project, output/ha is reduced from Rs. 19250/ha (2006-07) to Rs. 15465/ha (2007-08) which is about 67% of the state norm.

**CADA Beed:** On all three major projects agricultural output is more than State target. The reason for higher output can be attributed to higher percentage of area under perennial crops ranging from 31% to 67%.

**CADA Aurangabad & CADA Beed:** In Jayakwadi project (PRBC) the indicator is slightly lower than State norms.

On PLBC under Cada Aurangabad the agricultural out put has increased from Rs. 20283 to 30462 as compared to last year, due to increase in area irrigated under Ground nut & sugar cane.

**NIC Nanded:** In all the three projects viz., Manar, Vishnupuri & Purna the average agricultural out put increased slightly from Rs.20111 (2006-07) to Rs 20320 though it is still below state norms.

**CADA Nashik:** In Chankapur project, the output per ha is increased from Rs. 21710/ha to Rs. 22827/ha which is just near the state norm.

#### **Normal Plan Group:**

**AIC Akola:** Output observed on Pus Project (Rs.60864/ha) was more than the state norm of Rs.26000 per ha irrigated area. There is an increase in out put as compared to last year out put. Oil seeds, cash crops & perennial crops above 30% of the total area irrigated may be the responsible for appreciable increase.

**UWPC Amaravati:** Out put per unit ha on Upper Wardha project was Rs 26050/ha which is just above (4%) the state norm of Rs 25000./ha.

**YIC Yeotmal:** On Arunavati Project, there is better improvement in output during the irrigation year 2007-08(Rs25153/ha) as compared to out put realized in 2006-07(19377/ha) But it is low if compared to the state norm of Rs. 26000/ha.

**CADA Nagpur:** In case of Lower Wunna project, output per unit area irrigated was Rs 11485 which shows decrease in performance compared to last year performance of Rs. 12892 /ha. Still out put is low compared to the state target (Rs.26000 /ha) and other projects under this circle.

**CIPC Chandrapur:** Output per unit area on Bor Project (Rs.24650) has been improved as compared to its performance in 2006-07 (Rs17535). Performance is low compared to the state norm probably due to rabbi seasonal crops mainly gram with meager perennial crops (2.5%) sown in the command.

**CADA Jalgaon:** In Hatnur project, though the output /ha is reduced from Rs. 77415/ha (2006-07) to Rs. 36314/ha (2007-08) still it is on higher side of the state norms.

**CADA Nashik:** In all the projects, the output/ha is above the state norm.

**NIC Nanded :** In Upper Penganga Project the out put is decreased from Rs 28108 (2006-07) to Rs 24312 (2007-08).

**CADA Pune:** In kukdi Project the output is Rs. 18625/ha. It is decreased than last year performance and below the state target.

In Ghod Project the output increased from 21284/ha. To 21717./ha.this year but, it is still below the state norms.

**PIC Pune:** In Khadakwasla Project the output comes to Rs. 42982 as compare to last years output of Rs. 49666. In N.R.B.C the output is Rs. 28452/ ha. Which is less than last year and it is still below the state target. In N.L.B.C. output is Rs. 42196/ha. It is slightly increased than last year and above the state norms. In Pawna Project the output is Rs. 50794 decreased as compare to last year value of Rs.57705/ha.

#### **Surplus:**

**CADA Nagpur :** The output per unit irrigated area realized on Bagh (Rs.24885), Itiadh(Rs 24885) & Pench (Rs 30026) projects shows no improvement compared to it's last year performance except Pench project. As compared to the state norm (Rs.25000/ha) actual output derived is satisfactory.

### **Abundant Plan Group:**

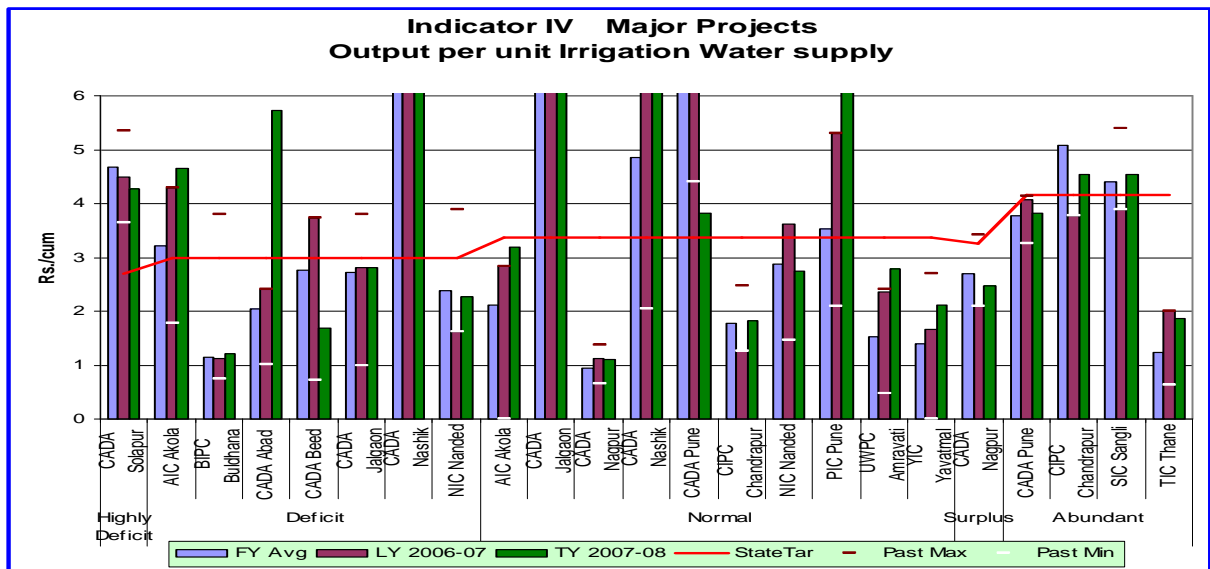
**CIPC Chandrapur:** Output observed on Asolamendha and Dina was Rs.24500/ha which is same as per last year out put.

Asolamendha & Dina projects are paddy growing projects. Obviously the output per unit irrigated area on these projects is likely to be low compared to state target (Rs.34000) and projects under SIC Sangli (Abundant) where sugar cane is the predominant crop.

**CADA Pune:** In Krishna Project the output is Rs. 33352/ha.shows slight decrease than last year performance of Rs. 26705/ha.

**SIC Sangli:** The average Agricultural output per unit area in different projects under this circle is (56190) project is Radhanagri, Tulsi, Warna, &Dhudhganga. Paste attack on sugarcane crop controlled, increase in yield, hence achievement is more than the state norm (Rs32000/Ha) .Overall performance is very good on all the projects.

**TIC Thane :** The average Agricultural output per unit area (Rs/ha) in different projects under this circle is (43172), project are Bhatsa,Kal-Amba ,& Surya, Due to horticulture crops in place of rice crops the output is much more the state norm (Rs 21000/Ha).Over all performance of Agricultural output is very good.



| Plan group     | Circle          | FY Avg | LY 2006-07 | TY 2007-08 | Past Max | Past Min | Avg Per | St Tar |
|----------------|-----------------|--------|------------|------------|----------|----------|---------|--------|
| Highly Deficit | CADA Solapur    | 4.67   | 4.50       | 4.26       | 5.35     | 3.63     | 4.26    | 2.69   |
| Deficit        | AIC Akola       | 3.21   | 4.29       | 4.65       | 4.29     | 1.78     | 4.46    | 2.99   |
|                | BIPC Buldhana   | 1.15   | 1.13       | 1.22       | 3.80     | 0.74     |         |        |
|                | CADA Abad       | 2.05   | 2.41       | 5.72       | 2.41     | 1.01     |         |        |
|                | CADA Beed       | 2.76   | 3.74       | 1.69       | 3.74     | 0.72     |         |        |
|                | CADA Jalgaon    | 2.73   | 2.82       | 2.81       | 3.81     | 0.98     |         |        |
|                | CADA Nashik     | 12.04  | 10.93      | 12.83      | 15.30    | 10.53    |         |        |
|                | NIC Nanded      | 2.38   | 1.62       | 2.28       | 3.88     | 1.62     |         |        |
| Normal         | AIC Akola       | 2.11   | 2.83       | 3.20       | 2.83     | No Water | 4.82    | 3.38   |
|                | CADA Jalgaon    | 10.44  | 6.72       | 10.40      | 19.09    | 6.72     |         |        |
|                | CADA Nagpur     | 0.95   | 1.12       | 1.09       | 1.36     | 0.64     |         |        |
|                | CADA Nashik     | 4.86   | 9.58       | 13.27      | 9.58     | 2.04     |         |        |
|                | CADA Pune       | 6.19   | 11.38      | 3.83       | 11.38    | 4.40     |         |        |
|                | CIPC Chandrapur | 1.77   | 1.26       | 1.83       | 2.48     | 1.26     |         |        |
|                | NIC Nanded      | 2.87   | 3.62       | 2.74       | 6.76     | 1.47     |         |        |
|                | PIC Pune        | 3.52   | 5.30       | 6.91       | 5.30     | 2.09     |         |        |
|                | UWPC Amravati   | 1.53   | 2.35       | 2.79       | 2.40     | 0.47     |         |        |
|                | YIC Yavatmal    | 1.39   | 1.66       | 2.11       | 2.70     | No Water |         |        |
| Surplus        | CADA Nagpur     | 2.70   | 2.08       | 2.48       | 3.41     | 2.08     | 2.48    | 3.25   |
| Abundant       | CADA Pune       | 3.78   | 4.07       | 3.83       | 4.14     | 3.26     | 3.69    | 4.16   |
|                | CIPC Chandrapur | 5.08   | 3.78       | 4.54       | 6.27     | 3.78     |         |        |
|                | SIC Sangli      | 4.41   | 3.88       | 4.53       | 5.39     | 3.88     |         |        |
|                | TIC Thane       | 1.24   | 1.99       | 1.87       | 1.99     | 0.64     |         |        |

Note: 1) Figures in red indicate values exceeding range of graph.

2) Figures in blue & red are excluded from Avg Per

3) 'No Water' indicates reservoirs are not filled in that year.

## **Indicator IV: Output per Unit Irrigation Water Supply (Rs./cum)**

### **Highly Deficit plangroup:**

**CADA Solapur:** In Bhima (Ujjani) project, output per unit water supply for (Irrigation) is Rs4.26/cum. Over all performance is very good.

### **Deficit Plan Group:**

**AIC Akola:** On Katepurna Project on account of better yield and economic water use per unit area irrigated, output realized per unit irrigation water supply (Rs5.20/cum) appears to be good.. In case of Nalganga project due to volumetric water supply and better output the ratio (Rs.3.89/cum) is very good compared to the state target(Rs2.99/cum}.

**BIPC Buldhana:** Due to the very low output and more water use than the state norm, output realized per unit of irrigation water supply on Wan project (Rs 1.22/cum) is low compared to state norm of Rs2.99/cum.

**CADA Jalgaon:** In Girna project, the output per unit irrigation water supply in last year was with the state norm (Rs.3/cum). However it is now reduced to Rs. 2.81/cum which is just below the state norm.

**CADA Nashik:** In chankapur project, out put per unit irrigation water supplied is on higher side (Rs. 12.83/cum) as the water use per unit irrigated area has not exceeded the state norms i.e. water is utilized for irrigation precisely.

**CADA Beed:** In Majalgaon project the indicator is increased from 1.98 (2006-07) to 2.15 this year but it is still lower to State target. The field officers are required to improve the indicator value by judicious water use. On Manjra & Lower Terna the values are 4.82 & 3.95 respectively, which are more ahead of State norms.

**CADA Aurangabad & CADA Beed:** In Jayakwadi project (PLBC) indicator value has 5.72 as out put includes 55432 ha. area irrigated on wells out of 135772 ha. Total utilized potential. On PRBC the value has decreased from 4.41 (2006-07) to 1.26 (2007-08), this is due to excessive water use per unit of area irrigated.

**.NIC Nanded:** In Manar project the value increased from 1.97(2006-07) to 2.28 (2007-08), in Vishnupuri & Purna project the values have increased from 3.0 to 3.28 and 1.35 to 2.03 respectively as compared to last year.

## **Normal Plan Group:**

**AIC Akola:** In spite of, excessive water use per unit irrigated area, good realization of output on Pus Project gave value as Rs.3.20. Moreover there is improvement in performance by Rs (3.20-2.83) 0.37 per cum as compared to last years performance.

**UWPC Amaravati:** Exceptionally high water use per unit area irrigated and low output has resulted in reduction in performance in case of Wardha project (Rs.2.79/cum). By curbing excessive water use performance can be improved.

**YIC Yeotmal:** Due to high water use and low output on Arunavati project, the ratio has attained value Rs.2.11/cum which is low compared to state target of Rs 3.38/cum. However there is increase in out put over its value in last year (Rs 0.45/cum)

**CADA Nagpur:** Output per unit irrigation water supply on Lower Wanna Project is Rs.1.09 only as compared to state norm of Rs.3.38/cum. Performance is average on account of low output and more water use on the project.

**CIPC Chandrapur:** Though the output per unit irrigated area on Bor Project is fair as compared to the state target, ultimate out put per unit water supply was Rs.1.83 due to excessive irrigation water use.

**CADA Jalgaon:** In Hatnur project, the output per unit irrigation water supply is increased from Rs. 7/cum (2006-07) to Rs. 10.40/Cum (2007-08) which is on higher side of the state norms due to cash crops (Banana & Sugar cane) in the command.

**CADA Nashik:** In all the projects, the output per unit irrigation water supply is quite higher as compared to the state norm due to cash crops in the command.

**NIC Nanded:** In Upper penganga project the value of indicator is reduced from 3.62 to 2.74 this year, this is due to excessive water use per unit of area irrigated.

**CADA Pune:** In Kukdi Project the output works out to Rs. 3.83/cum. This is on lower side as compared to last year performance. In Ghod Project output is increased (Rs. 5.50/cum) than last year (Rs. 4.00/cum).

**PIC Pune :** In Khadakwasla Project the output is Rs. 7.70/cum In N.L.B.C. the output increases from Rs.5.80/cum to Rs. 6.32/cum this year In N.R.B.C. the output increased from Rs. 5.44/cum to 6.84/cum this year because of repairs to canal system and rainfall during rotation period causes less utilisation of water. In Pawna the output is increased from Rs. 7.53/cum to Rs. 10.89/cum this year. The overall performance of project under this circle is above the state target.



### **Surplus Plan Group:**

**CADA Nagpur:** Ratio in case of Bagh & Itiadh Project is Rs.3.09/cum & 2.43/cum respectively. Performance in case of Itiadh project compared to Bagh is some what low due to Hot Weather paddy grown on it. Where as on Pench project, low output (Rs.2.43) is on account of more water use and low out put per hectare area irrigated.

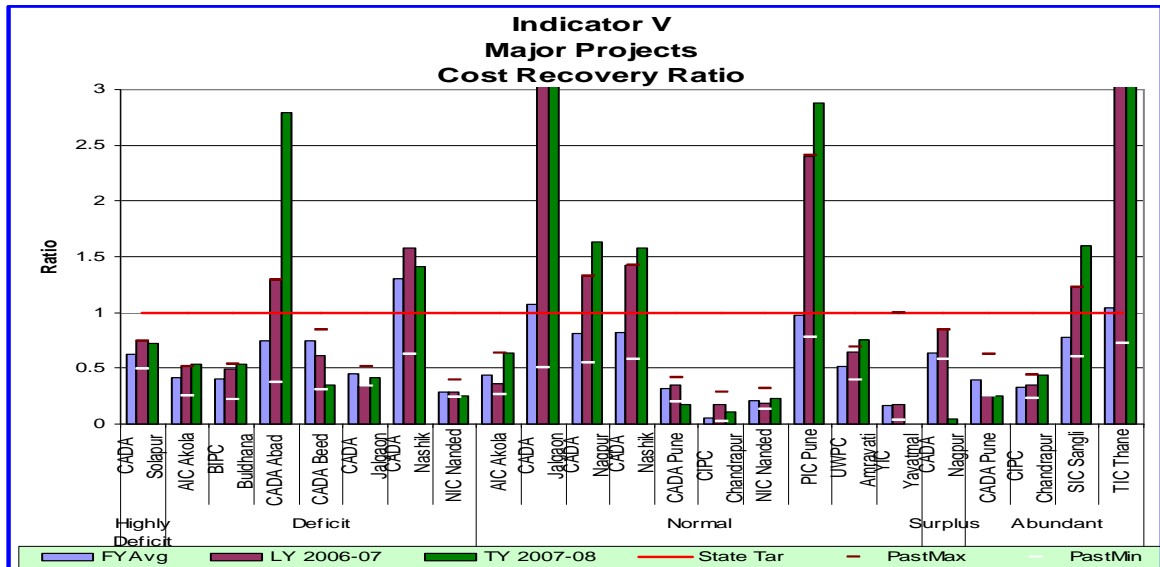
### **Abundant Plan Group:**

**CIPC Chandrapur:** On Asolamendha and Dina project irrigation is mainly in the form protective irrigation. The performance is better compared to the state norm, (4.16 /cum) on Dina Project (Rs.5.48/cum). On Asolamendha project, on account of more water use than Dina, the out put is comparatively low (Rs.3.89/cum).

**CADA Pune:** In Krishna Project the output comes out to Rs. 3.83/cum which is slightly more than state norms.

**SIC Sangli:** The output per unit water supply (Rs/cum) in different projects under this circle is (4.53), projects are Radhanagri, Tulsi, Warna, & Dudhaganga. Sincere efforts are being made for improvements. Compared with the last years overall performance is improved by 17%.

**TIC Thane:** The average out put per unit water supply (R/cum) in different projects under this circle is (1.87), the project are Bhatsa, Kal-Amba, & Surya. Compared with last year, overall performance is decreased to some extend (6%).



| Plan group     | Circle          | FYAvg | 2006-07 | 2007-08 | PastMax | PastMin | Av g Per |
|----------------|-----------------|-------|---------|---------|---------|---------|----------|
| Highly Deficit | CADA Solapur    | 0.62  | 0.75    | 0.72    | 0.75    | 0.49    | 0.72     |
| Deficit        | AIC Akola       | 0.42  | 0.52    | 0.54    | 0.52    | 0.26    | 0.90     |
|                | BIPC Buldhana   | 0.40  | 0.49    | 0.54    | 0.53    | 0.21    |          |
|                | CADA Abad       | 0.75  | 1.29    | 2.79    | 1.29    | 0.37    |          |
|                | CADA Beed       | 0.75  | 0.61    | 0.35    | 0.84    | 0.31    |          |
|                | CADA Jalgaon    | 0.45  | 0.34    | 0.42    | 0.52    | 0.34    |          |
|                | CADA Nashik     | 1.30  | 1.58    | 1.41    | 4.08    | 0.62    |          |
|                | NIC Nanded      | 0.29  | 0.29    | 0.25    | 0.39    | 0.25    |          |
| Normal         | AIC Akola       | 0.44  | 0.36    | 0.63    | 0.63    | 0.26    | 1.17     |
|                | CADA Jalgaon    | 1.07  | 3.80    | 3.67    | 3.80    | 0.51    |          |
|                | CADA Nagpur     | 0.81  | 1.33    | 1.63    | 1.33    | 0.55    |          |
|                | CADA Nashik     | 0.82  | 1.42    | 1.58    | 1.42    | 0.58    |          |
|                | CADA Pune       | 0.32  | 0.35    | 0.18    | 0.41    | 0.19    |          |
|                | CIPC Chandrapur | 0.05  | 0.18    | 0.11    | 0.29    | 0.02    |          |
|                | NIC Nanded      | 0.21  | 0.19    | 0.23    | 0.32    | 0.13    |          |
|                | PIC Pune        | 0.97  | 2.40    | 2.88    | 2.40    | 0.78    |          |
|                | UWPC Amravati   | 0.51  | 0.65    | 0.76    | 0.69    | 0.39    |          |
|                | YIC Yavatmal    | 0.16  | 0.18    | 0.00    | 1.00    | 0.03    |          |
| Surplus        | CADA Nagpur     | 0.64  | 0.85    | 0.04    | 0.85    | 0.58    | 0.04     |
| Abundant       | CADA Pune       | 0.39  | 0.25    | 0.25    | 0.62    | 0.25    | 1.91     |
|                | CIPC Chandrapur | 0.33  | 0.35    | 0.44    | 0.43    | 0.23    |          |
|                | SIC Sangli      | 0.78  | 1.23    | 1.60    | 1.23    | 0.60    |          |
|                | TIC Thane       | 1.04  | 4.78    | 5.35    | 4.78    | 0.72    |          |

Note: 1) Figures in red indicate values exceeding range of graph.

2) Figures in blue & red are excluded from Avg Per

## **Indicator V: Cost Recovery Ratio**

### **Highly Deficit Plan Group:**

**CADA Solapur:** In Bhima (Ujjani) project, cost recovery ratio is 0.72. It is less than the state norm due to utilization of O & M fund for repair of system & increase in the salaries of staff to some extent.

### **Deficit Plan Group:**

**AIC Akola:** On Katepurna project the ratio (0.89) is close to state target. Appreciable achievement is on account of notable NI water tax recovery. However on Nalganga project, the cost recovery ratio (0.15) is very poor compared to state norm. There is low revenue recovery on the part of irrigation & Non-irrigation water supply along with heavy operation (salary) cost. Reasons for such large operation cost when the. Most of the area on Nalganga project is managed by WUA needs to be sorted out at field level.

**BIPC Buldhana:** On Wan Project, ratio observed was (0.54). Though it is low compared to state target, there is slight improvement over its last year performance (0.49). Low irrigation recovery along with high operation cost has affected the cost recovery ratio.

**CADA Jalgaon:** In Girna project, the ratio is increased from 0.34 (2006-07) to 0.42 (2007-08). This is mainly due to increased in revenue by 136%

**CADA Nashik:** In chankapur project, the ratio is reduced from 1.58 (2006-07) to 1.41 (2007-08). This is because of reduction in revenue by 80%.

**CADA Beed:** In Majalgaon project the ratio has decreased from 0.88 to 0.34 this year, as recovery of non irrigation has reduced from Rs.357.00 (2006-07) to 87.00 lakhs in this year. In Manjra there is increase in cost recovery ratio 0.61 to 0.85 this year, as the NI recovery has increased from Rs. 85(2006-07) to 189 lakhs in this year. In Lower Terna, the ratio has increased from 0.08 to 0.20 this year, due to increase in recoveries. Still the ratio is far away from the state norms for all these three projects.

**CADA Aurangabad & CADA Beed:** The ratio on PLBC is has increased from 1.29 to 2.8 this year, which is increased over twice. The recovery has increased and the O&M cost has reduced. . In PRBC the ratio has declined over the last year from 0.47 to 0.31 this year, due to lesser recovery especially of irrigation.

**NIC Nanded:** In Vishnupuri project the cost recovery ratio has decreased from 1.11 to 0.71 this year, as there is reduction in NI recovery and increase in O&M cost. On Purna project the ratio has decreased from 0.18 to 0.14 this year, it has declined over last year due to O & M cost has increased and recovery being same.

In Manar project the ratio has decreased from 0.12 to 0.09 this year, field officers are required to take efforts for recovery of irrigation & non irrigation to achieve state target.

### **Normal Plan Group:**

**AIC Akola:** On Pus project, the ratio (0.63) is low compared to state norm but better than last year performance (0.36). It is so on account of low irrigation recovery and high operation cost. Suitable measures to increase the irrigation recovery are necessary.

**UWPC Amaravati:** On Upper Wardha Project cost recovery ratio has slightly improved (0.76) compared to last year (0.65)] but it is still below the state norm.

**YIC Yeotmal:** The cost recovery ratio on Arunavati project is (0.00).only Recovery on the part of irrigation & which was very least just Rs.1.48 lakh. It may be so on account of weak economical condition of farmers. But it is to be noted that recovery on account of Non Irrigation water supply was also nil Efforts are needed at least to collect the NI recovery in scheduled time.

**CADA Nagpur:** On lower Wanna Project (1.63), the cost recovery ratio observed is good as compared to state norm. 100% Non Irrigation water use recovery along with appreciable irrigation recovery is responsible to cross the target.

**CIPC Chandrapur:** On Bor Project (0.11), the ratio has rolled down compared to last year (0.40). Still it is very low compared to the state norm.

**CADA Jalgaon:** In Hatnur project, the ratio is above state norm (3.67). The increase is due to high recovery of N.I. water use.

**CADA Nashik:** In Bhandardara project, the ratio is improved from 0.61 (2006-07) to 1.00 (2007-08) due to reduction in O & M cost by 95%. and increased in revenue by 1.5 times as compared to last year..

In Mula project, the ratio is improved from 0.23 (2006-07) to 0.34 (2007-089).

In Ozerkhed project there is increase in revenue by 48% due to which the ratio is increased from 0.15 (2006-07) to 0.22 (2007-08)..

In Palkhed project the ratio has been increased from 0.72 (2006-07) to 0.96 (2007-08). Due to 72% reduction in O & M cost as compared to last year.

In Waghad project, due to increase in revenue by 48% as compare to last year, the ratio is improved from 0.13 (2006-07) to 0.22 (2007-08).

In Darna project, the ratio is above state norm since last two years.

In Gangapur project the ratio has been increased from 15.91 to 19.78 due to increase in recovery of Irrigation use by 95% as compared to last year.

In Kadwa project, due to high O & M cost, the ratio is much below the state norm (0.03).

Field officers are required to take necessary efforts to improve the performance in the projects where the ratio is below the state norm.

**NIC Nanded:** The ratio in UPP has increased from 0.19 to 0.23 as compared to last year, this is due to decrease in O & M cost and few increase in recovery, but it is still below the State norms. Field officers are advised to be more vigilant so as to reduce the maintenance cost and take efforts in revenue collection.

**CADA Pune:** In Kukdi Project the cost recovery ratio comes to 0.09 shows decrease than last year's value of 0.21 the ratio is below the state norms. The field officer's has to take more efforts for better recovery. In Ghod Project ratio decreased from 1.67 to 0.92 this year. The performance is lowered due to less recovery and excess amount of expenditure on maintenance.

**PIC Pune:** In Khadakwasla, N.L.B.C., N.R.B.C. and Pawna Project the cost recovery ratio is 2.20, 1.66, 0.87 and 24.22 this year. In Khadakwasla increase in performance than last year, the reason for better performance is better recovery and reduction in maintenance cost.

In Pawna Project the more recovery of N.I. use causes enhancement in performance considerably.

#### **Surplus Plan Group:**

**CADA Nagpur:** In case all three projects under this circle, namely Bagh (0.32), Itiadh (0.25) and Pench (4.58), achievement in respect of Cost recovery ratio was better than the past year performance of 0.07, 0.13 & 1.45 as well as state norm(except Pench). On Pench performance looks to be good compared to state norm due to considerable NI water use and recovery on that part. Low Percentage of irrigation revenue recovery on all the three projects has pulled down the performance of the circle. More efforts are needed towards maximum irrigation revenue recovery on these projects as a whole for improving the performance.

#### **Abundant Plan Group:**

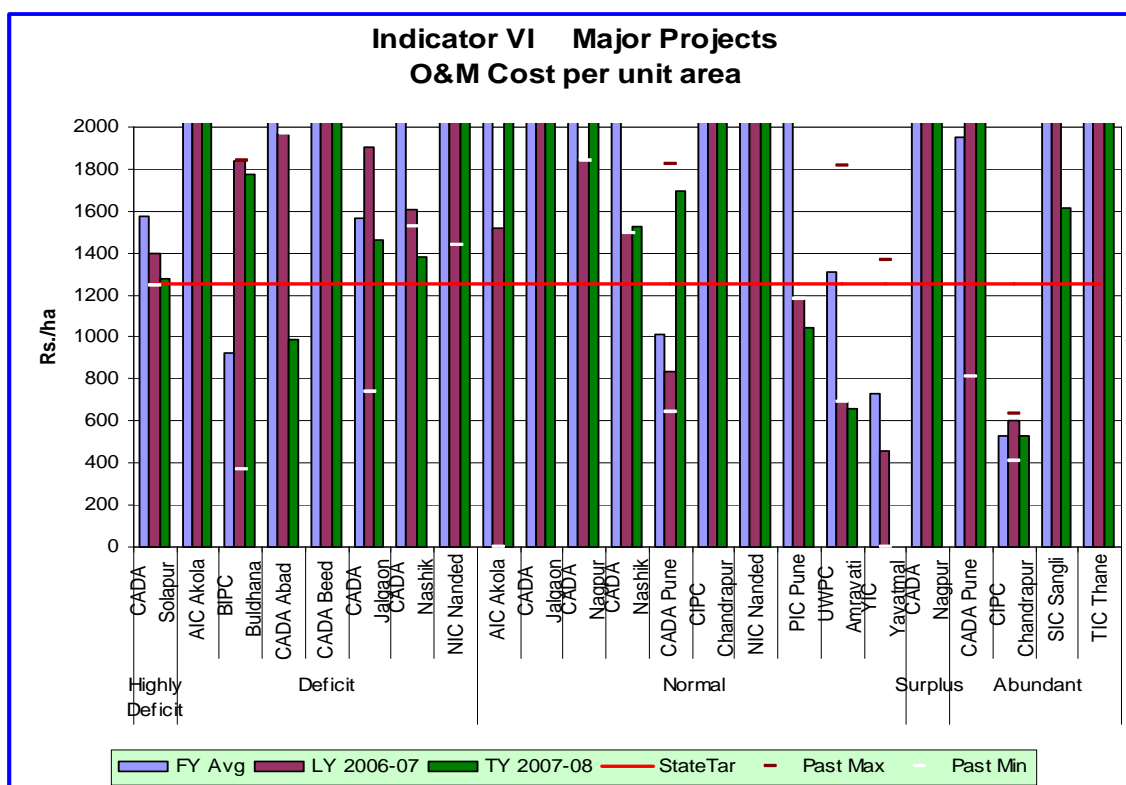
**CIPC Chandrapur:** On both the projects, Dina & Asolamendha cost recovery ratio was 44% of the state target. Low achievement obviously is due to low irrigation recovery.

**CADA Pune:** In Krishna Project the ratio comes to 0.25 which is same as last year. But it is below the state target. The field officer has to take more efforts for better recovery.

**SIC Sangli:** The average Cost Recovery ratio in different projects under this circle is (1.6) the project are Radhanagri, Tulsi, Warna, & Dudhaganga.

Substantial increase in O & M cost, old project & KT weirs newly rectified & fully repaired. It is 30% more than the last year value

**TIC Thane:** The average, cost Recovery ratio in different projects under this circle is 0.32; it is 68% below the state norm.



| Plan group     | Circle          | FY Avg | LY 2006-07 | TY 2007-08 | Past Max | Past Min | Avg Per |
|----------------|-----------------|--------|------------|------------|----------|----------|---------|
| Highly Deficit | CADA Solapur    | 1575   | 1398       | 1278       | 3492     | 1248     | 1278    |
| Deficit        | AIC Akola       | 4896   | 5145       | 5046       | 15100    | 2807     | 2454    |
|                | BIPC Buldhana   | 920    | 1839       | 1772       | 1839     | 372      |         |
|                | CADA Abad       | 4190   | 1968       | 988        | 21401    | 1968     |         |
|                | CADA Beed       | 18195  | 3563       | 4158       | 321053   | 3563     |         |
|                | CADA Jalgaon    | 1564   | 1904       | 1460       | 7113     | 739      |         |
|                | CADA Nashik     | 2328   | 1603       | 1378       | 5617     | 1529     |         |
|                | NIC Nanded      | 2169   | 2631       | 2376       | 2631     | 1438     |         |
| Normal         | AIC Akola       | 2254   | 1519       | 3310       | 2444     | 0        | 1982    |
|                | CADA Jalgaon    | 11894  | 5071       | 2189       | 23192    | 4840     |         |
|                | CADA Nagpur     | 2857   | 1837       | 2671       | 3854     | 1837     |         |
|                | CADA Nashik     | 2984   | 1493       | 1525       | 4465     | 1493     |         |
|                | CADA Pune       | 1015   | 834        | 1694       | 1820     | 643      |         |
|                | CIPC Chandrapur | 8714   | 2049       | 2689       | 16020    | 2049     |         |
|                | NIC Nanded      | 2800   | 2297       | 2058       | 7103     | 2090     |         |
|                | PIC Pune        | 3169   | 1177       | 1047       | 4454     | 1177     |         |
|                | UWPC Amravati   | 1306   | 693        | 658        | 1818     | 693      |         |
|                | YIC Yavatmal    | 731    | 455        | No Irr     | 1364     | 0        |         |
| Surplus        | CADA Nagpur     | 2887   | 2094       | 56450      | 4217     | 2094     | 56450   |
| Abundant       | CADA Pune       | 1956   | 4389       | 3925       | 4389     | 815      | 3381    |
|                | CIPC Chandrapur | 531    | 601        | 528        | 633      | 408      |         |
|                | SIC Sangli      | 2656   | 2176       | 1611       | 3703     | 2176     |         |
|                | TIC Thane       | 61039  | 9204       | 7459       | 123091   | 9204     |         |

Note: 1) Figures in red indicate values exceeding range of graph.

2) Figures in blue are excluded for Avg Per.

3) 'No Irr' indicates utilised potential of that year is nil.



## **Indicator VI: O & M Cost per Unit Irrigated Area (Rs./ ha)**

### **Highly Deficit Plan Group:**

**CADA Solapur:** In Bhima (Ujjani) project O & M cost per unit area is Rs.1278/ha, which is 3% more than the state norm, Hence performance is good.

### **Deficit Plan Group:**

**AIC Akola:** As the irrigation potential utilisation is the low but & twice the maintenance expenditure of prescribed norms on Katepurna Project, the O & M cost per unit are irrigated is about (4.0) times more (Rs.4677) than the state norm (Rs.1250). On Nalganga Project too, the maintenance expenditure 4 times the prescribed norm with low potential utilisation has raised the ratio to Rs.5545 ha against state norm of Rs.1250/ha.

**BIPC Buldhana:** On Wan Project, O & M cost per unit irrigated area has been decreased to Rs.1772 as compared to its last year performance of Rs 1839..

**CADA Jalgaon:** In Girna project, though the O&M cost per unit irrigated area is reduced from Rs. 1904/ha (2006-07) to Rs. 1460/ha (2007-08) still it is on higher side of the state norm (1250/ha).

**CADA Nashik:** In Chankapur project, the O & M cost per unit irrigated area is on higher side (110%) of the state norm.

**CADA Beed:** In Majalgaon project the indicator value has increased from Rs/ha 4187 to 4830 as a compared to last year, which is very high nearly 3.8 times to State norms.

In Manjra project the indicator value has reduced from 3115 to 2934 as compared to last year. But it is still higher nearly 2.3 times than State norms.

In Lower Terna though the indicator value is reduced from Rs. 5796 to 4904 as compared to last year, it is still very high nearly 4.0 times to State norms.

**CADA Aurangabad:** In Jayakwadi project (PLBC) the O & M cost per unit area has decreased from 1877 to 871 as compared to last year, which is well within the State norms.

In Jayakwadi project (PRBC) under CADA Beed the ratio has increased from 2455 to 3071 as compared to last year, which is 2.45 times the State norms.

**NIC Nanded:** In Manar project the indicator value has decreased from 2138 to 1998 as compared to last year, though it is still 1.6 times higher than the State norms.

In Vishnupuri project the indicator value has increased from 1585 to 2103 as compared to last year, which is above the State norm.

In Purna project the indicator value has decreased from 2862 to 2289 as compared to last year, which is still 1.8 times the State norm.

**Normal Plan Group:**

**AIC Akola:** On Pus project, the ratio was (2.65 times) higher (Rs3310) than the state norm

**UWPC Amaravati:** Low expenditure on maintenance and operation of Irrigation Management has kept the ratio well below the state norm.

**YIC Yeotmal:** On Arunavati project, the ratio (Rs 0) as there was no irrigation during 2007-08.

**CADA Nagpur:** On Lower Wunna project O&M cost per unit area irrigated (Rs 2671) was on higher side on account of low potential utilisation as well as more expenditure on maintenance and operation than the standard norms also it is more as compare to last years performance (Rs.1837)

**CIPC Chandrapur:** On Bor project, O&M cost per unit area irrigated was on higher side Rs. 2689 on account of low potential utilisation as well as more expenditure on maintenance and operation than the standard norms.

**CADA Jalgaon:** In Hatnur project, though the O & M cost per unit irrigated area is reduced from Rs. 5755/ha (2006-07) to Rs. 2189/ha (2007-08) still it is on higher side (1.75 times) of state norm. The field officers are required to take remedial measures to improve the performance.

**CADA Nashik:** In Darna, Bhandardara, Ozerkhed, Waghad and Palkhed projects, the O&M cost per unit irrigated area is well within the state norm. However, in Gangapur, Kadwa, & Mula projects, the O & M cost per unit irrigated area is on higher side of state norm.

**NIC Nanded:** In UPP the indicator value has reduced from 2052 to 1935 as compared to last year, which is still higher than the state norms.

**CADA Pune:** In Kukdi Project the O & M cost per unit area is Rs. 1897/ha which increased from Rs. 987/ha. of last year. In Ghod Project the performance considerably increased from Rs. 307/ ha to Rs. 901/ha. due to and enhancement in expenditure on maintenance.

**PIC Pune :** In Khadakwasla Project the O. & M. cost per unit area is Rs. 2033/ha. it decreases from Rs. 40247/ha. of last year's due to decrease in expenditure as compare to last year. In N.L.B.C. the O & M cost per unit area is Rs. 646/ha. shown decrease in performance than last year of Rs. 398/ha. due to more expenditure on establishment. In NRBC Cost per unit area is Rs. 632/ha

which is nearly same of last year value of Rs. 660/ha. In Pawna this year the value decreases from Rs. 5840/ha.to Rs.3970/ha. Due to reduction in expenditure on maintenance cost.

### **Surplus Plan Group:**

**CADA Nagpur:** O&M cost per unit area of 3 projects under the circle is Rs. 56450 /ha which is more than the state norm. In spite of good potential utilisation on Bagh & Itiadh projects, the ratio observed is Rs. 1386 /ha and Rs. 1992 /ha which suggest more O&M expenditure on these projects compared to the state norm.

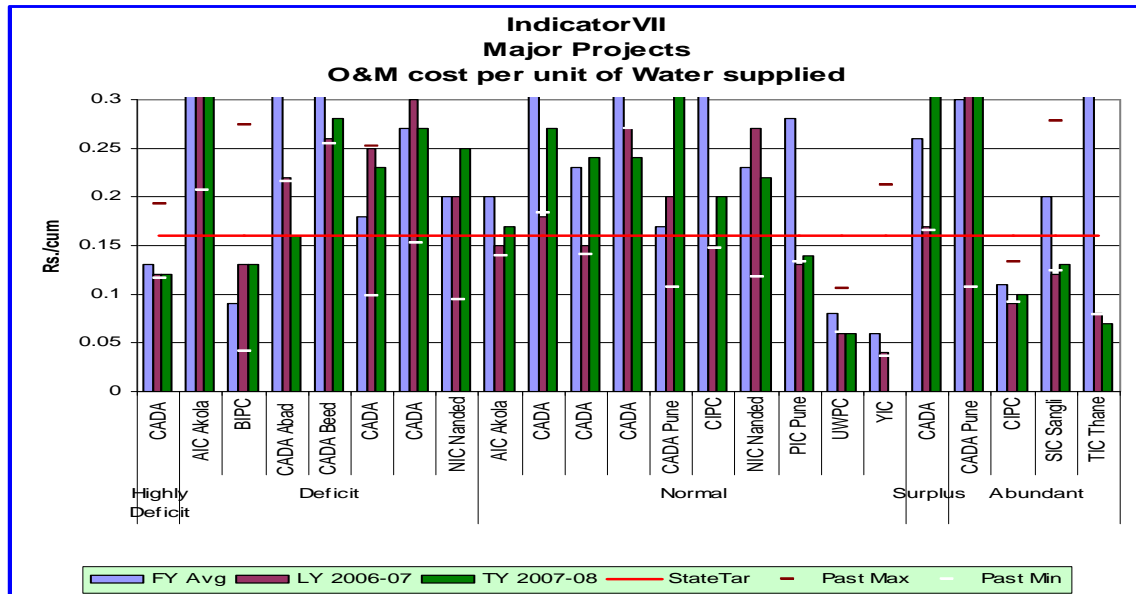
### **Abundant Plan Group:**

**CIPC Chandrapur:** Better potential utilisation and low expenditure on O & M has curbed the O & M cost per unit area irrigated well below the state norm on Dina (Rs 546) & Asolamendha (Rs659) projects.

**CADA Pune:** In Krishna Project the O & M cost per unit area reduces this year from Rs. 4310/ha.to Rs. 3861/ha. The reason for better performance is because of reduction in expenditure on maintenance and establishment cost.

**SIC Sangli:** The average O & M cost per unit area (Rs/ha) in different project under this circle is (1611) the project are Radhanagri, Tulsi, and Warna & Dudhaganga. Comparing with last year ratio is decreased by 54%, further efforts are being taken to reduce O & M cost & increasing irrigation area. Overall performance in Warna project & Dhudhganga project is good & improved marginally compared with last year. Due to huge repair work on Radhanagari & Tulsi, indicator value is too much more than the state target.

**TIC Thane:** The average O & M cost per unit area (Rs/ha) in different project under this circle is (7469), the project are Bhatsa, Kal-Amba, & Surya.. Overall performance is more than the state norm.



| Plan group     | Circle          | FY Avg | LY 2006-07 | TY 2007-08 | Past Max | Past Min | Avg Per |
|----------------|-----------------|--------|------------|------------|----------|----------|---------|
| Highly Deficit | CADA Solapur    | 0.13   | 0.12       | 0.12       | 0.19     | 0.12     | 0.12    |
| Deficit        | AIC Akola       | 0.37   | 0.39       | 0.41       | 1.02     | 0.21     | 0.25    |
|                | BIPC Buldhana   | 0.09   | 0.13       | 0.13       | 0.27     | 0.04     |         |
|                | CADA Abad       | 0.31   | 0.22       | 0.16       | 0.76     | 0.22     |         |
|                | CADA Beed       | 1.11   | 0.26       | 0.28       | 4.69     | 0.26     |         |
|                | CADA Jalgaon    | 0.18   | 0.25       | 0.23       | 0.25     | 0.10     |         |
|                | CADA Nashik     | 0.27   | 0.30       | 0.27       | 0.37     | 0.15     |         |
|                | NIC Nanded      | 0.20   | 0.20       | 0.25       | 0.37     | 0.09     |         |
| Normal         | AIC Akola       | 0.20   | 0.15       | 0.17       | 2.52     | 0.14     | 0.19    |
|                | CADA Jalgaon    | 0.60   | 0.18       | 0.27       | 0.91     | 0.18     |         |
|                | CADA Nagpur     | 0.23   | 0.15       | 0.24       | 0.48     | 0.14     |         |
|                | CADA Nashik     | 0.34   | 0.27       | 0.24       | 0.46     | 0.27     |         |
|                | CADA Pune       | 0.17   | 0.20       | 0.33       | 0.31     | 0.11     |         |
|                | CIPC Chandrapur | 0.78   | 0.15       | 0.20       | 1.61     | 0.15     |         |
|                | NIC Nanded      | 0.23   | 0.27       | 0.22       | 0.64     | 0.12     |         |
|                | PIC Pune        | 0.28   | 0.13       | 0.14       | 0.38     | 0.13     |         |
|                | UWPC Amravati   | 0.08   | 0.06       | 0.06       | 0.11     | 0.06     |         |
| YIC Yavatmal   | 0.06            | 0.04   | 0.00       | 0.21       | 0.04     |          |         |
| Surplus        | CADA Nagpur     | 0.26   | 0.17       | 4.59       | 0.37     | 0.17     | 4.59    |
| Abundant       | CADA Pune       | 0.30   | 0.66       | 0.63       | 0.66     | 0.11     | 0.23    |
|                | CIPC Chandrapur | 0.11   | 0.09       | 0.10       | 0.13     | 0.09     |         |
|                | SIC Sangli      | 0.20   | 0.12       | 0.13       | 0.28     | 0.12     |         |
|                | TIC Thane       | 0.56   | 0.08       | 0.07       | 1.08     | 0.08     |         |

Note: 1) Figures in red indicate values exceeding range of graph.

2) Figures in blue excluded for Avg Per

## **Indicator VII: O & M Cost per Unit Water Supply (Rs. /cum)**

### **Highly Deficit Plan Group:**

**CADA Solapur:** In Bhima (Ujjani) project, the O & M cost is Rs. 0.12 /cum, It is 25% below the state norm, overall performance is good.

### **Deficit Plan Group:**

**AIC Akola:** O & M cost per unit water supplied on Katepurna & Nalganga Project under AIC Akola (Deficit) was more than state norm on account of increase in maintenance expenditure.

**BIPC Buldhana:** On Wan Project performance is as per previous year.

**CADA Jalgaon:** In Girna project, the O & M cost per unit water supplied is reduced from Rs. 0.25/cum (2006-07) to Rs. 0.23/cum (2007-08), still it is 1.5 times more than the state norm.

**CADA Nashik:** In Chankapur project, the O & M cost per unit water supplied has exceeded the state norm (Rs.0.27/cum).

**CADA Beed:** In Majalgaon, the indicator value has increased from 0.24 to 0.32, Manjra has retained its last year's value (0.27), and Lower Terna has slightly increased from 0.61 to 0.65 this year.

**CADA Aurangabad & CADA Beed:** In Jayakwadi project (PLBC) the value is decreased from 0.22 to 0.16 achieving state target and for PRBC it is slightly reduced from 0.21 to 0.20 which is still higher to State norms.

**NIC Nanded:** In Purna & Manar projects the ratio has slightly increased from 0.21 to 0.23 & 0.24 respectively, where as in Vishnupuri project the ratio is increased from 0.19 to 0.27 as compared to last year.

### **Normal Plan Group:**

**AIC Akola:** The ratio on Pus was close to state target.

**UWPC Amravati:** The ratio on Upper Wardha was 0.06 which is as per previous year.

**YIC Yeotmal:** On Arunavati Project the ratio was Rs 0.00/cum, which was very low

**CIPC Chandrapur & CADA Nagpur:** The ratio on Bor, Lower Wunna project was close to the state target.

**CADA Jalgaon:** In Hatnur project, though the O&M expenditure is lowered from Rs. 531.28 Lakhs (2006-07) to 436.69 Lakhs (2007-08) the O&M cost per unit water supplied is Rs0.27/cum which is on higher side of the state norm.

**CADA Nashik:** In all the projects except Gangapur (Rs.0.10/cum) the O & M cost per unit water supplied is above state norm. The indicator value ranges from Rs.0.17/cum to Rs. 1.97/cum. Field officers are required to take care to improve the performance.

**NIC Nanded:** In UPP the ratio has from decreased 0.27 to 0.21 which is still higher than State norms; unutilized 33% of available water affects the indicator value.

**CADA Pune:** In Kukdi Project the O & M cost is Rs. 0.35/cum which is slightly increased over last year performance of Rs. 0.26/cum. because of increase in water utilisation. In Ghod Project, this year O & M cost is Rs. 0.22/cum increases from Rs. 0.07/cum the decrease in performance is due to high maintenance expenditure.

**PIC Pune:** In Khadakwasla, N.L.B.C., N.R.B.C. and Pawna Project O & M cost Per Unit water supply is Rs. 0.17, 0.10, 0.14 and 0.09/cum. The performances of all projects are up to satisfactorily level.

**Surplus Plan Group:**

**CADA Nagpur:** On each project under this circle i.e. Pench (Rs 0.10/cum), Bagh (Rs 0.29/cum), & Itiadh (Rs 0.17/cum), project O & M cost for unit water supply is close or more than state norm except Pench project.

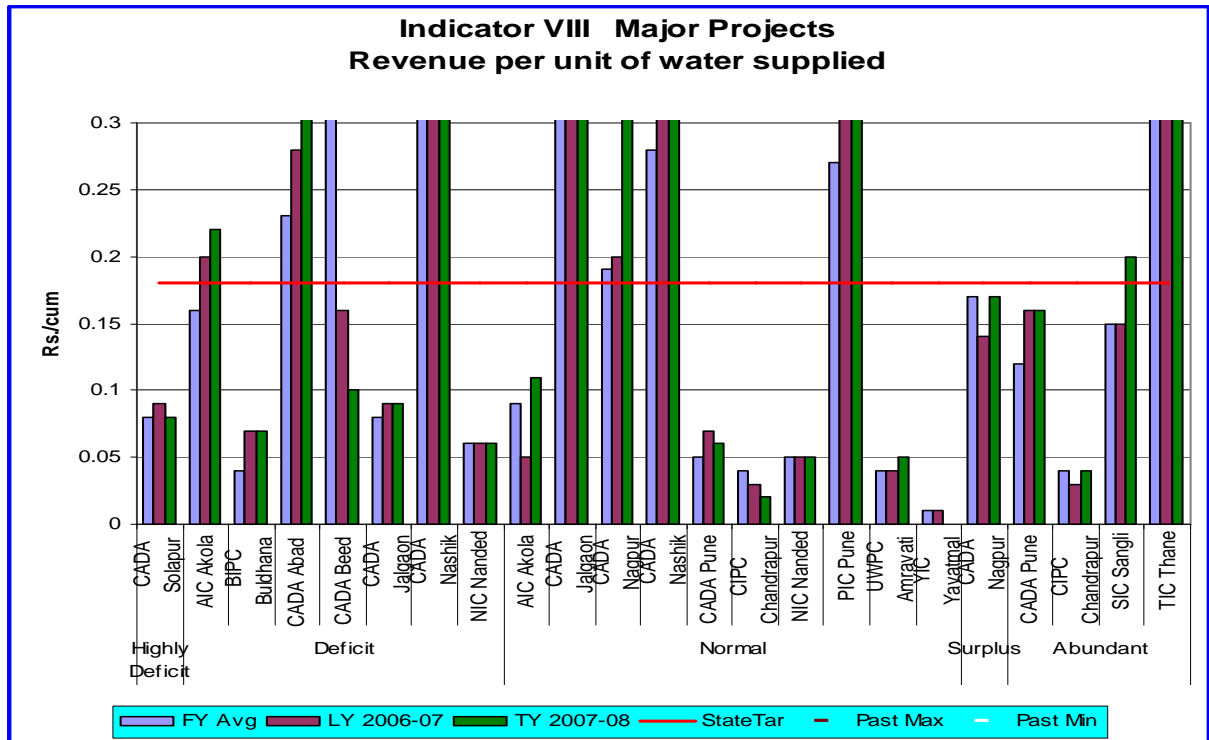
**Abundant Plan Group:**

**CIPC Chandrapur:** Protective irrigation in Kharif on Asolamendha & Dina project under CIPC Chandrapur has restricted the O & M cost per unit water supply well within the state norm.

**PIC Pune:** In Krishna Project the O & M Cost is Rs. 0.63/cum decreases than the last year, it is due reduction of expenditure on maintenance cost over last year.

**SIC Sangli :** The average O & M cost per cubic meter of water supply for irrigation, in different projects under this circle is (0.13) the project are Radhanagari ,Tulsi , Warna , & Dudhaganga .Overall performance is good.

**TIC Thane:** The average O & M Cost per cubic meter of water supply for irrigation in different project under this circle is (0.60), the project are Bhatsa, Surya, & Kal Amba. Overall performance is to much more than the state norm (0.16).



| Plan group     | Circle        | FY Avg | LY 2006-07 | TY 2007-08 | Past Max | Past Min | Avg Per |
|----------------|---------------|--------|------------|------------|----------|----------|---------|
| Highly Deficit | CADA Solapur  | 0.08   | 0.09       | 0.08       | 0.94     | 0.63     | 0.08    |
| Deficit        | AIC Akola     | 0.16   | 0.20       | 0.22       | 4.15     | 1.00     | 0.19    |
|                | BIPC Buldhana | 0.04   | 0.07       | 0.07       | 1.46     | 0.09     |         |
|                | CADA Abad     | 0.23   | 0.28       | 0.43       | 3.55     | 1.55     |         |
|                | CADA Beed     | 0.84   | 0.16       | 0.10       | 30.21    | 1.55     |         |
|                | CADA Jalgaon  | 0.08   | 0.09       | 0.09       | 1.07     | 0.49     |         |
|                | CADA Nashik   | 0.35   | 0.47       | 0.38       | 6.25     | 1.75     |         |
|                | NIC Nanded    | 0.06   | 0.06       | 0.06       | 1.04     | 0.23     |         |
| Normal         | AIC Akola     | 0.09   | 0.05       | 0.11       | 10.30    | 0.41     | 0.24    |
|                | CADA Jalgaon  | 0.64   | 0.70       | 0.98       | 8.34     | 2.02     |         |
|                | CADA Nagpur   | 0.19   | 0.20       | 0.38       | 2.63     | 1.09     |         |
|                | CADA Nashik   | 0.28   | 0.38       | 0.37       | 3.85     | 2.04     |         |
|                | CADA Pune     | 0.05   | 0.07       | 0.06       | 0.71     | 0.45     |         |
|                | CIPC          |        |            |            |          |          |         |
|                | Chandrapur    | 0.04   | 0.03       | 0.02       | 0.59     | 0.27     |         |
|                | NIC Nanded    | 0.05   | 0.05       | 0.05       | 1.14     | 0.35     |         |
|                | PIC Pune      | 0.27   | 0.32       | 0.40       | 3.22     | 2.14     |         |
|                | UWPC Amravati | 0.04   | 0.04       | 0.05       | 0.44     | 0.33     |         |
| YIC Yavatmal   | 0.01          | 0.01   | 0.00       | 0.41       | 0.01     |          |         |
| Surplus        | CADA Nagpur   | 0.17   | 0.14       | 0.17       | 2.23     | 1.40     | 0.17    |
| Abundant       | CADA Pune     | 0.12   | 0.16       | 0.16       | 1.65     | 0.51     | 0.20    |
|                | CIPC          |        |            |            |          |          |         |
|                | Chandrapur    | 0.04   | 0.03       | 0.04       | 0.49     | 0.24     |         |
|                | SIC Sangli    | 0.15   | 0.15       | 0.20       | 1.66     | 1.37     |         |
|                | TIC Thane     | 0.59   | 0.38       | 0.40       | 10.63    | 3.08     |         |

Note: 1) Figures in red indicate values exceeding range of graph.  
2) Figures in blue are excluded for Avg Per

## **Indicator VIII: Revenue per Unit Water Supply (Rs./ cum)**

### **Highly Deficit Plan Group:**

**CADA Solapur:** In Bhima (Ujjani) project, the revenue is Rs. 0.08/cum It is 60% below the state target. Overall performance is below average.

### **Deficit Plan Group:**

**AIC Akola:** Projects under AIC Akola are Katepurna & Nalganga the ratio (0.22) is improved performance than previous year.

**BIPC Buldhana:** On Wan Project the ratio is (0.07) same as per previous year.

**CADA Jalgaon:** In Girna project, the ratio is below the state norm since last two years...

**CADA Nashik:** In Chankapur project, the performance is much better (Rs.0.38/cum) as compared to state norm.

**CADA Beed:** In Majalgaon & Lower Terna the ratio is 0.11 (decreased from 0.22) & 0.13 (increased from 0.05) respectively, which is below the state norm (0.18), where as Manjra project has ratio of 0.23 (increased from 0.16) achieving state target.

**CADA Aurangabad & CADA Beed:** In Jayakwadi project (PLBC) the ratio increased from 0.28 to 0.43, in PRBC it has decreased from 0.10 to 0.06 as compared to last year.

**NIC Nanded:** In all the three projects viz. Manar, Vishnupuri & Purna revenue has decreased per cum of water supply in this year. That is in the range of 0.2 to 0.02.

### **Normal Plan Group:**

**AIC Akola:** Pus (AIC Akola) (Rs 0.11/cum)

**UWPC Amravati:** Upper Wardha (UWPC Amravati) (Rs 0.05/cum),

**YIC Yeotmal:** Arunavati (Rs 0.00/cum) compared to state norm as well as their past performances. An action for more realisation of revenue recovery along with economical water use is required at project level for improving the performance of above projects.

**CADA Jalgaon:** In Hatnur project the ratio is above state norm. (Rs.0.98/cum)

**CADA Nashik:** The revenue per unit water supplied is above state norm in Gangapur, Darna & Palkhed projects since last year. However, the ratio is



below state norm (varying from 8%to17%) in Kadwa, Bhandardara, Ozerkhed, Mula and Waghad projects.

**NIC Nanded:** UPP has retained last year's value 0.05, as recovery being negligible for successive years.

**CADA Pune:** In Kukdi Project revenue is Rs. 0.03/cum shows slight decrease over last year performance of Rs. 0.06/cum. It is also far below the state norms. In Ghod project revenue per unit water supply is Rs. 0.20/cum. Which shows improvement from Rs. 0.12/cum of last year.

**PIC Pune:** In Khadakwasla revenue is Rs. 0.38/cum increased from Rs. 0.31/cum of last year because of increased in revenue of irrigation and non irrigation use. In N.L.B.C. revenue Per Unit water supply is Rs. 0.16/cum. In N.R.B.C. the value is 0.13 In Pawna Project the value increased from Rs. 1.49/cum to Rs. 2.10/cum. The variation in performance is due to increase or reduction of recovery of irrigation water charges.

#### **Surplus Plan Group:**

**CADA Nagpur:** Low revenue recovery along with excessive water use on all projects under CADA Nagpur is responsible to low performance as compared to state target.

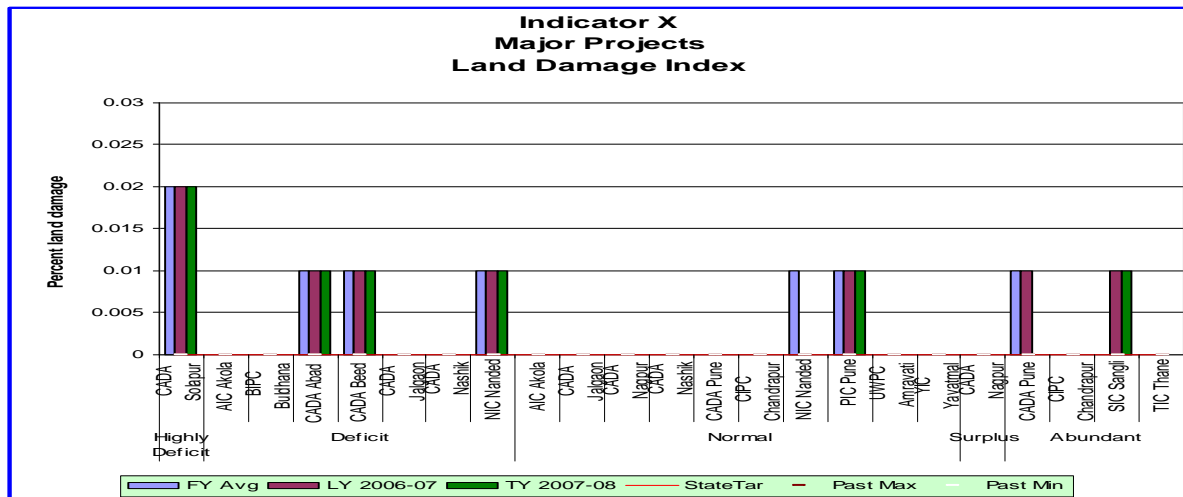
#### **Abundant Plan Group:**

**CIPC Chandrapur:** On Asolamendha & Dina projects under CIPC Chandrapur though ratio was (Rs 0.09/cum) low compared to the state norm it was better than projects under Normal.

**CADA Pune:** In Krishna Project the performance is same as Rs. 8.16/cum

**SIC Sangli:** The average revenue value per cubic meter of water supply, in different project under this circle is (0.2) the project are, Radhanagri Tulsi, Warna, & Dudhaganga .The performance is very good.

**TIC Thane:** The average revenue value per cubic meter water supply in different project under this circle is (0.4), the project are as under; Bhatsa, Kal-Amba, & Surya.The performance is very good.



| Plan group     | Circle          | FY Avg | LY 2006-07 | TY 2007-08 | Past ax | Past Min | Avg Per |
|----------------|-----------------|--------|------------|------------|---------|----------|---------|
| Highly Deficit | CADA Solapur    | 0.02   | 0.02       | 0.02       | 0.00    | 0.00     | 0.02    |
| Deficit        | AIC Akola       | 0.00   | 0.00       | 0.00       | 0.00    | 0.00     | 0.00    |
|                | BIPC Buldhana   | 0.00   | 0.00       | 0.00       | 0.00    | 0.00     |         |
|                | CADA Abad       | 0.01   | 0.01       | 0.01       | 0.00    | 0.00     |         |
|                | CADA Beed       | 0.01   | 0.01       | 0.01       | 0.00    | 0.00     |         |
|                | CADA Jalgaon    | 0.00   | 0.00       | 0.00       | 0.00    | 0.00     |         |
|                | CADA Nashik     | 0.00   | 0.00       | 0.00       | 0.00    | 0.00     |         |
|                | NIC Nanded      | 0.01   | 0.01       | 0.01       | 0.00    | 0.00     |         |
| Normal         | AIC Akola       | 0.00   | 0.00       | 0.00       | 0.00    | 0.00     | 0.00    |
|                | CADA Jalgaon    | 0.00   | 0.00       | 0.00       | 0.00    | 0.00     |         |
|                | CADA Nagpur     | 0.00   | 0.00       | 0.00       | 0.00    | 0.00     |         |
|                | CADA Nashik     | 0.00   | 0.00       | 0.00       | 0.00    | 0.00     |         |
|                | CADA Pune       | 0.00   | 0.00       | 0.00       | 0.00    | 0.00     |         |
|                | CIPC Chandrapur | 0.00   | 0.00       | 0.00       | 0.00    | 0.00     |         |
|                | NIC Nanded      | 0.01   | 0.00       | 0.00       | 0.00    | 0.00     |         |
|                | PIC Pune        | 0.01   | 0.01       | 0.01       | 0.00    | 0.00     |         |
|                | UWPC Amravati   | 0.00   | 0.00       | 0.00       | 0.00    | 0.00     |         |
|                | YIC Yavatmal    | 0.00   | 0.00       | 0.00       | 0.00    | 0.00     |         |
| Surplus        | CADA Nagpur     | 0.00   | 0.00       | 0.00       | 0.00    | 0.00     | 0.00    |
| Abundant       | CADA Pune       | 0.01   | 0.01       | 0.00       | 0.00    | 0.00     | 0.01    |
|                | CIPC Chandrapur | 0.00   | 0.00       | 0.00       | 0.00    | 0.00     |         |
|                | SIC Sangli      | 0.00   | 0.01       | 0.01       | 0.00    | 0.00     |         |
|                | TIC Thane       | 0.00   | 0.00       | 0.00       | 0.00    | 0.00     |         |

Note: 1) Figures in red exceeds range of graph. 2) Figures in blue excluded for Avg Per.

## **Indicator X: Land Damage Index:**

### **Highly Deficit Plan Group:**

**CADA Solapur:** In Bhima (Ujjani) project land damage index is 0.02.

### **Deficit Plan group:**

**CADA Beed:** In Manjra project the year, resulting affected area has increased from 448 to 487ha. As compared to last slight variation in ratio.

**CADA Aurangabad:** In Jayakwadi Project (PLBC) the land damage decreased from 2653 ha. To 1305 ha. This year.

**NIC Nanded:** In Manar project percentage of land damage increased from 1.0 to 1.11 and in Purna project there is no change in percentage of land damaged area (0.87).

### **Normal Plan Group:**

**CADA Pune:** Ghod Project there is no land damage this year. .In Kukdi Project land damage ratio is 0.13 this year.

**PIC Pune:** In Khadakwasla, N.L.B.C., N.R.B.C. and Pawna Projects the land damage index is 0, 2.0, 1.0 and Nil this year respectively,

**NIC Nanded:** In UPP, there is increase in land damage area from 72 ha. To 270 ha. This year, resulting increase in % of indicator.

### **Surplus Plan Group:**

### **Abundant Plan Group:**

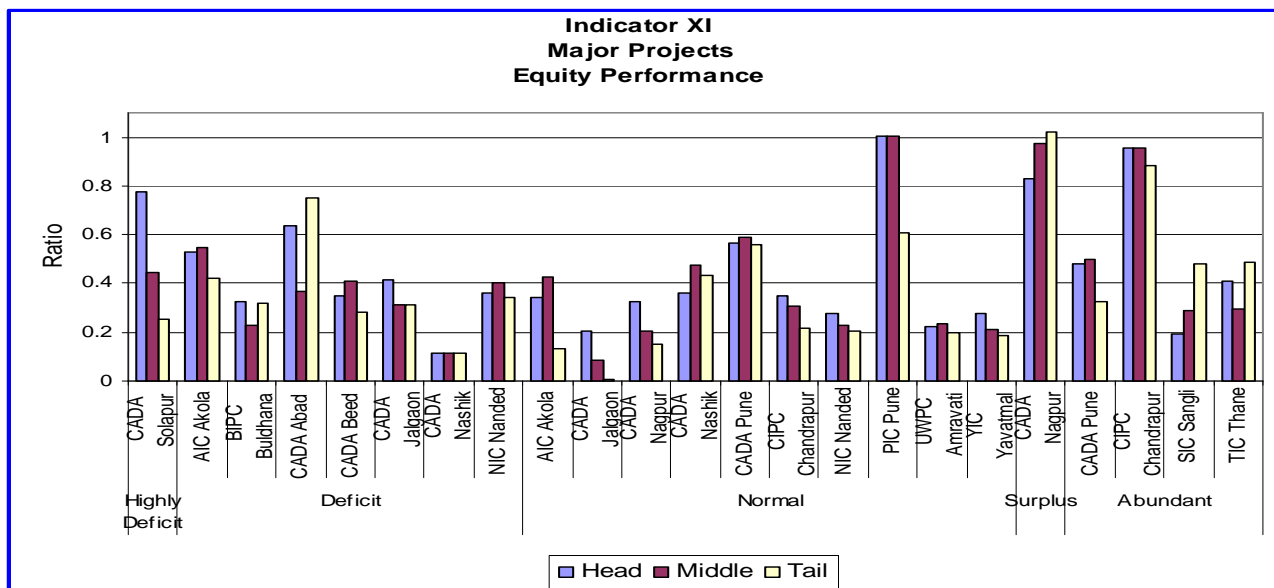
**CADA Pune:** In Krishna Project the land damaged is nil this year.

Land, less than 0.17 % of C.C.A. have been damaged due to water logging on Katepurna, Bor, and Nalganga & Pench project. From available data, part of damaged land appears to be reclaimed on Katepurna, Pench project where as 0.11% of the CCA, new land damage is identified on Lower Wunna project.

### **Abundant plan group:**

**SIC Sangli:** The average Land damage index value in Radhanagri (0.01).

**TIC Thane:** ---- Nil.



| Plangroup      | Circle          | 2007-08 |        |      |
|----------------|-----------------|---------|--------|------|
|                |                 | Head    | Middle | Tail |
| Highly Deficit | CADA Solapur    | 0.77    | 0.45   | 0.25 |
| Deficit        | AIC Akola       | 0.53    | 0.55   | 0.42 |
|                | BIPC Buldhana   | 0.32    | 0.23   | 0.32 |
|                | CADA Abad       | 0.64    | 0.37   | 0.75 |
|                | CADA Beed       | 0.35    | 0.41   | 0.28 |
|                | CADA Jalgaon    | 0.42    | 0.31   | 0.31 |
|                | CADA Nashik     | 0.11    | 0.11   | 0.11 |
|                | NIC Nanded      | 0.36    | 0.41   | 0.34 |
| Normal         | AIC Akola       | 0.34    | 0.43   | 0.13 |
|                | CADA Jalgaon    | 0.21    | 0.09   | 0.01 |
|                | CADA Nagpur     | 0.32    | 0.21   | 0.15 |
|                | CADA Nashik     | 0.36    | 0.48   | 0.43 |
|                | CADA Pune       | 0.56    | 0.59   | 0.56 |
|                | CIPC Chandrapur | 0.35    | 0.31   | 0.22 |
|                | NIC Nanded      | 0.27    | 0.23   | 0.20 |
|                | PIC Pune        | 1.01    | 1.01   | 0.60 |
|                | UWPC Amravati   | 0.22    | 0.24   | 0.20 |
|                | YIC Yavatmal    | 0.28    | 0.21   | 0.19 |
| Surplus        | CADA Nagpur     | 0.83    | 0.98   | 1.02 |
| Abundant       | CADA Pune       | 0.48    | 0.50   | 0.33 |
|                | CIPC Chandrapur | 0.96    | 0.96   | 0.89 |
|                | SIC Sangli      | 0.19    | 0.29   | 0.48 |
|                | TIC Thane       | 0.41    | 0.29   | 0.49 |

## **Indicator XI: Equity Performance:**

### **Highly Deficit Plan Group:**

**CADA Solapur:** In Bhima project the performance value of 2007-08 are as under; Head reach 0.89, Middle reach 0.5, & Tail reach 0.27. Potential utilization, in head reach is max. & in tail reach is min.

### **Deficit Plan Group:**

**CADA Beed:** In Majalgaon project there is declining trend of equity performance at Head, Middle & Tail reaches with 0.68, 0.50 & 0.43 respectively. In Manjra project potential utilization is concentrated in middle, tail and little in Head reach.

In Lower Terna there is a poor utilization in tail reach and no good performance in Head and Middle reach even though.

**CADA Aurangabad:** In Jayakwadi project (PLBC) the potential utilization is concentrated more in head and tail reaches.

In Jayakwadi (PRBC) under CADA Beed the potential utilization is concentrated in Head & Middle and lesser on Tail reach.

**NIC Nanded:** In Purna & Vishnupuri the potential utilization is equally concentrated on Head, Middle & Tail reaches. In Manar the potential utilization is concentrated more in Middle reach, than the head and tail reaches.

### **Normal Plan Group:**

**CADA Pune:** In Kukdi Project the ratio of potential utilizations is 53% at head middle and tail In Ghod Project 73% & 90%, 80% area has been irrigated at Head and middle reach but at tail the ratio comes to 0.81.

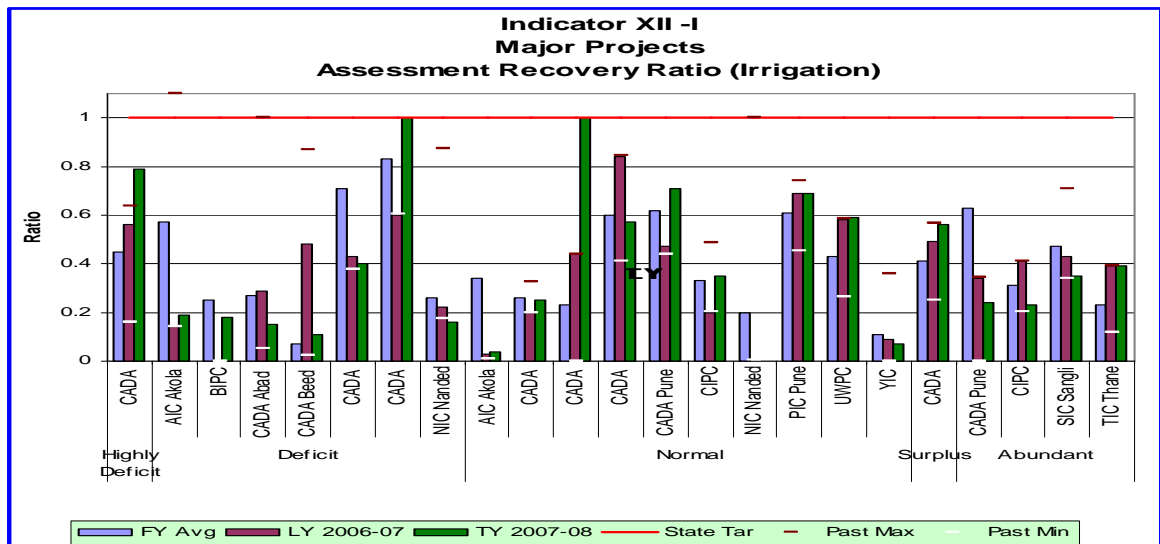
PIC Pune: In Khadakwasla potential Utilization is same (0.35) in three reaches of command area. In NLBC the ratio comes to 0.83 in three reaches of command area. In NRBC Irrigation Potential are 1.73, 1.73 and 0.72 at head, middle and tail reach respectively.

**NIC Nanded:** In UPP project the potential utilization is equally concentrated in Head, Middle & Tail reach.

### **Abundant Plan Group:**

**CADA Pune:** In Krishna Project potential utilization comes to 0.48, 0.50, and 0.33 in head, middle and tail reach of command area.

**SIC Sangli-**No comments, **TIC Thane-**No comments



| Plan group     | Circle          | FY Avg | LY 2006-07 | TY 2007-08 | Past Max | Past Min | Avg Per |
|----------------|-----------------|--------|------------|------------|----------|----------|---------|
| Highly Deficit | CADA Solapur    | 0.45   | 0.56       | 0.79       | 0.64     | 0.16     | 0.79    |
| Deficit        | AIC Akola       | 0.57   | 0.14       | 0.19       | 1.10     | 0.14     | 0.31    |
|                | BIPC Buldhana   | 0.25   | 0.00       | 0.18       | 1.36     | 0.00     |         |
|                | CADA Abad       | 0.27   | 0.29       | 0.15       | 1.00     | 0.05     |         |
|                | CADA Beed       | 0.07   | 0.48       | 0.11       | 0.87     | 0.02     |         |
|                | CADA Jalgaon    | 0.71   | 0.43       | 0.40       | 19.46    | 0.38     |         |
|                | CADA Nashik     | 0.83   | 0.60       | 1.00       | 1.15     | 0.60     |         |
|                | NIC Nanded      | 0.26   | 0.22       | 0.16       | 0.87     | 0.18     |         |
| Normal         | AIC Akola       | 0.34   | 0.03       | 0.04       | 1.17     | 0.01     | 0.43    |
|                | CADA Jalgaon    | 0.26   | 0.20       | 0.25       | 0.32     | 0.20     |         |
|                | CADA Nagpur     | 0.23   | 0.44       | 1.00       | 0.44     | 0.00     |         |
|                | CADA Nashik     | 0.60   | 0.84       | 0.57       | 0.84     | 0.41     |         |
|                | CADA Pune       | 0.62   | 0.47       | 0.71       | 1.22     | 0.44     |         |
|                | CIPC Chandrapur | 0.33   | 0.20       | 0.35       | 0.49     | 0.20     |         |
|                | NIC Nanded      | 0.20   | 0.00       | 0.00       | 1.00     | 0.00     |         |
|                | PIC Pune        | 0.61   | 0.69       | 0.69       | 0.74     | 0.45     |         |
|                | UWPC Amravati   | 0.43   | 0.58       | 0.59       | 0.58     | 0.26     |         |
|                | YIC Yavatmal    | 0.11   | 0.09       | 0.07       | 0.36     | 0.00     |         |
| Surplus        | CADA Nagpur     | 0.41   | 0.49       | 0.56       | 0.57     | 0.25     | 0.56    |
| Abundant       | CADA Pune       | 0.63   | 0.34       | 0.24       | 0.34     | 0.00     | 0.30    |
|                | CIPC Chandrapur | 0.31   | 0.41       | 0.23       | 0.41     | 0.20     |         |
|                | SIC Sangli      | 0.47   | 0.43       | 0.35       | 0.71     | 0.34     |         |
|                | TIC Thane       | 0.23   | 0.39       | 0.39       | 0.39     | 0.12     |         |

Note: 1) Figures in red exceeds range of graph. 2) Figures in blue excluded for Avg Per.

## **Indicator XII\_I: Assessment Recovery Ratio (Irrigation)**

### **Highly Deficit Plan Group:**

**CADA Solapur:** In Bhima (Ujjani) project the ratio is 0.97, it is improved by 3% than the last year & 3% below the state norm.

### **Deficit Plan Group:**

**BIPC Buldhana:** Percentage of irrigation recovery compared to assessment on Wan, Katepurna, and Nalganga under AIC Akola and in BIPC Buldhana, varied from 0 to 9%. Weaker economical condition of farmers may be the prime reason for poor irrigation recovery.

**CADA Jalgaon:** In Girna project, the ratio is lowered from 0.43 (2006-07) to 0.40 (2007-08).

**CADA Nashik:** In Chankapur project, the ratio is improved from 0.60 (2006-07) to 1.00 (2007-08).

**CADA Beed:** In Majalgaon project the ratio has decreased from 0.56 to 0.15 as compared to last year, which is very below the State norms, in Manjra project the ratio has decreased from 0.45 to 0.20 as compared to last year, in Lower Terna the ratio has decreased from 0.38 to 0.05 as compared to last year. The field officers are required to give proper attention to recover the revenue from the farmers & WUA.

**CADA Aurangabad & CADA Beed:** In Jayakwadi project (PLBC) the ratio has decreased from 0.29 to 0.15 as compared to last year. In Jayakwadi project (PRBC) under CADA Beed the ratio has decreased from 0.45 to 0.05 which is very below the state norms. This year the recovery is very less against assessment for both the circles.

**NIC Nanded:** All three projects under this circle viz., Manar, Vishnupuri & Purna the ratio has decreased from 0.64 to 0.21, 0.28 to 0.27 & 0.16 to 0.12 respectively, lesser recovery affected the indicator value, field officers are required to achieve 100% recovery with hard efforts.

### **Normal Plan Group:**

**UWPC Amravati & CADA Nagpur:** On Upper Wardha (UWPC Amravati) & Lower Wunna (CADA Nagpur), the revenue recovery against assessment is improved over its last year performance.

**CADA Jalgaon:** In Hatnur project, though the ratio is improved from 0.20 (2006-07) to 0.25 (2007-08) still it is much below state norm.

**CADA Nashik:** In all the projects except Kadwa about 46 to 98 % water charges has been recovered. Specifically in Ozarkhed project, the state target is achieved.

**CADA Pune:** In Kukdi Project the ratio is same as 1.00 of last year. In Ghod Project ratio has been decreased from 2.05 of last year to 0.44 this year. In Khadakwasla the ratio decreases from 0.87 last year to 0.80 this year. It is due to reduction in recovery of irrigation water charges this year.

**PIC Pune :**In N.L.B.C. Project the ratio increases from 0.46 last year to 0.76 this year because of better recovery of water charges assessment and .

In N.R.B.C. ratio comes to 0.61 this year as compare to 0.72 last year. The decrease in performance is due to less recovery of irrigation water charges. In Purna Project the ratio increases from 1.13 last year to 0.98 this year. The decrease in performance is due to less revenue recovery these years.

**NIC Nanded:** In UPP the recovery is very negligible i.e. 1.28 lakhs against 611.93 lakhs resulting ratio just 0.01.

#### **Surplus Plan Group:**

**CADA Nagpur:** Revenue recovery against assessment on Pench project (85%) is appreciable as compared to the Bagh (8%) and Itiadh project (25%) under CADA Nagpur.

#### **Abundant Plan Group:**

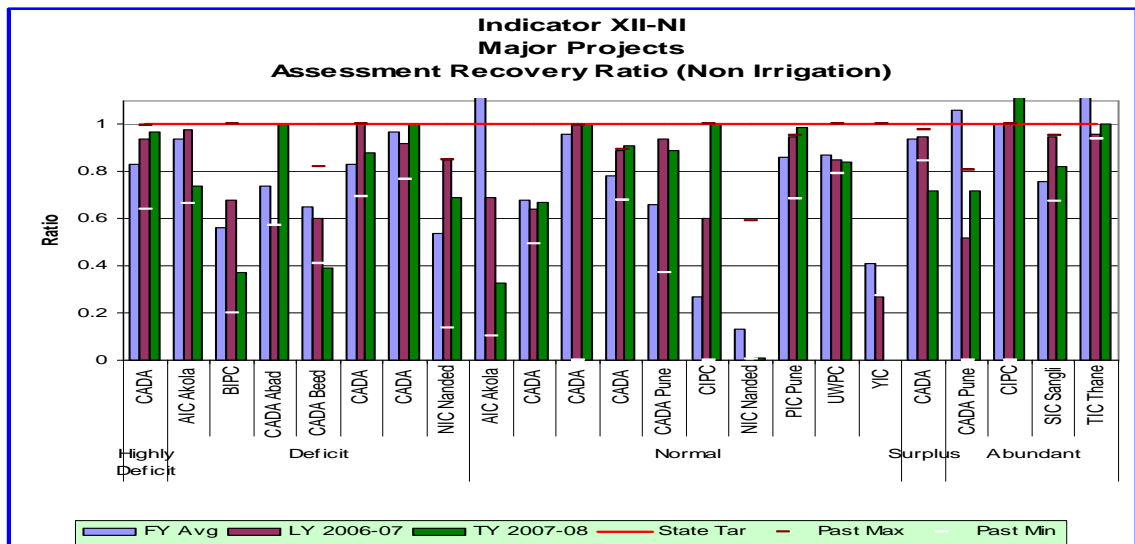
**CIPC Chandrapur:** Ratio in case of Asolamendha (19%) as compared to Dina (26%) project under CIPC Chandrapur has low value. Though recovery percentage against assessment is low on these projects, there is slight improvement in performance compared to last year for Asolamendha.

**CADA Pune:** In Krishna Project the ratio decreases to 0.24 as compare to 0.34 of last year. The decrease is due to less recovery Field Officer is taken more efforts to enhance the performance up to state norms.

**SIC Sangli:** The average Assessment recovery ratio values & remarks there on, in the projects under this circle is (0.82), the project are; Radhanagri, Tulsi, Warna, & Dudhaganga. By increasing recovery efforts has been going on to achieve state target. Overall performance in Tulsi, Warna & Dudhaganga projects is improved.

**TIC Thane:** The average Assessment recovery ratio values & remarks there on, in the projects under this circle is (1.0) the project are Bhatsa, Kal-Amba, & Surya. Efforts are being taken by increasing recovery to achieve the state target-Overall performance is very good.





| Plan group     | Circle          | FY Avg | LY 2006-07 | TY 2007-8 | Past Max | Past Min | Avg Per |
|----------------|-----------------|--------|------------|-----------|----------|----------|---------|
| Highly Deficit | CADA Solapur    | 0.83   | 0.94       | 0.97      | 1.00     | 0.64     | 0.97    |
| Deficit        | AIC Akola       | 0.94   | 0.98       | 0.74      | 1.28     | 0.66     | 0.72    |
|                | BIPC Buldhana   | 0.56   | 0.68       | 0.37      | 1.00     | 0.20     |         |
|                | CADA Abad       | 0.74   | 0.57       | 1.00      | 1.21     | 0.57     |         |
|                | CADA Beed       | 0.65   | 0.60       | 0.39      | 0.82     | 0.41     |         |
|                | CADA Jalgaon    | 0.83   | 1.00       | 0.88      | 1.00     | 0.69     |         |
|                | CADA Nashik     | 0.97   | 0.92       | 1.00      | 1.39     | 0.77     |         |
|                | NIC Nanded      | 0.54   | 0.85       | 0.69      | 0.85     | 0.14     |         |
| Normal         | AIC Akola       | 1.14   | 0.69       | 0.33      | 2.93     | 0.10     | 0.66    |
|                | CADA Jalgaon    | 0.68   | 0.64       | 0.67      | 1.32     | 0.49     |         |
|                | CADA Nagpur     | 0.96   | 1.00       | 1.00      | 1.00     | 0.00     |         |
|                | CADA Nashik     | 0.78   | 0.89       | 0.91      | 0.89     | 0.68     |         |
|                | CADA Pune       | 0.66   | 0.94       | 0.89      | 1.22     | 0.37     |         |
|                | CIPC Chandrapur | 0.27   | 0.60       | 1.00      | 1.00     | 0.00     |         |
|                | NIC Nanded      | 0.13   | 0.00       | 0.01      | 0.59     | 0.00     |         |
|                | PIC Pune        | 0.86   | 0.95       | 0.99      | 0.95     | 0.68     |         |
|                | UWPC Amravati   | 0.87   | 0.85       | 0.84      | 1.00     | 0.79     |         |
|                | YIC Yavatmal    | 0.41   | 0.27       | 0.00      | 1.00     | 0.27     |         |
| Surplus        | CADA Nagpur     | 0.94   | 0.95       | 0.72      | 0.98     | 0.84     | 0.72    |
| Abundant       | CADA Pune       | 1.06   | 0.52       | 0.72      | 0.81     | 0.00     | 1.02    |
|                | CIPC Chandrapur | 1.00   | 1.00       | 1.53      | 1.00     | 0.00     |         |
|                | SIC Sangli      | 0.76   | 0.95       | 0.82      | 0.95     | 0.67     |         |
|                | TIC Thane       | 1.48   | 0.96       | 1.00      | 3.92     | 0.94     |         |

Note: 1) Figures in red exceeds range of graph. 2) Figures in blue excluded for Avg Per.

## **Indicator XII: Assessment Recovery Ratio (Non Irrigation)**

### **Highly Deficit Plan Group:**

**CADA Solapur:** In Bhima (Ujjani) project the ratio is 0.79. it is below the state norm by 21%.

### **Deficit Plan Group:**

**AIC Akola:** Revenue recovery against assessment on Katepurna (75%) was less as compared to state as well as its last year performance (98%). On Nalganga project, performance was low (50%) than state norm.

**BIPC Buldhana:** On Wan project (37%) though there was decrease over its last year performance (68%), recovery was low against assessment compared to state norm.

**CADA Jalgaon:** In Girna project, the ratio is lowered from 1.00 (2006-07) to 0.88 (2007-08).

**CADA Nashik:** In Chankapur project, the ratio is improved from 0.92 (2006-07) to 1.00 (2007-08).

**CADA Beed:** In Majalgaon project the ratio has decreased from 1.0 to 0.71 this year. In Manjra project the ratio has increased from 0.19 to 0.40 as compared to last year. In Lower Terna the ratio has increased from 0.13 to 0.35 as compared to last year. The field officers are required to take more efforts to recover the assessed amount.

**CADA Aurangabad & CADA Beed:** In Jayakwadi Project (PLBC), 100 % recovery against assessed amount Rs. 3483 lakh. Resulted increase in the ratio, from 0.57 to 1.0 as compared to last year. In Jayakwadi Project (PRBC) under CADA Beed the ratio has decreased from 0.61 to 0.17 as compared to last year, due to lesser recovery (32 lakhs) against the assessment (185.46 lakhs) and is far below the State norms.

**NIC Nanded:** In Manar project the ratio has decreased from 1.0 to 0.83 this year. Where as Vishnupuri has retained its last year value (1.0) recovery being 100% against assessed amount.

In Purna project the ratio has decreased from 0.07 to 0.01 the recovery is very poor. Only Rs. 0.97 lakhs are recovered against assessment of Rs. 90 lakhs.

### **Normal Plan Group:**

**CADA Jalgaon:** In Hatnur project, though the ratio is improved from 0.64 (2006-07) to 0.67 (2007-08) still it is below the state norm.

**CADA Nashik:** In Gangapur, Kadwa, Ozarkhed & Darna projects, the field authorities have achieved the state target. However, in Bhandardara,

Palkhed, and Waghad & Mula Projects about 38 to 93% water charges have been recovered.

**UWPC Amrawati:** On Upper Wardha project assessment recovery ratio non irrigation was similar to last year performance

**NIC Nanded:** In UPP the recovery is very poor. Only Rs.2.34 lakh is recovered against assessment of Rs.428.4 lakhs, this shows that the field officers are not paying proper attention to recover the government revenue.

**CADA Pune:** In Kukdi Project the performance is same 1.00 of last year. In Ghod the performance reduces from 0.88 of last year to 0.87 this year due to less recovery of N.I. use.

**PIC Pune:** In Khadakwasla the 100% recovery achieved this year. In N.L.B.C. the 100% recovery achieved this year. In N.R.B.C. the ratio comes down from 1.00 to 0.93 due to less recovery of N.I. use. In Purna Project the ratio increases from 0.97 of last year to 1.00 this year because of better recovery of N.I. Water Charges.

#### **Surplus Plan Group:**

**CADA Nagpur:** Recovery rate against assessment on Itiadh & Bagh project under CADA Nagpur was appreciable. On Pench project NI recovery was 72% of the assessment.

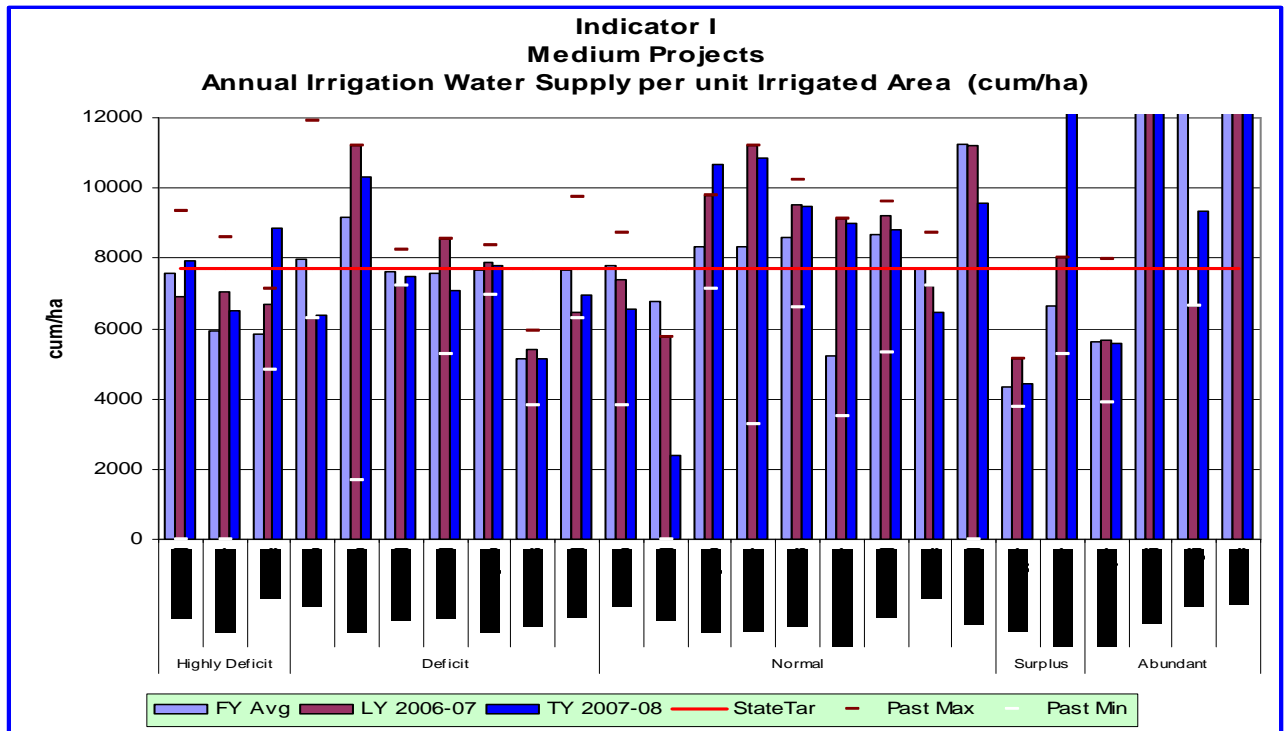
#### **Abundant Plan Group:**

**CADA Pune:** In Krishna Project the ratio increases from 0.52 of last year to 0.72 this year due to increase of Non Irrigation recovery.

**SIC Sangli:** The average Assessment recovery ratio value for non Irrigation in different projects under this circle is (0.35) the projects are Radhanagri, Tulsi, Warna, & Dudhganga. Overall performance is marginally reduced performance is below average.

**TIC Thane:** The average Assessment recovery ratio value for non irrigation in different projects under this circle is (0.39), the project are, Bhatsa, Kal-Amba, & Surya. Overall performance is below average.

# **Indicator of Medium Project**



| Plan group     | Circle          | FY Avg | LY 2006-07 | TY 2007-08 | Past Max | Past Min | Avg Per |
|----------------|-----------------|--------|------------|------------|----------|----------|---------|
| Highly Deficit | CADA Beed       | 7581   | 6915       | 7910       | 9328     | 0        | 7760    |
|                | CADA Solapur    | 5944   | 7035       | 6528       | 8577     | 0        |         |
|                | PIC Pune        | 5850   | 6678       | 8843       | 7119     | 4845     |         |
| Deficit        | AIC Akola       | 7962   | 6267       | 6385       | 11901    | 6267     | 7306    |
|                | BIPC Buldhana   | 9154   | 11181      | 10319      | 11181    | 1667     |         |
|                | CADA Abad       | 7631   | 7199       | 7477       | 8253     | 7199     |         |
|                | CADA Beed       | 7554   | 8533       | 7082       | 8533     | 5257     |         |
|                | CADA Jalgaon    | 7681   | 7887       | 7784       | 8347     | 6935     |         |
|                | CADA Nashik     | 5123   | 5382       | 5137       | 5943     | 3792     |         |
|                | NIC Nanded      | 7648   | 6464       | 6956       | 9730     | 6285     |         |
| Normal         | AIC Akola       | 7783   | 7396       | 6555       | 8740     | 3812     | 8193    |
|                | CADA Abad       | 6786   | 5741       | 2393       | 5741     | 0        |         |
|                | CADA Jalgaon    | 8308   | 9775       | 10651      | 9775     | 7119     |         |
|                | CADA Nagpur     | 8313   | 11185      | 10850      | 11185    | 3265     |         |
|                | CADA Nashik     | 8577   | 9528       | 9465       | 10245    | 6619     |         |
|                | CIPC Chandrapur | 5234   | 9131       | 8997       | 9131     | 3517     |         |
|                | NIC Nanded      | 8667   | 9206       | 8813       | 9625     | 5313     |         |
|                | PIC Pune        | 7696   | 7227       | 6461       | 8707     | 7227     |         |
|                | YIC Yavatmal    | 11252  | 11214      | 9554       | 19042    | 0        |         |
| Surplus        | CADA Nagpur     | 4350   | 5128       | 4421       | 5128     | 3750     | 8480    |
|                | CIPC Chandrapur | 6627   | 8033       | 12538      | 8033     | 5265     |         |
| Abundant       | CIPC Chandrapur | 5626   | 5655       | 5577       | 7960     | 3915     | 57731   |
|                | KIC Ratnagiri   | 89429  | 123332     | 199136     | 129172   | 21429    |         |
|                | SIC Sangli      | 29144  | 6620       | 9341       | 97537    | 6620     |         |
|                | TIC Thane       | 18750  | 17811      | 16871      | 21513    | 14988    |         |

Note: 1) Figures in red indicate values exceeding range of graph.

2) Figures in red & blue excluded for Avg Per

## Observations of Medium projects

### Indicator I: Annual Irrigation Water Supply per Unit Area (cum/ha)

#### Highly Deficit Plan Group:

**CADA Solapur:** Average annual water supplied per unit irrigated area of five Medium Projects in this Circle is 6528 cum/ha. It is reduced 7% than the last year performance.

**CADA Beed:** Average annual water supplied per unit irrigated area of medium project under this circle is 7910 cum/ha. It has decreased by 13% over last year performance. In Rooty medium project the water used is maximum i.e. 20695 cum/ha. This is due to ongoing repair to canal system. In Khandala Medium project the water use is minimum i.e. 4255 cum/ha, this is due to area irrigated is maximum in Rabi season with less rotations.

**PIC Pune :** Average Amount water supplied Per Unit Irrigated Area for Sina, Khairy, Nher, Rannand, Tirangi & Mhaswad projects under this circle is 8843 cum/ha. this year. The performance is below as compared to state target.

#### Deficit Plan Group:

**AIC Akola:** Irrigation water use per unit area irrigated on projects under the circle is low (6267/cum) compared to state target and as well as last years performance) (7931/m<sup>3</sup>). Water use on Mas, Morna & Nirguna is more compared to all other projects under the circle.

**BIPC Buldhana:** On and average water use on projects under this circle was 11181 cum/ha. It was so as irrigation water use on both the projects Mun (10995 cum/ha) and Torna (12232 cum/ha) under this circle was excessively high. Reasons for the same, needs to be sorted out.

**CADA Jalgaon:** Though the water use per ha is just reduced (2%) as compared to last year, the indicator value (7784 cum/ha) has been exceeded the state norm. The field officers are required to improve the performance in case of Bhokarbari (11735 cum/ha) and Kanoli (9348 cum/ha) projects.

**CADA Nashik:** The water use is well within the state norm since last two years.

**CADA Beed:** Average annual water supplied per unit irrigated area of medium project under this circle has decreased in this year from 8533 to 7082 cum/ha. It is decreased by 18% over last years performance, especially in Devarjan, Gharni, Kundalika & Whati projects water supply per unit of irrigated area is reduced compared last year. In Raigavan project the water use is minimum 3509 cum/ha.

**CADA Aurangabad:** Average annual water supplied per unit irrigated area of medium project under this circle has increased from 7199 to 7477 cum/ha.

In Masoli project the water use is maximum i.e. 12885 cum/ha and in Pir Kalyan the water use is minimum i.e. 2237 cum/ha, this is due to area irrigated is maximum in Rabi season with less rotations.

**NIC Nanded:** Average annual water supplied per unit irrigated area of medium project under this circle has increased from 6464 to 6956 cum/ha. Water use increased by 7% as compared to last year.

In Pethwadaj project the water use is maximum i.e. 8934 cum/ha. Where as In Mahalingi project the water use is minimum i.e. 5843 cum/ha. Except Karadkhed, in all other projects water use per unit irrigated area is increased in this year compared to last year.

#### **Normal Plan Group:**

**AIC Akola:** Average rate of water use on group of projects under the circle has value (7396 m<sup>3</sup>/ha) which was very close to state norm. Reasons can be attributed to appreciable economic water use on Ekburji Sonal, Boargaon&

Koradi project. Water use on Saikheda (9358cum/ha) and Lower Pus (11589cum/ha) was excessively high. Field officers are advised to investigate high water use on Saikheda when crops grown on the project were mealy Rabbi seasonal. More water use on Lower Pus is justifiable to some extent as perennial and HW ground nuts were irrigated over more than 25% irrigated area.

**YIC Yeotmal:** Average water use of Adan & Navargaon projects per unit area irrigated was 11214 cum per ha which was low compared to its last years water use of 19042 m<sup>3</sup>. Though there was improvement still current water use is more than the state target. Water use on Navargaon was 7225 cum/ha as against 11572 cum /ha on Adan project.

**CADA Nagpur:** Water use per unit irrigated area on Chandrabhaga & Wunna projects was 10850 and 14708 cum respectively. This is much more comparing to state norm.

**CIPC Chandrapur:** Except Labhansarad and Amalnalla water use on remaining two projects namely Pothara (11840m<sup>3</sup>), Panchadhara (19163 m<sup>3</sup>) was exceptionally high. Water use per unit area on this project has been increased compared to last year use.

**CADA Jalgaon:** The water use per ha of irrigation is increased by 9% as compared to last year and exceeded the state norm. Specifically in Aner & Suki projects, the water use per ha is 1.5 to 4.5 times more than the state norm. Necessary steps should be taken by field officers to improve the performance.

**CADA Nashik:** The water use per ha is on hither side of the state norm since last year. It is very much essential to use the water for irrigation more

precisely specifically in Adhala (9822 cum/ha), Bhojapur (11528 cum/ha) and Mandohol (12813 cum/ha) projects to achieve the state target.

**CADA Aurangabad:** Average annual water supplied per unit irrigated area of medium project under this circle is 2393 cum/ha, which is well below State norms.

**NIC Nanded:** Average annual water supplied per unit irrigated area of medium project under this circle is 8813 cum/ha. Water used has decreased as compared to last year. But it is still more than State norms.

**PIC Pune:** Irrigation potential of Wadiwale Project under this circle is 0.70 of this year. This is below the state target.

#### **Surplus Plan Group:**

**CADA Nagpur:** On and average, water use on projects under this circle was 4361 cum/ha which was low compared to the state norm. It was so as most of the projects under the circle are kharif predominant where water is supplied as a protective irrigation. Though water use on these projects is decrease as compared to (5223 cum/ha) last year, it is low compared to state norm.

**CIPC Chandrapur:** Average water use for unit area in 4 projects under the circle is slightly more (9459 m<sup>3</sup>) than state norm. Water use on Dongargaon project which is under construction has excessive water use to the tune of (13349 m<sup>3</sup>). However there was improvement over its last year water use performance (13641 cum/ha).

#### **Abundant Plan Group:**

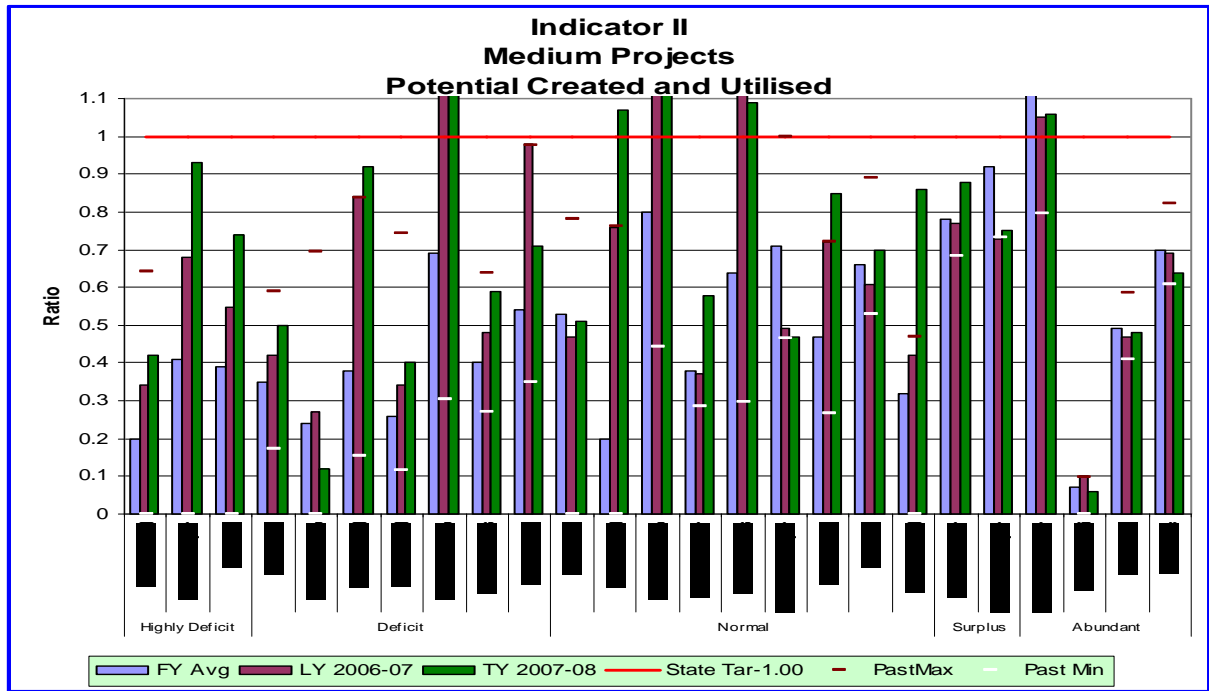
**CIPC Chandrapur:** Water use in Naleshwar (4948 cum/ha) was less as compared to Ghorazari (5876 cum/ha), though average water use of the project taken together (5577 cum/ha) was below the state norm

**K.I.C. Ratnagiri:** Utilisation of potential in Natuwadi project is decreased from 0.10 to 0.06 this year. But it is very low than the state norms, it is due to very less irrigation area and heavy leakages in the canal system.

**SIC Sangli:** - Average annual water supplied per unit irrigated area of 6 Medium Projects in this Circle is 9341 cum/ha. It is increased 30% than the last year value.

**TIC Thane:** The water use in Rajnalla Complex & Wandri in this Circle is 16871 cum/ha. It is less by 10% than last year value. It is lower than the five years average value; Water use is more than the state norm due to paddy crops and hilly region Command Area in Konkan.





| Plan group      | Circle          | FY Avg      | LY 2006-07 | TY 2007-08 | PastMax | Past Min | Avg Per |
|-----------------|-----------------|-------------|------------|------------|---------|----------|---------|
| Highly Deficit  | CADA Beed       | 0.20        | 0.34       | 0.42       | 0.64    | 0.00     | 0.70    |
|                 | CADA Solapur    | 0.41        | 0.68       | 0.93       | 2.13    | 0.00     |         |
|                 | PIC Pune        | 0.39        | 0.55       | 0.74       | 1.17    | 0.00     |         |
| Deficit         | AIC Akola       | 0.35        | 0.42       | 0.50       | 0.59    | 0.17     | 0.66    |
|                 | BIPC Buldhana   | 0.24        | 0.27       | 0.12       | 0.70    | 0.00     |         |
|                 | CADA Abad       | 0.38        | 0.84       | 0.92       | 0.84    | 0.15     |         |
|                 | CADA Beed       | 0.26        | 0.34       | 0.40       | 0.74    | 0.12     |         |
|                 | CADA Jalgaon    | 0.69        | 1.17       | 1.39       | 1.17    | 0.30     |         |
|                 | CADA Nashik     | 0.40        | 0.48       | 0.59       | 0.64    | 0.27     |         |
|                 | NIC Nanded      | 0.54        | 0.98       | 0.71       | 0.98    | 0.35     |         |
| Normal          | AIC Akola       | 0.53        | 0.47       | 0.51       | 0.78    | 0.00     | 0.85    |
|                 | CADA Abad       | 0.20        | 0.76       | 1.07       | 0.76    | 0.00     |         |
|                 | CADA Jalgaon    | 0.80        | 1.23       | 1.55       | 1.31    | 0.44     |         |
|                 | CADA Nagpur     | 0.38        | 0.37       | 0.58       | 1.17    | 0.29     |         |
|                 | CADA Nashik     | 0.64        | 1.13       | 1.09       | 1.14    | 0.30     |         |
|                 | CIPC Chandrapur | 0.71        | 0.49       | 0.47       | 1.00    | 0.46     |         |
|                 | NIC Nanded      | 0.47        | 0.72       | 0.85       | 0.72    | 0.26     |         |
|                 | PIC Pune        | 0.66        | 0.61       | 0.70       | 0.89    | 0.53     |         |
|                 | YIC Yavatmal    | 0.32        | 0.42       | 0.86       | 0.47    | 0.00     |         |
|                 | Surplus         | CADA Nagpur | 0.78       | 0.77       | 0.88    | 1.22     |         |
| CIPC Chandrapur |                 | 0.92        | 0.73       | 0.75       | 1.45    | 0.73     |         |
|                 |                 |             |            |            |         |          |         |
| Abundant        | CIPC Chandrapur | 1.14        | 1.05       | 1.06       | 2.18    | 0.80     | 0.56    |
|                 | KIC Ratnagiri   | 0.07        | 0.10       | 0.06       | 0.10    | 0.00     |         |
|                 | SIC Sangli      | 0.49        | 0.47       | 0.48       | 0.59    | 0.41     |         |
|                 | TIC Thane       | 0.70        | 0.69       | 0.64       | 0.82    | 0.61     |         |
|                 |                 |             |            |            |         |          |         |

Note:1) Figures in red indicate values exceeding range of graph.

2) Figures in blue excluded for Avg Per

3) 'No Water' indicates reservoirs are not filled in that year.

## **Indicator II: Potential Utilized and created**

### **Highly Deficit Plan Group:**

**CADA Solapur:** -The Average value of, Irrigation Potential created & utilised of five Medium Projects in this Circle is 0.93 % compared to last year it is increased to some extend.

**P.I.C. Pune:** Average output per unit irrigated area of six medium Projects is Rs. 20645/ha.this years

**CADA Beed:** Average ratio of medium project under this circle has increased from 0.34 to 0.42 this year. It has overall increase of 8% over last year's ratio and especially drastic increase in Jakapur, Turori & Khandala projects.

### **Deficit Plan Group:**

**AIC Akola:** Potential utilisation on the projects is low (0.50) as compared to created potential. Morna (0.44) Nirguna (0.47), Shahanoor (0.24) & Dnyanganga (0.55) projects have low under -potential utilisation.

**BIPC Buldhana:** Due to less water availability for irrigation, actual potential utilisation on Mun & Torna projects was just 9% of the effective created irrigation potential.

**CADA Jalgaon:** In all the projects except Bhokarbari (90%) and Bori (82%) the potential is fully utilised since last three years.

**CADA Nashik:** Though the ratio is increased from 0.48 (2006-07) to 0.59 (2007-08), the performance is below state target. There is much scope to improve the performance in Haranbari (55%) & Kelzar (49%) Projects.

**CADA Beed:** Average ratio of medium project under this circle has increased from 0.34 to 0.40 this year. The value is increased by 6% as compared to last year and especially drastic increase in Masalga, Raigavan, Sakol, Tiru & Whati projects.

**CADA Aurangabad:** Average ratio of medium project under this circle has increased from 0.84 to 0.92 this year. The ratio is increased by 10%.

In Sukhana project the ratio is 3.27 because of well irrigation on wells in command area is more compared to canal irrigation.

**NIC Nanded:** The average ratio of medium project under this circle is 0.71.

### **Normal Plan Group:**

**AIC Akola:** Storage position of projects under the circle was satisfactory during the irrigation year 2007-08. Still the average utilisation on projects under the circle was 51 % which was more than last year performance of

47%. Saikheda & Lower pus has more under utilisation compared to Sonal, Koradi & Ekburji projects under the circle.

**YIC Yeotmal:** Potential utilisation compared to created potential on both the projects Adan & Navargaon was good. There was improvement over last year performance.

**CADA Nagpur:** Potential utilisation on Chandrabhaga (0.58) & Wunna (0.29) is very low compared to the state norm.

**CIPC Chandrapur:** Under potential utilisation on all 4 projects has resulted 49 % average potential utilisation, which is quite low compared to state norm.

**CADA Jalgaon:** The potential is fully utilised in all the projects except Suki (21%).

**CADA Nashik:** 100% potential is utilised in all the projects except Bhojapur (79%) and Mandohol (43%).

**CADA Aurangabad:** Average ratio of medium project under this circle is 1.07.

**NIC Nanded:** Average ratio of medium project under this circle is 0.85 The ratio is increased by 10%.

**P.I.C. Pune:** Irrigation potential of Wadiwale Project under this circle is 0.70 of this year. This is below the state target.

#### **Surplus Plan Group:**

**CADA Nagpur:** Most of the projects under the circle are kharif predominant projects. There fore, average potential utilisation was 89 % which is quite good compared to state norm. Also it was more comparing to last year performance of 75%. Potential utilisation is low on Mordham (64%), Khekaranala (20%) compared to other projects if considered individually.

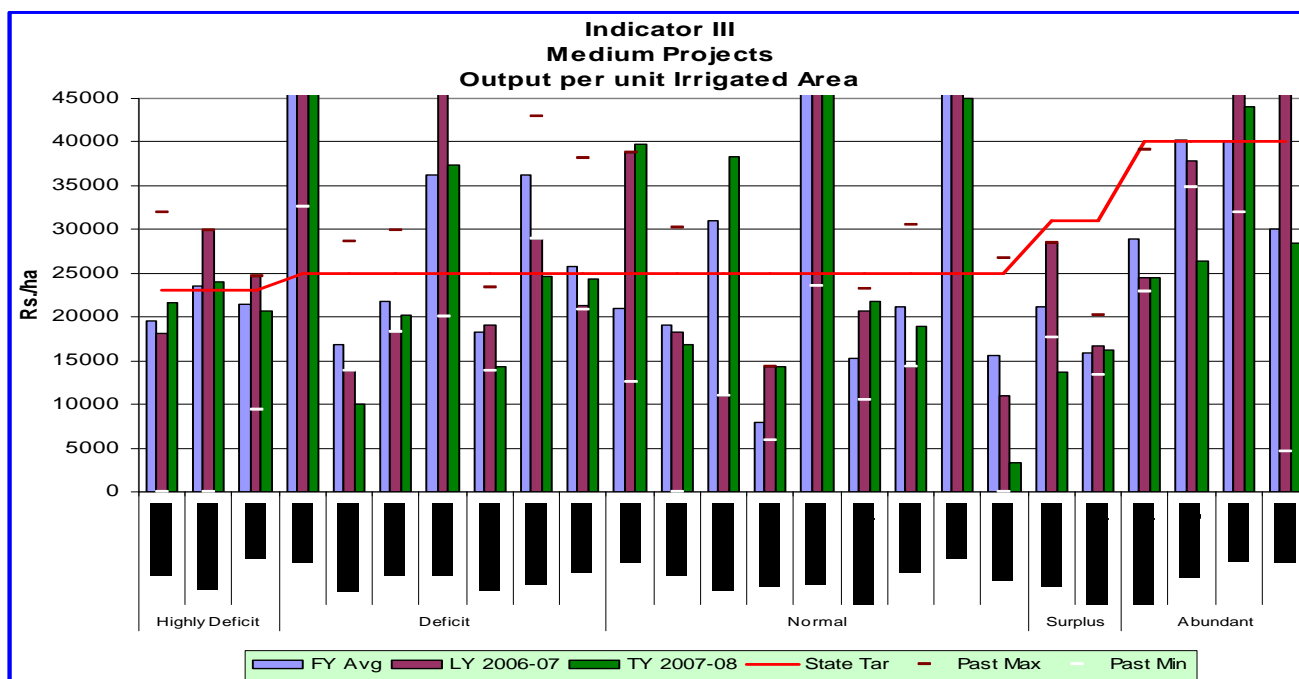
#### **Abundant Plan Group:**

**CIPC Chandrapur:** Potential utilisation on both Ghorazari & Naleshwar was as per state norm & last year performance. Potential utilisation of projects combined together was 106 % of potential created.

**K.I.C. Ratnagiri:** Utilisation of potential in Natuwadi project is decreased from 0.10 to 0.06 this year. But it is very low than the state norms, it is due to very less irrigation area and heavy leakages in the canal system.

**SIC Sangli:** The Average value, of Irrigation Potential created & utilised of six Medium Projects in this Circle is 0.48 % compared to last year it is increased to some extend.

**TIC Thane:** The Average value of Irrigation Potential created & utilized under this circle is 0.64. It is decreased to some extent than the last year.



| Plan group     | Circle          | FY Avg | LY 2006-07 | TY 2007-08 | Past Max | Past Min | Avg Per | St. Tar |
|----------------|-----------------|--------|------------|------------|----------|----------|---------|---------|
| Highly Deficit | CADA Beed       | 19488  | 18155      | 21689      | 32000    | 0        | 22096   | 23000   |
|                | CADA Solapur    | 23500  | 29928      | 23954      | 29928    | 0        |         | 23000   |
|                | PIC Pune        | 21391  | 24667      | 20645      | 24667    | 9396     |         | 23000   |
| Deficit        | AIC Akola       | 49750  | 80568      | 79188      | 80568    | 32588    | 30012   | 25000   |
|                | BIPC Buldhana   | 16783  | 13755      | 10006      | 28611    | 13755    |         | 25000   |
|                | CADA Abad       | 21821  | 18303      | 20247      | 29914    | 18303    |         | 25000   |
|                | CADA Beed       | 36255  | 48491      | 37336      | 48491    | 20093    |         | 25000   |
|                | CADA Jalgaon    | 18228  | 19098      | 14359      | 23452    | 13885    |         | 25000   |
|                | CADA Nashik     | 36178  | 28910      | 24669      | 42867    | 28910    |         | 25000   |
|                | NIC Nanded      | 25683  | 21261      | 24280      | 38203    | 20840    |         | 25000   |
| Normal         | AIC Akola       | 21048  | 38748      | 39806      | 38748    | 12544    | 27625   | 25000   |
|                | CADA Abad       | 19087  | 18304      | 16893      | 30142    | 0        |         | 25000   |
|                | CADA Jalgaon    | 31021  | 10923      | 38285      | 59500    | 10923    |         | 25000   |
|                | CADA Nagpur     | 7984   | 14352      | 14308      | 14352    | 5889     |         | 25000   |
|                | CADA Nashik     | 88798  | 47712      | 50256      | 211074   | 23604    |         | 25000   |
|                | CIPC Chandrapur | 15327  | 20646      | 21831      | 23292    | 10510    |         | 25000   |
|                | NIC Nanded      | 21165  | 14251      | 18922      | 30477    | 14251    |         | 25000   |
|                | PIC Pune        | 59554  | 75847      | 44978      | 75847    | 49382    |         | 25000   |
|                | YIC Yavatmal    | 15521  | 10964      | 3343       | 26784    | 0        |         | 25000   |
| Surplus        | CADA Nagpur     | 21186  | 28478      | 13692      | 28478    | 17724    | 14945   | 31000   |
|                | CIPC Chandrapur | 15862  | 16723      | 16197      | 20221    | 13396    |         | 31000   |
| Abundant       | CIPC Chandrapur | 28971  | 24500      | 24500      | 39158    | 22842    | 30844   | 40000   |
|                | KIC Ratnagiri   | 40269  | 37910      | 26368      | 98571    | 34861    |         | 40000   |
|                | SIC Sangli      | 40076  | 47023      | 44006      | 47023    | 32024    |         | 40000   |
|                | TIC Thane       | 30057  | 54420      | 28500      | 54420    | 4684     |         | 40000   |

Note: 1) Figures in red indicate values exceeding range of graph.

2) Figures in red & blue excluded for Avg Per

3) 'No Water' indicates reservoirs are not filled in that year.

### **Indicator III: Output per Unit Irrigated Area (Rs. /ha)**

#### **Highly Deficit Plan Group:**

**CADA Solapur:** Average output per unit irrigated area of five medium projects in this Circle is Rs. 23954/-. It is decreased than last year value to some extent.

**CADA Beed:** Average output per unit irrigated area of project under this circle has increased from Rs.18155 to 21689/ha. This year which is still below the state norms.

On Turori project the ratio is Rs. 31501/ha. This is because there is 90% irrigation on reservoir lift itself.

**P.I.C. Pune:** Average output per unit irrigated area of six medium Projects is Rs. 20645/ha.this year.

#### **Deficit Plan Group:**

**AIC Akola:** Average output per unit area irrigated on projects under this circle was better (Rs79188) compared to state norm but low than last years performance (Rs.80568). Output on, Nirguna and Shahanoor if considered individually is exorbitant as compared to state norm. Data about yield and market rate for above projects needs to be checked for proper evaluation.

**BIPC Buldana:** Output on Mun and Torna project was less than 50% of the state target as well as last years performance.

**CADA Jalgaon:** The output/ha is reduced from Rs. 19098/ha (2006-07) to Rs. 14359/ha (2007-08) which is below state norm. Field officers are required to improve the performance in case of Bhokarbari, Bori, & Kanoli projects as the performance of these projects is about 50% of the state norm only.

**CADA Nashik:** The output/ha is with the state norm since last two years except Ghatshill pargaon. (Rs. 17275/ha).

**CADA Beed:** Average output per unit irrigated area of project under this circle has decreased from Rs 48491 to 37336/ha. Devarjan project under this plangroup has highest output of Rs.60294/ha, which is due to 59% perennials crops irrigated.

**CADA Aurangabad:** Average ratio of medium project under this circle is has increased from Rs. 18303 to 20247/ha.Masoli project has highest output of Rs. 50341.8/ha, which is due to the perennially irrigated crops is 54%

**NIC Nanded:** Average ratio of medium project under this circle has increased from Rs. 21261 to 24280 /ha

### **Normal Plan Group:**

**AIC Akola:** Output per unit area irrigated (Rs.39806) is good on projects taken together under AIC Akola.

**YIC Yeotmal:** Low output per unit irrigated area is observed on projects under YIC Yeotmal (Rs3343), CIPC Chandrapur (Rs 20060).

**CADA Nagpur:** Average output per unit irrigated area for projects under this circle is 18507.

**CIPC Chandrapur:** Average output per unit irrigated area for projects under this circle is 20060.

**CADA Jalgaon:** The output/ha in Karwand, Malangaon & Panzara projects is below state target. Field officers are required to improve the performance.

**CADA Nashik:** The output/ha has exceeded the state target in all the projects except Adhala (Rs. 17755/ha), Mandohol (Rs. 16817/ha).

**CADA Aurangabad:** Average ratio of medium project under this circle is has decreased from Rs.18304 to 16893 /ha this year.Ambadi project has the maximum output/ha. i.e., Rs.19844/ha.

**NIC Nanded:** Average ratio of medium project under this circle has increased from Rs. 14251 to 18922/ha.this year.

In Nagzari project has the highest output in this plangroup i.e., Rs. 25242/ha which is has crossed the State norms Rabi.

**PIC Pune:** In Wadiwale Project the output is Rs. 44978/ha. It is above the state target. The improvement is due to increase in irrigable area under cash crops.

### **Surplus Plan Group:**

**CADA Nagpur & CIPC Chandrapur:** Output on projects under this circle is Rs. 13555 /ha and Rs.20873 /ha, respectively which is low compared to the state norm (Rs.31000/ha.).

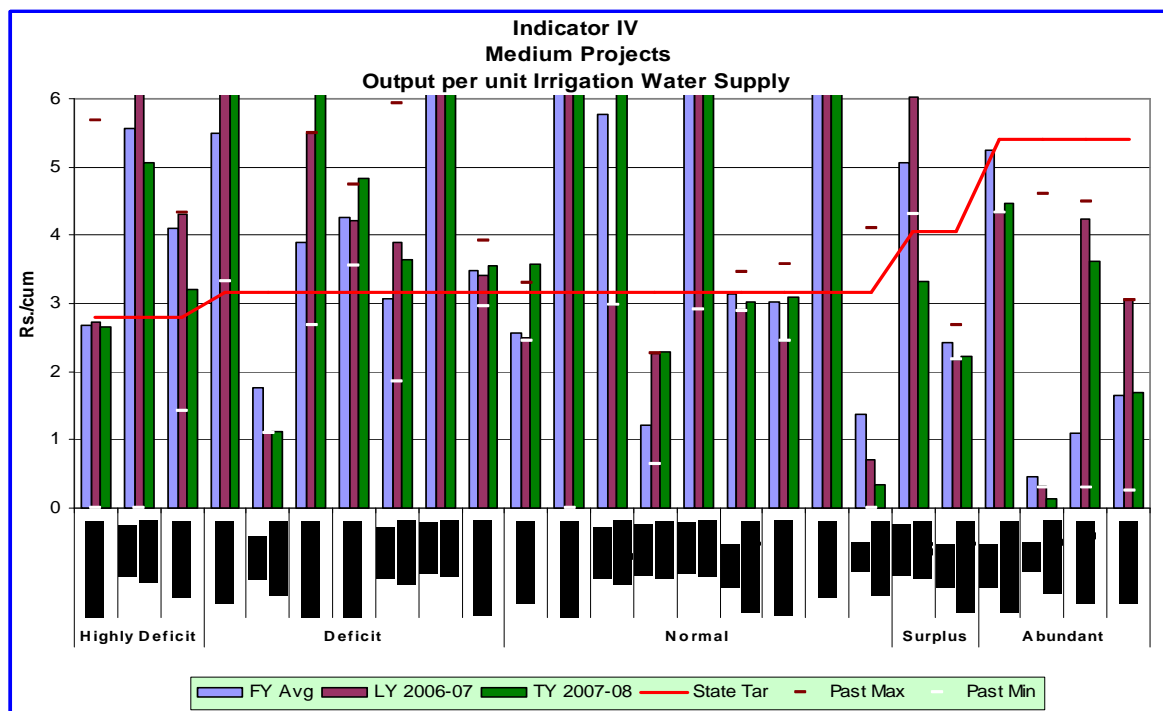
### **Abundant Plan Group:**

**CIPC Chandrapur:** Ghorazari & Naleshwar are the paddy growing projects. Naturally the output is Rs.24500 /ha which is low compared to state norm of Rs.40, 000/ha.

**K.I.C. Ratnagiri:** In Natuwadi Project the annual output is reduced from Rs. 37910/cum to Rs. 26368/ha, this year. The decrease in performance is due to reduction in yield of cash crops.

**SIC Sangli:** - Average output per unit irrigated area of six medium projects in this Circle is Rs.44006/-. It is decreased than last year value to some extent.

**TIC Thane:** - On Rajnalla Complex Project, & Wandri output per unit irrigated area in this Circle is Rs. 28500/- which is less than the last year.



| Plan group     | Circle          | FY Avg | LY 2006-07 | TY 2007-08 | Past Max | Past Min | Avg Per | St. Tar |
|----------------|-----------------|--------|------------|------------|----------|----------|---------|---------|
| Highly Deficit | CADA Beed       | 2.67   | 2.73       | 2.65       | 5.68     | 0.00     | 3.64    | 2.8     |
|                | CADA Solapur    | 5.56   | 6.06       | 5.07       | 9.44     | 0.00     |         | 2.8     |
|                | PIC Pune        | 4.10   | 4.31       | 3.21       | 4.33     | 1.42     |         | 2.8     |
| Deficit        | AIC Akola       | 5.49   | 6.49       | 6.77       | 6.49     | 3.32     | 4.61    | 3.15    |
|                | BIPC Buldhana   | 1.76   | 1.10       | 1.12       | 17.17    | 1.10     |         | 3.15    |
|                | CADA Abad       | 3.90   | 5.50       | 6.22       | 5.50     | 2.69     |         | 3.15    |
|                | CADA Beed       | 4.25   | 4.21       | 4.83       | 4.75     | 3.55     |         | 3.15    |
|                | CADA Jalgaon    | 3.06   | 3.89       | 3.63       | 5.94     | 1.85     |         | 3.15    |
|                | CADA Nashik     | 7.76   | 7.00       | 6.14       | 11.31    | 6.43     |         | 3.15    |
|                | NIC Nanded      | 3.49   | 3.42       | 3.56       | 3.93     | 2.95     |         | 3.15    |
| Normal         | AIC Akola       | 2.57   | 2.49       | 3.57       | 3.29     | 2.44     | 6.76    | 3.15    |
|                | CADA Abad       | 8.08   | 8.56       | 15.52      | 8.56     | 0.00     |         | 3.15    |
|                | CADA Jalgaon    | 5.78   | 2.97       | 11.60      | 15.85    | 2.97     |         | 3.15    |
|                | CADA Nagpur     | 1.21   | 2.26       | 2.30       | 2.26     | 0.65     |         | 3.15    |
|                | CADA Nashik     | 16.37  | 13.15      | 14.42      | 43.53    | 2.91     |         | 3.15    |
|                | CIPC Chandrapur | 3.13   | 2.90       | 3.02       | 3.46     | 2.90     |         | 3.15    |
|                | NIC Nanded      | 3.02   | 2.45       | 3.09       | 3.58     | 2.45     |         | 3.15    |
|                | PIC Pune        | 7.48   | 10.49      | 6.96       | 10.49    | 6.14     |         | 3.15    |
|                | YIC Yavatmal    | 1.37   | 0.70       | 0.35       | 4.10     | 0.00     |         | 3.15    |
| Surplus        | CADA Nagpur     | 5.07   | 6.03       | 3.31       | 6.03     | 4.31     | 2.77    | 4.05    |
|                | CIPC Chandrapur | 2.42   | 2.18       | 2.23       | 2.67     | 2.18     |         | 4.05    |
| Abundant       | CIPC Chandrapur | 5.25   | 4.33       | 4.47       | 6.72     | 4.33     | 2.48    | 5.4     |
|                | KIC Ratnagiri   | 0.45   | 0.31       | 0.13       | 4.60     | 0.31     |         | 5.4     |
|                | SIC Sangli      | 1.11   | 4.23       | 3.62       | 4.49     | 0.29     |         | 5.4     |
|                | TIC Thane       | 1.64   | 3.06       | 1.69       | 3.06     | 0.24     |         | 5.4     |

Note: 1) Figures in red indicate values exceeding range of graph.  
2) Figures in red & blue excluded for Avg Per  
3) 'No Water' indicates reservoirs are not filled in that year.

## **Indicator IV: Output per Unit Irrigation Water Supply Rs. /cum**

### **Highly Deficit Plan Group:**

**CADA Solapur:** The average output per unit of water supplied of five medium projects in this circle is Rs5.07/- it is little less than the last year.

**CADA Beed:** Average output/cum of medium project under this circle has decreased from to Rs. 2.73 to 2.65 /cum which is slightly below the State norms and also last year performance.

**P.I.C. Pune:** Average output per unit irrigation water supply for Six Projects under this circle is Rs. 3.00/cum this year. It is below state norms the reduction in performance is due to more water use.

### **Deficit Plan Group:**

**AIC Akola:** Output (Rs.6.77/m<sup>3</sup>) is quite high compared to the state norm (Rs. 3.15/m<sup>3</sup>) and last year value of Rs 6.49 on project under AIC Akola it is so on account of exorbitantly high out put observed on Shahanoor project than water use on other projects.

**BIPC Buldhana:** Output (Rs.1.12/m<sup>3</sup>) is similar to the previous year and lower to the state norm. (Rs.3.15/m<sup>3</sup>) on project under BIPC Buldhana.

**CADA Jalgaon:** Output per unit irrigation water supply is above state target since last year except Bhokarbari (Rs.2.04/Cum), Bori (Rs.1.78/Cum), Burai (Rs2.95/cum) & Kanoli (Rs.1.86/Cum).

**CADA Nashik:** The performance is above state target since last two years.

**CADA Beed:** Average out put/cum of medium project under this circle has increased from Rs. 4.21 to 4.83/cum which is more than state norms.

**CADA Aurangabad:** Average output/cum of medium project under this circle has increased from Rs. 5.5 to 6.22 /cum which is more than state norms Khelna project has the max output of Rs.43.33/cum.

**NIC Nanded:** Average output/cum of medium project under this circle has increased from Rs. 3.42 to 3.56 /cum which is more than state norms. Karadkhed has highest output under this PG of Rs. 6.58/ha.

### **Normal Plan Group:**

**AIC Akola:** The indicator value is increased from (Rs.2.49 /m<sup>3</sup>) to (Rs.3.57 /m<sup>3</sup>) and exceeds state norm.

**YIC Yeotmal:** Output is reduced from (Rs. 0.7 /m<sup>3</sup>) to Rs. 0.35 /m<sup>3</sup> which are for below the state norm.



**CADA Nagpur:** Average output/cum of medium project under this circle is Rs. 2.59 /cum which is less than state norms.

**CIPC Chandrapur:** Average output/cum of medium project under this circle is Rs. 2.72 /cum which is less than state norms.

**CADA Jalgaon:** Overall performance is improved from 2.97 (2006-07) to 11.60 (2007-08) as compared to last year.

**CADA Nashik:** All the project except Mandohol project (1.98) have achieved the state target. Over all output is Rs. 14.42/cum.

**CADA Aurangabad:** Average output/cum of medium project under this circle has increased from Rs. 8.56 to 15.52/cum which is very well above state norms. Ambadi has highest output of Rs 185.55/cum.

**NIC Nanded:** Average output/cum of medium project under this circle has increased from Rs. 2.45 to 3.09/cum .Loni project has the maximum output of Rs.3.73/cum.

**PIC Pune - :** In Wadiwale Project output is Rs. 7/cum this year and it is above state target. The improvement in performance is due to reduction in water use and increased in yield of cash crops.

#### **Surplus Plan Group:**

**CADA Nagpur:** Due to low water utilisation output per unit irrigation water supply on projects under CADA Nagpur (Rs.3.31 /m<sup>3</sup>) is less than the state norm (Rs.5.4 /m<sup>3</sup>) as well as last year performance. (Rs.5.90 /cum) But in case of project under CIPC (Rs 3.04/cum), it was low compared to state norm.

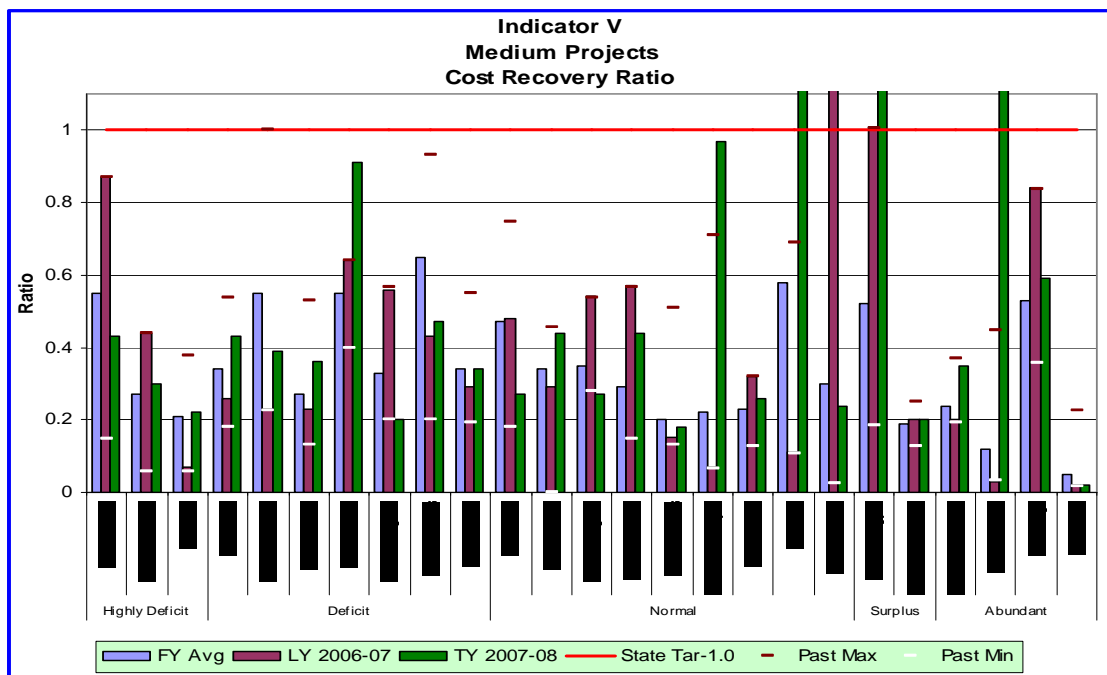
#### **Abundant Plan Group:**

**CIPC Chandrapur :** Output per unit water supply on Ghorazari & Naleshwar project under this circle combined together has low value (Rs4.33/cum) compared to state norm & last year performance.

**K.I.C. Ratnagiri:** In Natuwadi Project this year the output per unit water supply is very low i.e. Rs. 0.13/cum as compare to Rs. 0.30/cum of last year. It is due to excess quantity of water use and leakage through canal system.

**SIC Sangli:** -The average output per unit irrigation water supplied of six medium projects in this Circle is Rs.3.62/Cum. It is more than the last year & more than the state norm.

**TIC Thane:** - Output per unit irrigation water supplied in Rajnalla Complex & Wandri is Rs1.69/cum. It is less than the last year value.



| Plan group     | Circle        | FY Avg | LY 2006-07 | TY 2007-08 | Past Max | Past Min | Avg Per |
|----------------|---------------|--------|------------|------------|----------|----------|---------|
| Highly Deficit | CADA Beed     | 0.55   | 0.87       | 0.43       | 0.87     | 0.15     | 0.32    |
|                | CADA Solapur  | 0.27   | 0.44       | 0.30       | 0.44     | 0.06     |         |
|                | PIC Pune      | 0.21   | 0.07       | 0.22       | 0.38     | 0.06     |         |
| Deficit        | AIC Akola     | 0.34   | 0.26       | 0.43       | 0.54     | 0.18     | 0.44    |
|                | BIPC Buldhana | 0.55   | 0.23       | 0.39       | 1.00     | 0.23     |         |
|                | CADA Abad     | 0.27   | 0.23       | 0.36       | 0.53     | 0.13     |         |
|                | CADA Beed     | 0.55   | 0.64       | 0.91       | 0.64     | 0.40     |         |
|                | CADA Jalgaon  | 0.33   | 0.56       | 0.20       | 0.56     | 0.20     |         |
|                | CADA Nashik   | 0.65   | 0.43       | 0.47       | 0.93     | 0.20     |         |
|                | NIC Nanded    | 0.34   | 0.29       | 0.34       | 0.55     | 0.19     |         |
| Normal         | AIC Akola     | 0.47   | 0.48       | 0.27       | 0.75     | 0.18     | 1.12    |
|                | CADA Abad     | 0.34   | 0.29       | 0.44       | 0.46     | 0.00     |         |
|                | CADA Jalgaon  | 0.35   | 0.54       | 0.27       | 0.54     | 0.28     |         |
|                | CADA Nagpur   | 0.29   | 0.57       | 0.44       | 0.57     | 0.15     |         |
|                | CADA Nashik   | 0.20   | 0.15       | 0.18       | 0.51     | 0.13     |         |
|                | CIPC          | 0.22   | 0.07       | 0.97       | 0.71     | 0.07     |         |
|                | Chandrapur    |        |            |            |          |          |         |
|                | NIC Nanded    | 0.23   | 0.32       | 0.26       | 0.32     | 0.13     |         |
|                | PIC Pune      | 0.58   | 0.11       | 7.01       | 0.69     | 0.11     |         |
|                | YIC Yavatmal  | 0.30   | 1.45       | 0.24       | 1.45     | 0.02     |         |
| Surplus        | CADA Nagpur   | 0.52   | 1.01       | 1.48       | 1.01     | 0.18     | 0.84    |
|                | CIPC          | 0.19   | 0.20       | 0.20       | 0.25     | 0.13     |         |
|                | Chandrapur    |        |            |            |          |          |         |
| Abundant       | CIPC          | 0.24   | 0.20       | 0.35       | 0.37     | 0.19     | 0.62    |
|                | Chandrapur    |        |            |            |          |          |         |
|                | KIC Ratnagiri | 0.12   | 0.03       | 1.51       | 0.45     | 0.03     |         |
|                | SIC Sangli    | 0.53   | 0.84       | 0.59       | 0.84     | 0.36     |         |
|                | TIC Thane     | 0.05   | 0.02       | 0.02       | 0.23     | 0.02     |         |

Note: 1) Figures in red indicate values exceeding range of graph  
2) Figures in red & blue excluded for Avg Per  
3) 'No Water' indicates reservoirs are not filled in that year.

## Indicator V: Cost Recovery Ratio

### Highly Deficit Plan Group:

**CADA Beed:** Average ratio of medium project under this circle has declined from 0.87 to 0.43. The ratio is decreased heavily as compared to last year. The project which has performed well is Khandala & Kurnoor with a ratio of 15.8 & 3.23.

**PIC Pune :** Average cost recovery ratio of Six medium projects under this circle is 0.22 this year and below the state target due to reduction in recovery.

### Deficit Plan Group:

**AIC Akola:** Cost Recovery Ratio has low value in case of projects under AIC Akola (0.43) on account of very low realization of Irrigation recovery on all projects except Shahanoor (0.89) and Dnyanganga (1.80). Weak financial condition of farmers may be the main cause for low realisation of irrigation recovery.

**BIPC Buldana:** On both the projects under the circle ratio has low value suggesting more O&M expenditure than revenue recovery.

**CADA Jalgaon:** The cost recovery ratio is lowered from 0.56 (2006-07) to 0.20 (2007-08) which is much below the state norm. More attention is required to be given by the field officers in case of all the projects to improve the performance.

**CADA Nashik:** The overall cost recovery ratio is improved from 0.43 (2006-07) to 0.47 (2007-08). Specifically in Ghatshilpargaon & Nagyasakya projects, much improvement is required as the ratio is only 0.06 & 0.18 respectively.

**CADA Beed:** Average ratio of medium project under this circle has increased from 0.64 to 0.91; this is due to Rui & Terna projects that have performed well with a ratio of 9.07 & 3.29.

**CADA Aurangabad:** Average ratio of medium project under this circle has increased from 0.23 to 0.36, as compared to last year. Ajantha Andhari has the maximum cost recovery ratio of 3.11.

**NIC Nanded:** Average ratio of medium project under this circle has increased from 0.29 to 0.34 which has very slightly increased over last year. Kundrala project has the maximum recovery ratio of 0.55.

### Normal Plan Group:

**AIC Akola & YIC Yeotmal:** Cost recovery ratio on project under YIC Yeotmal is quite good (1.45). It is comparatively low on projects under AIC Akola (0.48).

**CADA Nagpur & CIPC Chandrapur:** Cost recovery ratio on projects under these circles is quite good i.e. 12.18 & 1.22 respectively.

**CADA Jalgaon:** Overall performance is lowered from 0.54 (2006-07) to 0.27 (2007-08) which is much below the state target. Efforts are required to improve the performance in case of Abhora, Aner, Karwand, Malangaon & Suki projects.

**CADA Nashik:** The ratio is increased from 0.15 (2006-07) to 0.18 (2007-08). There is much scope to improve the performance in all the projects. Field officers are required to take necessary actions in this regard.

**CADA Aurangabad:** The average ratio of medium project under this circle has increased from 0.29 to 0.44. Ambadi project having the maximum ratio of 1.1 in this plan group, it has achieved the state target.

**NIC Nanded:** Average ratio of medium project under this circle has decreased from 0.32 to 0.26 .Nagzari project having the maximum ratio of 0.53 in this plan group.

**PIC Pune:** In Wadiwale Project the cost recovery ratio this year is 7.01. The performance is enhanced due to increase in revenue recovery.

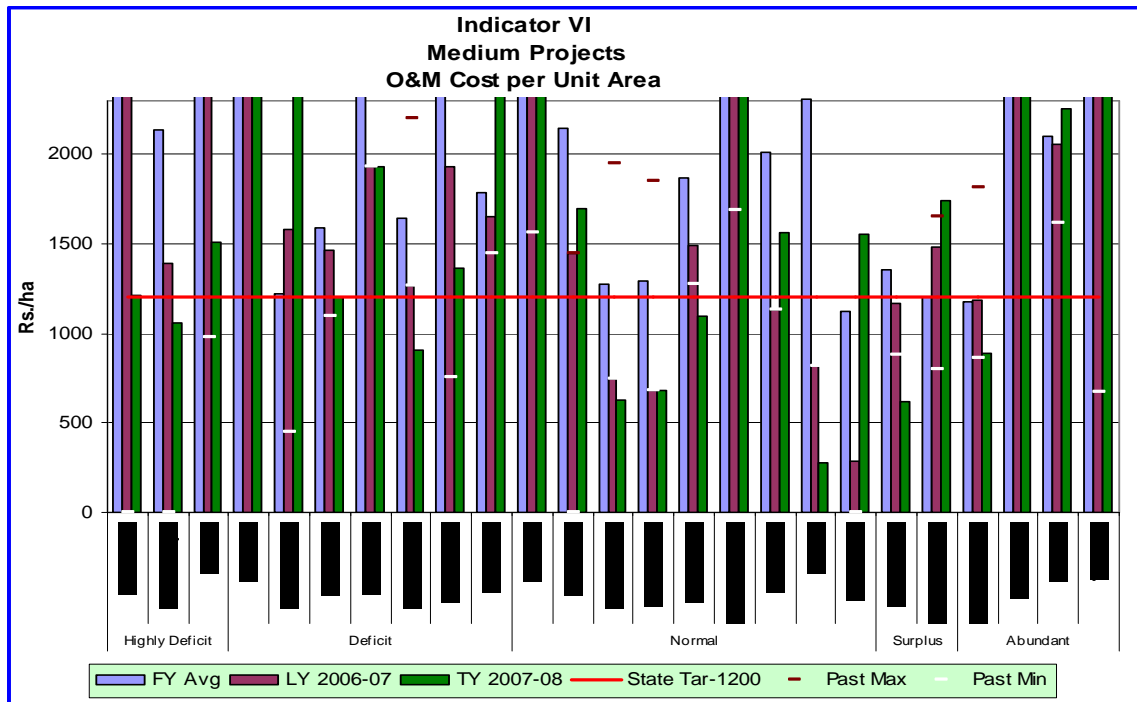
#### **Surplus Plan Group:**

**CADA Nagpur & CIPC Chandrapur:** Cost recovery ratio on CADA Nagpur (.54) was less than state target & as well as its last year performance (1.00). In case of projects under CIPC Chandrapur, there was no change in cost recovery compared to last year performance.

#### **Abundant Plan Group:**

**K.I.C. Ratnagiri:** In Natuwadi Project cost recovery ratio is very low i.e. 0.13. The performance is increased as compared to last year i.e. 0.03 for 2006-07

**CIPC Chandrapur:** Cost recovery on Naleshwar project (0.19) under this circle is improved compared to last year performance (0.12).



| Plan group      | Circle          | FY Avg      | LY 2006-07 | TY 2007-08 | Past Max | Past Min | Avg Per |
|-----------------|-----------------|-------------|------------|------------|----------|----------|---------|
| Highly Deficit  | CADA Beed       | 2505        | 3002       | 1209       | 200667   | 0        | 1261    |
|                 | CADA Solapur    | 2142        | 1391       | 1064       | 2489     | 0        |         |
|                 | PIC Pune        | 3127        | 3107       | 1509       | 44396    | 976      |         |
| Deficit         | AIC Akola       | 4806        | 6077       | 5893       | 77730    | 2626     | 2300    |
|                 | BIPC Buldhana   | 1225        | 1579       | 2440       | 15417    | 448      |         |
|                 | CADA Abad       | 1589        | 1467       | 1207       | 2400     | 1096     |         |
|                 | CADA Beed       | 2984        | 1932       | 1933       | 4808     | 1932     |         |
|                 | CADA Jalgaon    | 1646        | 1264       | 911        | 2199     | 1264     |         |
|                 | CADA Nashik     | 2399        | 1930       | 1363       | 7038     | 758      |         |
|                 | NIC Nanded      | 1786        | 1653       | 2350       | 2573     | 1448     |         |
|                 | AIC Akola       | 2390        | 5628       | 3176       | 17070    | 1566     |         |
| Normal          | CADA Abad       | 2150        | 1450       | 1700       | 1449     | 0        | 1499    |
|                 | CADA Jalgaon    | 1277        | 747        | 632        | 1948     | 747      |         |
|                 | CADA Nagpur     | 1295        | 679        | 683        | 1846     | 679      |         |
|                 | CADA Nashik     | 1866        | 1491       | 1096       | 2655     | 1272     |         |
|                 | CIPC Chandrapur | 8225        | 38310      | 2810       | 38310    | 1687     |         |
|                 | NIC Nanded      | 2017        | 1129       | 1562       | 3970     | 1129     |         |
|                 | PIC Pune        | 2306        | 817        | 281        | 3615     | 817      |         |
|                 | YIC Yavatmal    | 1122        | 292        | 1555       | 3660     | 0        |         |
|                 | Surplus         | CADA Nagpur | 1355       | 1167       | 617      | 2551     |         |
| CIPC Chandrapur |                 | 1203        | 1481       | 1739       | 1655     | 799      |         |
| Abundant        | CIPC Chandrapur | 1178        | 1185       | 888        | 1818     | 866      | 2994    |
|                 | KIC Ratnagiri   | 25352       | 39276      | 3728       | 198071   | 2677     |         |
|                 | SIC Sangli      | 2105        | 2056       | 2259       | 2555     | 1616     |         |
|                 | TIC Thane       | 2935        | 6183       | 5103       | 6183     | 677      |         |

Note: 1) Figures in red indicate values exceeding range of graph.  
2) Figures in red & blue excluded for Avg Per.

## **Indicator VI: O & M Cost per Unit Area (Rs./ha)**

### **Highly Deficit Plan Group:**

**CADA Beed:** The average cost per unit irrigated area of medium projects under this circle has decreased from Rs 3002 to 1209/ha.

**P.I.C. Pune:** Average O & M cost per unit area of Six medium projects of this circle is Rs. 15091/ha. It is above the state target. The improvement in performance is due to increase in irrigated area.

### **Deficit Plan Group:**

**AIC Akola:** O & M cost per unit area irrigated on projects under this circle is quite high (Rs.5893) compared to state norm, as well as last year value (Rs 6077.43) due to low potential utilisation.

**CADA Jalgaon:** The O&M cost per unit irrigated area is Rs 911/ha. In Agnawati, Bhokarbari, Hiwara, Kanoli & Tondapur projects, O & M cost is on higher side which should be minimized in future.

**CADA Nashik:** The O&M cost per unit irrigated area is Rs. 1363/ha, which is 1.14 times more than the state norm. Specifically in Ghatshilpargaon project (Rs. 1794/ha), the O & M cost should be minimized in future.

**CADA Beed:** The average cost per unit irrigated area of medium projects under this circle has increased from Rs. 1932 to 1933ha, which has increased by over the State norms.

**CADA Aurangabad:** The average O & M cost per unit irrigated area of medium projects under this circle has decreased from Rs.1467 to 1207 /ha, which has slightly decreased over last year and achieved the State norms.

Sukhana, Girija & Jui have low ratio of Rs.743, 863, & 858/ha.This must have contributed for the overall reduction of the factor.

**NIC Nanded:** The average O & M cost per unit irrigated area of medium projects under this circle has increased from Rs. 1653 to 2349 /ha, which has increased over last year and over State norms. In Mahalingi project the O & M cost per irrigated area is 3421 which is maximum for this plangroup in the circle.

### **Normal Plan Group:**

**AIC Akola:** Low potential utilisation on Shahnoor, Nirguna & Uma with more O&M expenditure under AIC Akola has resulted more ratio value than state norm.

**YIC Yeotmal:** In case of projects under YIC Yeotmal, the ratio (1554.62) was quite higher the state norm .It may be on account of salary of staff exempted from operation cost at field level.

**CADA Nagpur:** Performance (Rs. 1602) is improved compared to last year performance (Rs. 1144)

**CIPC Chandrapur:** Performance (Rs.2321) is improved compared to last year performance (Rs. 1668)

**CADA Jalgaon:** Overall performance is well within the state norm except Karwand (Rs. 1573/ha) and Suki (Rs. 7628/ha).

**CADA Nashik:** Overall performance is improved as compared to last year as the O & M cost per ha. is reduced from Rs. 1491/ha (2006-07) to Rs. 1095/ha (2007-08).

**NIC Nanded:** The average O & M cost per unit irrigated area of medium projects under this circle has increased from Rs.1129 to 1562 /ha, which is above State norms as well as last year value. It is mainly due to increase in O & M cost in Nagzari project. The O & M cost has increased from 673 to 1935 Rs/ha, which is almost double the last year's ratio.

**CADA Aurangabad:** The average O & M cost per unit irrigated area of medium projects under this circle has increased from Rs.1449 to 1670/ha, which is above State norms.

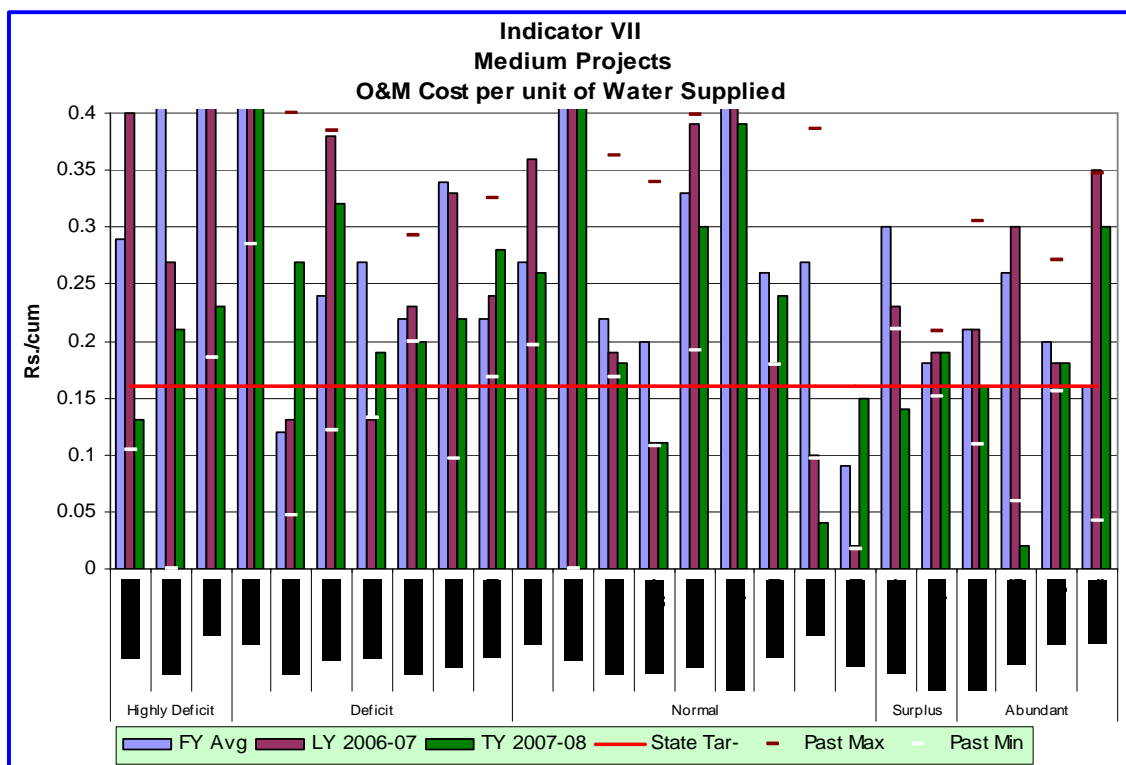
#### **Surplus Plan Group:**

**CADA Nagpur:** O & M cost per unit area irrigated on projects under CADA Nagpur was less than (Rs. 588 /ha) the state norm & for projects under CIPC it works out to Rs.2980 /ha

#### **Abundant Plan Group:**

**K.I.C. Ratnagiri:** In Natuwadi Project the O & M Cost per unit area decreases to Rs. 3728/ha. But the value is more than state norms. The Field Officers are to take efforts for improvement in performance.

**CIPC Chandrapur :** O & M cost works out to Rs. 888 /ha which is less than state norm and also less as compared to last years performance Rs.1185 /ha



| Plan group      | Circle          | FY Avg      | LY 2006-07 | TY 2007-08 | Past Max | Past Min | Avg Per |
|-----------------|-----------------|-------------|------------|------------|----------|----------|---------|
| Highly Deficit  | CADA Beed       | 0.29        | 0.40       | 0.13       | 1.69     | 0.11     | 0.19    |
|                 | CADA Solapur    | 0.47        | 0.27       | 0.21       | 0.65     | 0.00     |         |
|                 | PIC Pune        | 0.55        | 0.54       | 0.23       | 6.71     | 0.19     |         |
| Deficit         | AIC Akola       | 0.45        | 0.44       | 0.44       | 1.71     | 0.28     | 0.27    |
|                 | BIPC Buldhana   | 0.12        | 0.13       | 0.27       | 0.40     | 0.05     |         |
|                 | CADA Abad       | 0.24        | 0.38       | 0.32       | 0.38     | 0.12     |         |
|                 | CADA Beed       | 0.27        | 0.13       | 0.19       | 0.44     | 0.13     |         |
|                 | CADA Jalgaon    | 0.22        | 0.23       | 0.20       | 0.29     | 0.20     |         |
|                 | CADA Nashik     | 0.34        | 0.33       | 0.22       | 0.85     | 0.10     |         |
|                 | NIC Nanded      | 0.22        | 0.24       | 0.28       | 0.33     | 0.17     |         |
|                 | AIC Akola       | 0.27        | 0.36       | 0.26       | 0.71     | 0.20     |         |
| Normal          | CADA Abad       | 0.56        | 0.57       | 0.83       | 1.79     | 0.00     | 0.28    |
|                 | CADA Jalgaon    | 0.22        | 0.19       | 0.18       | 0.36     | 0.17     |         |
|                 | CADA Nagpur     | 0.20        | 0.11       | 0.11       | 0.34     | 0.11     |         |
|                 | CADA Nashik     | 0.33        | 0.39       | 0.30       | 0.40     | 0.19     |         |
|                 | CIPC Chandrapur | 1.58        | 5.16       | 0.39       | 5.16     | 0.45     |         |
|                 | NIC Nanded      | 0.26        | 0.18       | 0.24       | 0.60     | 0.18     |         |
|                 | PIC Pune        | 0.27        | 0.10       | 0.04       | 0.39     | 0.10     |         |
|                 | YIC Yavatmal    | 0.09        | 0.02       | 0.15       | 0.56     | 0.02     |         |
|                 | Surplus         | CADA Nagpur | 0.30       | 0.23       | 0.14     | 0.53     |         |
| CIPC Chandrapur |                 | 0.18        | 0.19       | 0.19       | 0.21     | 0.15     |         |
| Abundant        | CIPC Chandrapur | 0.21        | 0.21       | 0.16       | 0.31     | 0.11     | 0.17    |
|                 | KIC Ratnagiri   | 0.26        | 0.30       | 0.02       | 1.02     | 0.06     |         |
|                 | SIC Sangli      | 0.20        | 0.18       | 0.18       | 0.27     | 0.16     |         |
|                 | TIC Thane       | 0.16        | 0.35       | 0.30       | 0.35     | 0.04     |         |

Note:1) Figures in red indicate values exceeding range of graph.

2) Figures in red & blue excluded for Avg.Per.



## **Indicator VII: O & M Cost Per Unit of Water Supply (Rs./cum)**

### **Highly Deficit Plan Group:**

**CADA Beed:** The average value of this indicator for medium project under this circle has increased from Rs 0.40 to 0.13 /cum, which increased over last year & above the State norms.

**P.I.C. Pune:** Average O & M Cost per unit of water supply in six medium projects comes to Rs. 0.23/cum this year. But it is more than the state target. The Field Officers are advised to take efforts to improve the performance.

### **Deficit Plan Group:**

**AIC Akola:** O & M cost per unit water supply on projects under AIC Akola was more as water was economically used on projects under this circle. It suggests more expenditure on O&M than standards specified.

**CADA Jalgaon:** O & M cost per unit water supplied is on higher side of the state norm since last two years. More attention is required in case of Bhokarbari, Hiwara, Kanoli & Tondapur projects to improve the performance.

**CADA Nashik:** O & M cost per unit water supplied is on higher side of the state norm since last two years except Haranbari project. Field authorities are required to take necessary steps to improve the performance.

**CADA Beed:** The average value of this indicator for medium projects under this circle has increased over last year's value from Rs 0.13 to 5.66/ha, which is above the state norms.

**NIC Nanded:** The average value of this indicator for medium projects under this circle is Rs 0.24 to 0.28 /cum, which increased over last year and State norms.

**CADA Aurangabad:** The average value of this indicator for medium projects under this circle has decreased from Rs.0.38 to 0.32/cum, which is decreased by 13% over last years and also which is over the State norms.

### **Normal Plan Group:**

**CADA Nagpur:** This year O & M cost /unit water supplied is increased from Rs. 0.08 (Last year) to Rs. 0.12 /cum

**CIPC Chandrapur:** O & M cost /unit water supplied is increased from Rs. 0.21 to Rs. 0.29 /cum

**CADA Jalgaon:** O & M cost per unit water supplied is reduced from 0.19/cum (2006-07) to Rs. 0.18/cum (2007-08) which is close to state norms. The performance in Aner & Panzara projects is better as the indicator value in

these projects is close to state norm. However, improvement is required in case of Abhora, Malangaon & Karwand projects.

**CADA Nashik:** In all the projects except Adhala, the O&M cost per unit water supplied is on higher side. Remedial measures should be taken to improve the performance in Alandi, Bhojapur, & Mandohol projects.

**NIC Nanded:** The average value of this indicator for medium projects under this circle has increased from Rs.0.18 to 0.24/hawhich has increased by 12% over last years. The indicator is above the State norms.

**CADA Aurangabad:** The average value of this indicator for medium projects under this circle has increased from Rs. 0.57 to 0.83 /cum, which has increased by over last year and 5 times more than State norms.

In Dheku project O & M cost per unit water supply is 1.22. Which is the reason O & M cost of the circle has increased 7.5 times over state norms.

**P.I.C. Pune:** In Wadiwale Project O & M Cost per unit of water supply is lower down this year to Rs. 0.04/cum.

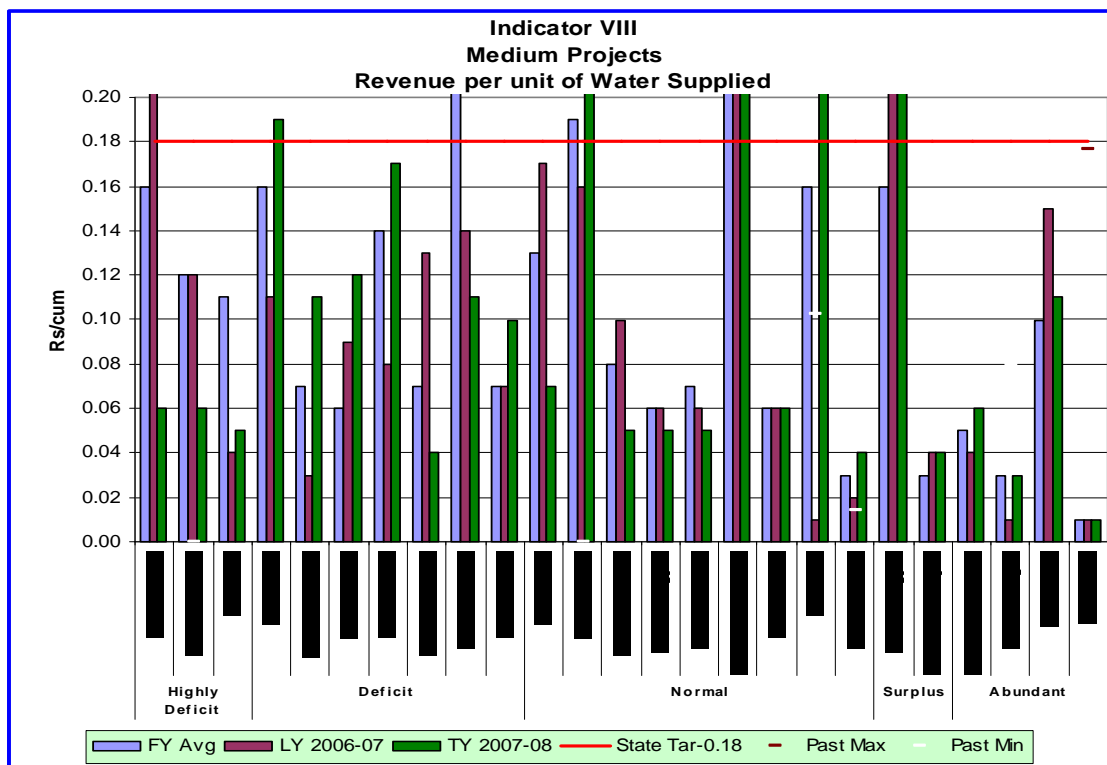
#### **Surplus Plan Group:**

**CADA Nagpur & CIPC Chandrapur:** O & M cost per unit water supplied observed on projects under CADA Nagpur(0.14) & CIPC Chandrapur (0.41) was slightly more than state norm as well as last years performance..

#### **Abundant Plan Group:**

**K.I.C. Ratnagiri:** In Natuwadi Project O & M Cost per unit of water supply is reduced from Rs. 0.03/cum of last year to Rs. 0.02/cum this year.

**CIPC Chandrapur:** O & M Cost per unit of water supply is reduced from Rs. 0.21/cum of last year to Rs. 0.16/cum this year.



| Plan group     | Circle          | FY Avg | LY 2006-07 | TY 2007-08 | Past Max | Past Min | Avg Per |
|----------------|-----------------|--------|------------|------------|----------|----------|---------|
| Highly Deficit | CADA Beed       | 0.16   | 0.35       | 0.06       | 3.55     | 0.29     | 0.06    |
|                | CADA Solapur    | 0.12   | 0.12       | 0.06       | 1.98     | 0.00     |         |
|                | PIC Pune        | 0.11   | 0.04       | 0.05       | 3.82     | 0.24     |         |
| Deficit        | AIC Akola       | 0.16   | 0.11       | 0.19       | 7.69     | 0.80     | 0.12    |
|                | BIPC Buldhana   | 0.07   | 0.03       | 0.11       | 3.99     | 0.29     |         |
|                | CADA Abad       | 0.06   | 0.09       | 0.12       | 1.22     | 0.27     |         |
|                | CADA Beed       | 0.14   | 0.08       | 0.17       | 1.77     | 0.85     |         |
|                | CADA Jalgaon    | 0.07   | 0.13       | 0.04       | 1.28     | 0.40     |         |
|                | CADA Nashik     | 0.22   | 0.14       | 0.11       | 7.93     | 0.22     |         |
|                | NIC Nanded      | 0.07   | 0.07       | 0.10       | 1.79     | 0.37     |         |
| Normal         | AIC Akola       | 0.13   | 0.17       | 0.07       | 1.94     | 0.35     | 0.15    |
|                | CADA Abad       | 0.19   | 0.16       | 0.37       | 8.19     | 0.00     |         |
|                | CADA Jalgaon    | 0.08   | 0.10       | 0.05       | 1.20     | 0.47     |         |
|                | CADA Nagpur     | 0.06   | 0.06       | 0.05       | 0.90     | 0.46     |         |
|                | CADA Nashik     | 0.07   | 0.06       | 0.05       | 0.98     | 0.51     |         |
|                | CIPC Chandrapur | 0.36   | 0.34       | 0.38       | 7.22     | 2.90     |         |
|                | NIC Nanded      | 0.06   | 0.06       | 0.06       | 1.50     | 0.41     |         |
|                | PIC Pune        | 0.16   | 0.01       | 0.30       | 2.67     | 0.10     |         |
|                | YIC Yavatmal    | 0.03   | 0.02       | 0.04       | 3.47     | 0.01     |         |
| Surplus        | CADA Nagpur     | 0.16   | 0.23       | 0.21       | 3.20     | 0.39     | 0.13    |
|                | CIPC Chandrapur | 0.03   | 0.04       | 0.04       | 0.45     | 0.26     |         |
| Abundant       | CIPC Chandrapur | 0.05   | 0.04       | 0.06       | 0.72     | 0.40     | 0.05    |
|                | KIC Ratnagiri   | 0.03   | 0.01       | 0.03       | 4.60     | 0.08     |         |
|                | SIC Sangli      | 0.10   | 0.15       | 0.11       | 1.51     | 0.57     |         |
|                | TIC Thane       | 0.01   | 0.01       | 0.01       | 0.18     | 0.03     |         |

Note: 1) Figures in red indicate values exceeding range of graph.

2) Figures in red & blue excluded for Avg Per.

## **Indicator VIII: Revenue Per Unit of Water Supplied Rs./cum**

### **Highly Deficit Plan Group:**

**CADA Beed:** The average value of this indicator for the medium projects of this circle has drastically decreased from Rs. 0.35 to 0.06/cum, It has reduced heavily as over last years performance by 1.35 times. The value of indicators has gone 18% below the State norms. The highest revenue gainer in this PG is Khandala which has a ratio of Rs. 2.35 /cum.

**P.I.C. Pune:** Average revenue per unit of water supplied in Six medium projects under this circle comes to Rs. 0.05/cum this year. The reason for poor performance is due to reduction in revenue recovery.

### **Deficit Plan Group:**

**AIC Akola:** Revenue recovery per unit water supplied on projects under AIC Akola (0.19), BIPC Buldana was quite low mainly due to low revenue realization.

**BIPC Buldana** Revenue recovery per unit water supplied on projects under (0.19), BIPC Buldana was quite low mainly due to low revenue realization.

**CADA Jalgaon:** Revenue per unit water supplied is reduced from Rs. 0.13/cum (2006-07) to 0.04/cum (2007-08) which is below state norm. In case of Bhokarabari, Bori, Burai, Kanoli & Rangwali projects, performance is very low (ratio is 0.04, 0.07, 0.01, 0.02 & 0.03 respectively). Improvement in these projects is necessary.

**CADA Nashik:** Revenue per unit water supplied is lowered from 0.14 (2006-07) to 0.11 (2007-08) . Efforts are required to improve the performance in all the projects concerned.

**CADA Beed:** The average value of this indicator for the medium project under this circle has increased from Rs.0.08 to 0.17/cum It has increased nearingly twice over last years performance and still is below the State norms. The field officers are required to take some more efforts in recovering the revenue.

**CADA Aurangabad:** The average value of this indicator for medium project under this circle had increased from Rs. 0.09 to 0.12 /cum. It has increased by 25%over last year.

But it is still below state norms; improvement in revenue collection is still needed. Ajantha Andhari has the annual ratio of 0.8 which is the maximum revenue per unit water gained under this PG for the circle. There are many projects under this plan group which have zero revenue.

**NIC Nanded:** The average value of this indicator for medium project under this circle had increased from Rs 0.07 to 0.1/cum. It has increased over last year's performance but still it is below State norms. The field officers are

required to take still more efforts in recovering the revenue Kundrala and Karadkhed are the only projects which have gained the state norms for revenue per unit water irrigated.

#### **Normal Plan Group:**

**AIC Akola:** The indicator value is reduced from (Rs.0.17 /m<sup>3</sup> to Rs.0.07 /m<sup>3</sup>) than last year, which is quite below than state norm.

**YIC Yeotmal:** Though the revenue is increased from (Rs.0.02 /m<sup>3</sup> to Rs 0.04 /m<sup>3</sup> as compared to last year, still it is far below the state norm.

**CADA Nagpur:** There is slight decrease in revenue per unit water supplied (1.58 to 1.48) as compared to last year.

**CIPC Chandrapur:** There is slight increase in revenue per unit water supplied (0.33 to 0.35) as compared to last year.

**CADA Jalgaon:** The indicator value is lowered from 0.10 (2006-07) to 0.05 (2007-08). The improvement in the performance is required in all the projects concerned.

**CADA Nashik:** The performance is lowered from 0.06 to 0.05 as compared to last year and which is below the state norm.

**P.I.C. Pune:** In Wadiwale Project the ratio is (0.30) shows good performance than state target due to increase in revenue recovery.

**CADA Aurangabad:** The average value of this indicator for medium project under this circle has increased from Rs 0.16 to 0.37 /cum. It has increased by two times over last year's performance as well as the State norms. In Dheku project the revenue collection has the ratio of 0.8 which is 4.5 times the state norms.

**NIC Nanded:** The average value of this indicator for projects under this circle is has retained its last year's value of Rs.0.06/cum. It is very much below state norms. The collection of revenue has to be strictly taken up by the field officers.

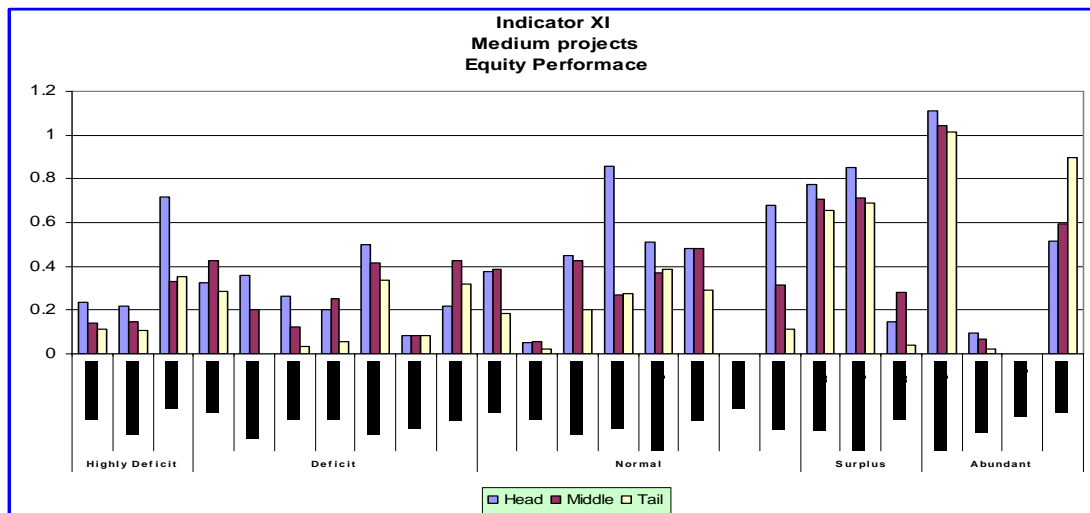
#### **Surplus Plan Group:**

**CADA Nagpur:** Revenue recovery per unit water supplied on projects under this circle (0.08) was less than the state norm as water was used for protective irrigation in Kharif only.

**CIPC Chandrapur:** Revenue recovery per unit water supplied on projects under this circle (0.05) was less than the state norm as water was used for protective irrigation in Kharif only.

#### **Abundant Plan Group:**

**K.I.C., Ratnagiri:** In Natuwadi Project the ratio comes to (0.03) due to less amount of revenue recovery and excess water use.



| Plan group     | Circle          | 2007-08 |        |      |
|----------------|-----------------|---------|--------|------|
|                |                 | Head    | Middle | Tail |
| Highly Deficit | CADA Beed       | 0.24    | 0.14   | 0.11 |
|                | CADA Solapur    | 0.22    | 0.14   | 0.11 |
|                | PIC Pune        | 0.72    | 0.33   | 0.35 |
| Deficit        | AIC Akola       | 0.33    | 0.43   | 0.29 |
|                | BIPC Buldhana   | 0.36    | 0.20   | 0.00 |
|                | CADA Abad       | 0.26    | 0.12   | 0.04 |
|                | CADA Beed       | 0.20    | 0.25   | 0.06 |
|                | CADA Jalgaon    | 0.50    | 0.42   | 0.33 |
|                | CADA Nashik     | 0.09    | 0.09   | 0.09 |
|                | NIC Nanded      | 0.22    | 0.43   | 0.32 |
| Normal         | AIC Akola       | 0.38    | 0.39   | 0.19 |
|                | CADA Abad       | 0.05    | 0.05   | 0.02 |
|                | CADA Jalgaon    | 0.45    | 0.43   | 0.20 |
|                | CADA Nashik     | 0.86    | 0.27   | 0.28 |
|                | CIPC Chandrapur | 0.51    | 0.37   | 0.39 |
|                | NIC Nanded      | 0.48    | 0.48   | 0.29 |
|                | PIC Pune        | 0.00    | 0.00   | 0.00 |
|                | YIC Yavatmal    | 0.68    | 0.31   | 0.11 |
| Surplus        | CADA Nagpur     | 0.78    | 0.71   | 0.66 |
|                | CIPC Chandrapur | 0.85    | 0.71   | 0.69 |
|                | NIC Nagpur      | 0.15    | 0.28   | 0.04 |
| Abundant       | CIPC Chandrapur | 1.11    | 1.05   | 1.01 |
|                | KIC Ratnagiri   | 0.10    | 0.06   | 0.02 |
|                | SIC Sangli      | 0.00    | 0.00   | 0.00 |
|                | TIC Thane       | 0.52    | 0.60   | 0.90 |

## **Indicator XI: Equity Performance**

### **Highly Deficit Plan Group:**

**PIC Pune:** - Average potential utilisation in six medium projects is higher in Head reach and low in tail reach.

### **Deficit Plan Group:**

**AIC Akola:** Potential utilisation is more or less equal in all the reaches in projects under AIC Akola.

**BIPC Buldana:** Potential utilisation is more or less equal in head and tail reaches of projects under the circle.

### **Surplus Plan Group:**

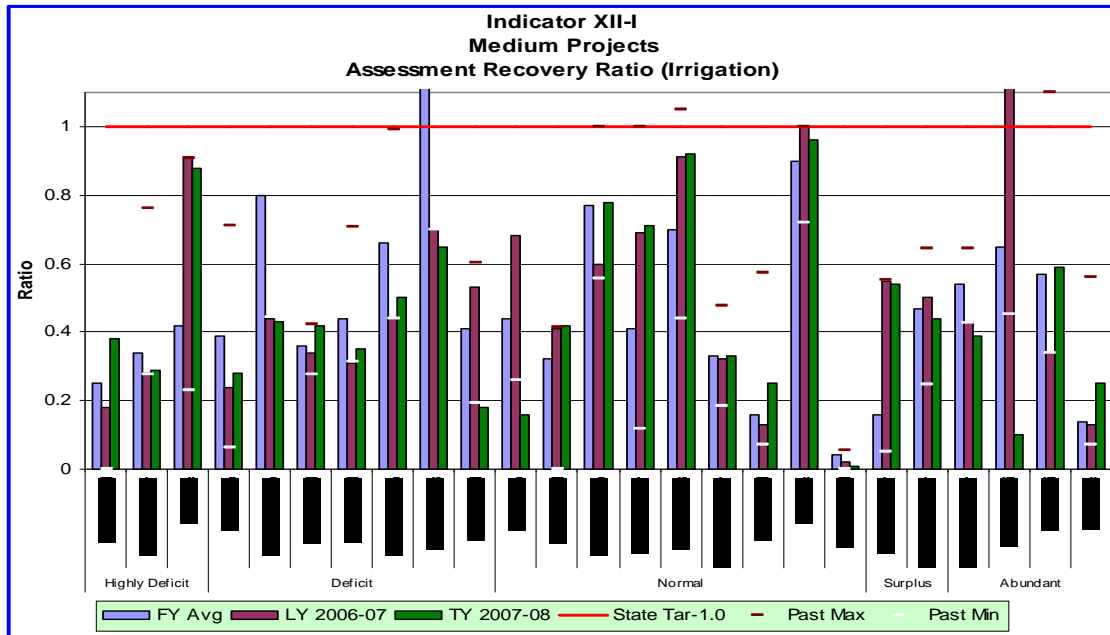
Potential utilisation was more or less equal in all the reaches in projects under CADA Nagpur and CIPC Chandrapur.

**Normal Plan Group:** Potential utilisation was more concentrated in head and middle reaches of projects under AIC Akola, CIPC Chandrapur and YIC Yeotmal.

### **Abundant Plan Group:**

Potential utilisation was more or less equal in all the reaches in projects under CIPC Chandrapur.

**KIC Ratnagiri:** - In Natuwadi project irrigation potential utilization ratio is 0.10, 0.06, and 0.02 at head; middle and tail reach of command area



| Plan group     | Circle          | FY Avg | LY 2006-07 | TY 2007-08 | Past Max | Past Min | Avg Per |
|----------------|-----------------|--------|------------|------------|----------|----------|---------|
| Highly Deficit | CADA Beed       | 0.25   | 0.18       | 0.38       | 33.60    | 0.00     | 0.52    |
|                | CADA Solapur    | 0.34   | 0.28       | 0.29       | 0.76     | 0.28     |         |
|                | PIC Pune        | 0.42   | 0.91       | 0.88       | 0.91     | 0.23     |         |
| Deficit        | AIC Akola       | 0.39   | 0.24       | 0.28       | 0.71     | 0.06     | 0.40    |
|                | BIPC Buldhana   | 0.80   | 0.44       | 0.43       | 6.25     | 0.44     |         |
|                | CADA Abad       | 0.36   | 0.34       | 0.42       | 0.42     | 0.27     |         |
|                | CADA Beed       | 0.44   | 0.31       | 0.35       | 0.71     | 0.31     |         |
|                | CADA Jalgaon    | 0.66   | 0.44       | 0.50       | 0.99     | 0.44     |         |
|                | CADA Nashik     | 1.14   | 0.70       | 0.65       | 1.51     | 0.70     |         |
|                | NIC Nanded      | 0.41   | 0.53       | 0.18       | 0.60     | 0.19     |         |
| Normal         | AIC Akola       | 0.44   | 0.68       | 0.16       | 12.73    | 0.26     | 0.50    |
|                | CADA Abad       | 0.32   | 0.41       | 0.42       | 0.41     | 0.00     |         |
|                | CADA Jalgaon    | 0.77   | 0.60       | 0.78       | 1.00     | 0.56     |         |
|                | CADA Nagpur     | 0.41   | 0.69       | 0.71       | 1.00     | 0.12     |         |
|                | CADA Nashik     | 0.70   | 0.91       | 0.92       | 1.05     | 0.44     |         |
|                | CIPC Chandrapur | 0.33   | 0.32       | 0.33       | 0.48     | 0.18     |         |
|                | NIC Nanded      | 0.16   | 0.13       | 0.25       | 0.57     | 0.07     |         |
|                | PIC Pune        | 0.90   | 1.00       | 0.96       | 1.00     | 0.72     |         |
| YIC Yavatmal   | 0.04            | 0.02   | 0.01       | 0.06       | 0.00     |          |         |
| Surplus        | CADA Nagpur     | 0.16   | 0.55       | 0.54       | 0.55     | 0.05     | 0.49    |
|                | CIPC Chandrapur | 0.47   | 0.50       | 0.44       | 0.64     | 0.25     |         |
| Abundant       | CIPC Chandrapur | 0.54   | 0.43       | 0.39       | 0.65     | 0.43     | 0.33    |
|                | KIC Ratnagiri   | 0.65   | 2.32       | 0.10       | 2.32     | 0.45     |         |
|                | SIC Sangli      | 0.57   | 0.34       | 0.59       | 1.10     | 0.34     |         |
|                | TIC Thane       | 0.14   | 0.13       | 0.25       | 0.56     | 0.07     |         |

Note: 1) Figures in red indicate values exceeding range of graph.  
2) Figures in red & blue excluded for Avg Per.



## **Indicator XII (I): Assessment Recovery Ratio (Irrigation)**

### **Highly Deficit Plan Group:**

**CADA Beed:** The average value of this indicator for projects under this circle has increased from 0.18 to 0.38. Kada & Kambli have the least ratio for this indicator i.e., zero and Khandala and Jakapur have ratio of 1.0 which has attained state norms.

**P.I.C. Pune:** Average assessment recovery ratio in six medium projects under this circle comes to 1.37 this year it is above state target the increase is due to recovery of previous year's revenue.

### **Deficit Plan Group:**

**AIC Akola:** Recovery against assessment sanctioned during the year 2007-08 on group of projects under AIC Akola was high than last year but less on projects under BIPC Buldana

**CADA Jalgaon:** The ratio is improved from 0.44 (2006-06) to 0.50 (2007-08). More attention is required by field officers to improve the performance in all the projects.

**CADA Nashik:** The ratio is lowered from 0.70 (2006-07) to 0.65 (2007-08). There is much scope in all the projects to improve the performance.

**CADA Beed:** The average value of this indicator for projects under this circle has increased from 0.31 to 0.35. Kundlika and Wan has the least ratio of 0.04 & 0.14 respectively, whereas it has attained the state norm in Sakol, Masalga & Whati.

**CADA Aurangabad:** The average value of this indicator for projects under this circle has increased from 0.34 to 0.42. Masoli, Galhati & Gadadgad have ratios of 0.1 & 0.2 respectively whereas Sukhana, Girija, Ajantha Andhari, Pir Kalyan, & Jui have attained the state norms

**NIC Nanded:** The average value of this indicator for medium project under this circle has decreased from 0.53 to 0.18, Kudala & Pethwadaj have least ratio of 0.15 whereas Mahalingi has ratio of 0.35. None of the projects have attained the state target.

### **Normal Plan Group:**

Except some projects under AIC Akola recovery against assessment on group of projects under YIC Yeotmal CIPC Chandrapur was low as compared to state norm.

**CADA Nagpur:** The ratio is roll down from 0.83 (2006-07) to 0.02 (2007-08).

**CIPC Chandrapur:** The ratio is same 0.58 (2006-07) & (2007-08).

**CADA Jalgaon:** Though the ratio is increased from 0.6 (2006-07) to 0.78 (2007-08) still it is below state norm. As such improvement is necessary.

**CADA Nashik:** The ratio is improved from 0.91 (2006-07) to 0.92 (2007-08).

**CADA Aurangabad:** The average value of this indicator for projects under this circle has slightly from 0.41 to 0.42. Ambadi& Kolhi have ratio of 0.2 &0.3 whereas in Dheku project the ratio has attained the state norms.

**NIC Nanded:** The average value of this indicator for projects under this circle has increased from 0.13 to 0.25. Dongargaon has no recovery against assessment, whereas in Nagzari assessment recovery ratio is 0.46 & 0.58 which is below the state norms.

**P.I.C. Pune:** In Wadiwale Project the ratio is (0.96) shows better recovery.

**Surplus Plan Group:**

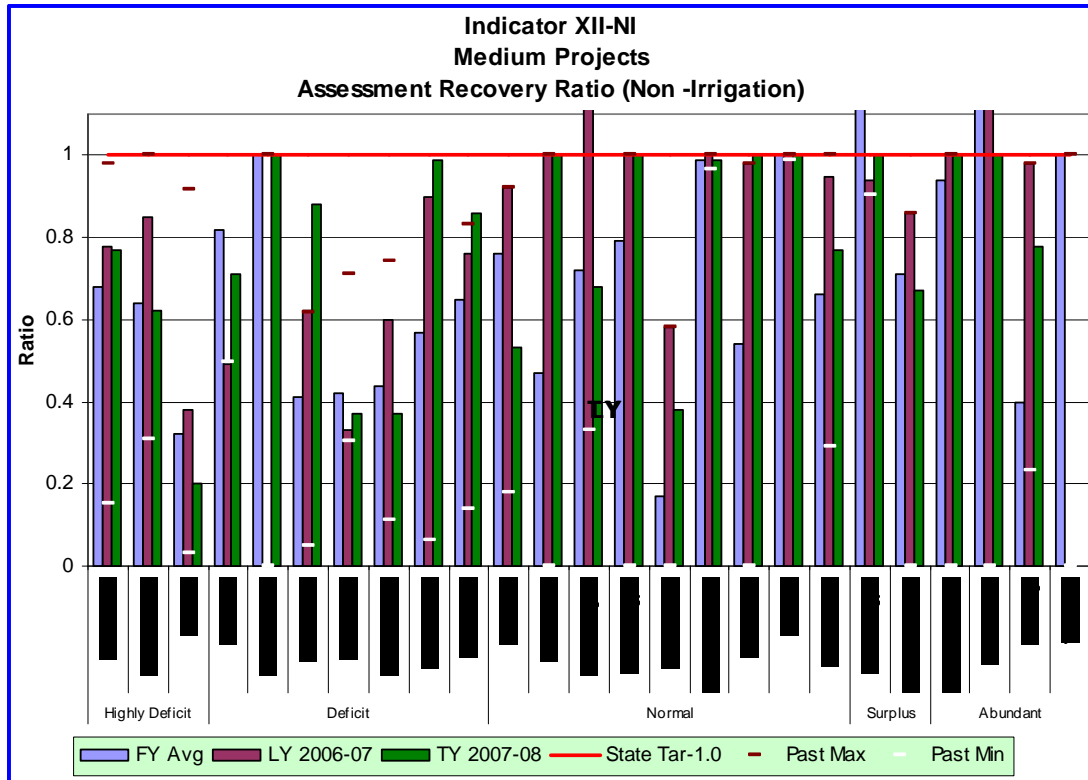
**CADA Nagpur:** The ratio is reduced from 0.76 (2006-07) to 0.44 (2007-08).

**Abundant Plan Group:**

**CIPC Chandrapur:** The ratio is roll down from 0.57 (2006-07) to 0.23 (2007-08).

**K.I.C. Ratnagiri:** In Natuwadi Project the ratio decrease to (0.10) from 2.32 of last year due to less recovery.

Recovery against assessment on group of projects under CIPC Chandrapur (0.39) was low compared to last year performance and state norms.



| Plan group     | Circle          | FY Avg | LY 2006-07 | TY 2007-08 | Past Max | Past Min | Avg Per |
|----------------|-----------------|--------|------------|------------|----------|----------|---------|
| Highly Deficit | CADA Beed       | 0.68   | 0.78       | 0.77       | 0.98     | 0.15     | 0.53    |
|                | CADA Solapur    | 0.64   | 0.85       | 0.62       | 1.00     | 0.31     |         |
|                | PIC Pune        | 0.32   | 0.38       | 0.20       | 0.92     | 0.03     |         |
| Deficit        | AIC Akola       | 0.82   | 0.49       | 0.71       | 1.38     | 0.49     | 0.74    |
|                | BIPC Buldhana   | 1.00   | No Irr     | 1.00       | 1.00     | 0.00     |         |
|                | CADA Abad       | 0.41   | 0.62       | 0.88       | 0.62     | 0.05     |         |
|                | CADA Beed       | 0.42   | 0.33       | 0.37       | 0.71     | 0.30     |         |
|                | CADA Jalgaon    | 0.44   | 0.60       | 0.37       | 0.74     | 0.11     |         |
|                | CADA Nashik     | 0.57   | 0.90       | 0.99       | 5.65     | 0.06     |         |
|                | NIC Nanded      | 0.65   | 0.76       | 0.86       | 0.83     | 0.14     |         |
| Normal         | AIC Akola       | 0.76   | 0.92       | 0.53       | 0.92     | 0.18     | 0.82    |
|                | CADA Abad       | 0.47   | 1.00       | 1.00       | 1.00     | 0.00     |         |
|                | CADA Jalgaon    | 0.72   | 1.38       | 0.68       | 1.38     | 0.33     |         |
|                | CADA Nagpur     | 0.79   | 1.00       | 1.00       | 1.00     | 0.00     |         |
|                | CADA Nashik     | 0.17   | 0.58       | 0.38       | 0.58     | 0.00     |         |
|                | CIPC Chandrapur | 0.99   | 1.00       | 0.99       | 1.00     | 0.96     |         |
|                | NIC Nanded      | 0.54   | 0.98       | 1.00       | 0.98     | 0.00     |         |
|                | PIC Pune        | 1.00   | 1.00       | 1.00       | 1.00     | 0.99     |         |
|                | YIC Yavatmal    | 0.66   | 0.95       | 0.77       | 1.00     | 0.29     |         |
| Surplus        | CADA Nagpur     | 1.78   | 0.94       | 1.00       | 6.34     | 0.90     | 0.84    |
|                | CIPC Chandrapur | 0.71   | 0.86       | 0.67       | 0.86     | 0.00     |         |
| Abundant       | CIPC Chandrapur | 0.94   | 1.00       | 1.00       | 1.00     | 0.00     | 0.93    |
|                | KIC Ratnagiri   | 1.25   | 4.25       | 1.00       | 4.25     | 0.00     |         |
|                | SIC Sangli      | 0.40   | 0.98       | 0.78       | 0.98     | 0.23     |         |
|                | TIC Thane       | 1.00   | No Irr     | No Irr     | 1.00     | 0.00     |         |

Note: 1) Figures in red indicate values exceeding range of graph.  
2) Figures in blue excluded for Avg Per  
3) 'No irr' indicates no irrigation in that year.

## **Indicator XII (NI): Assessment Recovery Ratio (Non Irrigation)**

### **Highly Deficit Plan Group:**

**CADA Beed:** The average value of this indicator for projects under this circle has slightly decreased from 0.78 to 0.77. Turori, Kurnoor & Kada have attained the state norms whereas in Kadi, Mehkari, Kambli, Talwar, Khandala, & Jakapur the ratio is zero as there is no NI use in the projects.

**P.I.C. Pune:** Average assessment ratio (NI) of six medium projects is 0.20. It is below the state target due to reduction in recovery of water charges of Non Irrigation use.

### **Deficit Plan Group:**

**AIC Akola:** Recovery against assessment during the year 2007-08 on group of projects under AIC Akola Deficit was on lower side (71%) as compared to the state target.

**YIC Yeotmal:** Recovery on projects under YIC Yeotmal, AIC Akola (Normal plan group) was low compared to the state norm.

**CADA Jalgaon:** The ratio is on lower side (37%) in Agnawati, Kanoli & Tondapur projects. Hence improvement is necessary.

**CADA Nashik:** The ratio is improved from 0.90 to 0.99 as compared to last year and just close to state norms.

**CADA Beed:** The average value of this indicator for projects under this circle has increased from 0.33 to 0.37. Sakol, Tawarja, Kundlika, Rui have attained the state norms, whereas in Gharni, Whati, Wan, Terna the ratio is below 0.41. Rest of the projects has no NI use resulting nil value of indicator

**CADA Aurangabad:** The average value of this indicator for projects under this circle has increased from 0.62 to 0.88. Sukhana, Girija, Gadadgad, Khelna, Ajantha Andhari, Dhamna, Jivrekha attained the state norm whereas in Pir Kalyan & Jui have ratio of 0.8 & 0.2. Rest of the projects has no NI use.

**NIC Nanded:** The average value of this indicator for projects under this circle has increased from 0.76 to 0.86. Kundrala & Karadkhed have attained state norms. Kudala has ratio of 0.33. Rest of the projects has no NI use.

### **Normal Plan Group**

**CADA Nagpur:** The 100 % recovery has been achieved as that of last year.

**CIPC Chandrapur:** The 99% recovery has been achieved as that of last year (100%).

**CADA Jalgaon:** Field officers have succeeded to achieve the state target in last year. However the ratio is reduced from 1.00 (2006-07) to 0.68 (2007-08).

**CADA Nashik:** The ratio has been reduced from 0.58 (2006-07) to 0.38 (2007-08). Necessary steps should be taken by the field officers to improve the performance.

**CADA Aurangabad:** The average value of this indicator for projects under this circle has retained its last year's value i.e., 1.0. Kolhi and Ambadi have attained state norms. Whereas in Dheku it is 0.4 It has increased by 44% over last year.

**NIC Nanded:** The average value of this indicator of the projects for this circle has increased from 0.98 to 1.0. Nagzari project has attained the state norms rest of the project viz., Dongargaon there is no NI use.

**P.I.C. Pune:** In Wadiwale Project the 100 % recovery has been achieved as that of last year.

**Surplus:**

**CADA Nagpur:** The 99 % recovery has been achieved as compared to last year's performance (76%)

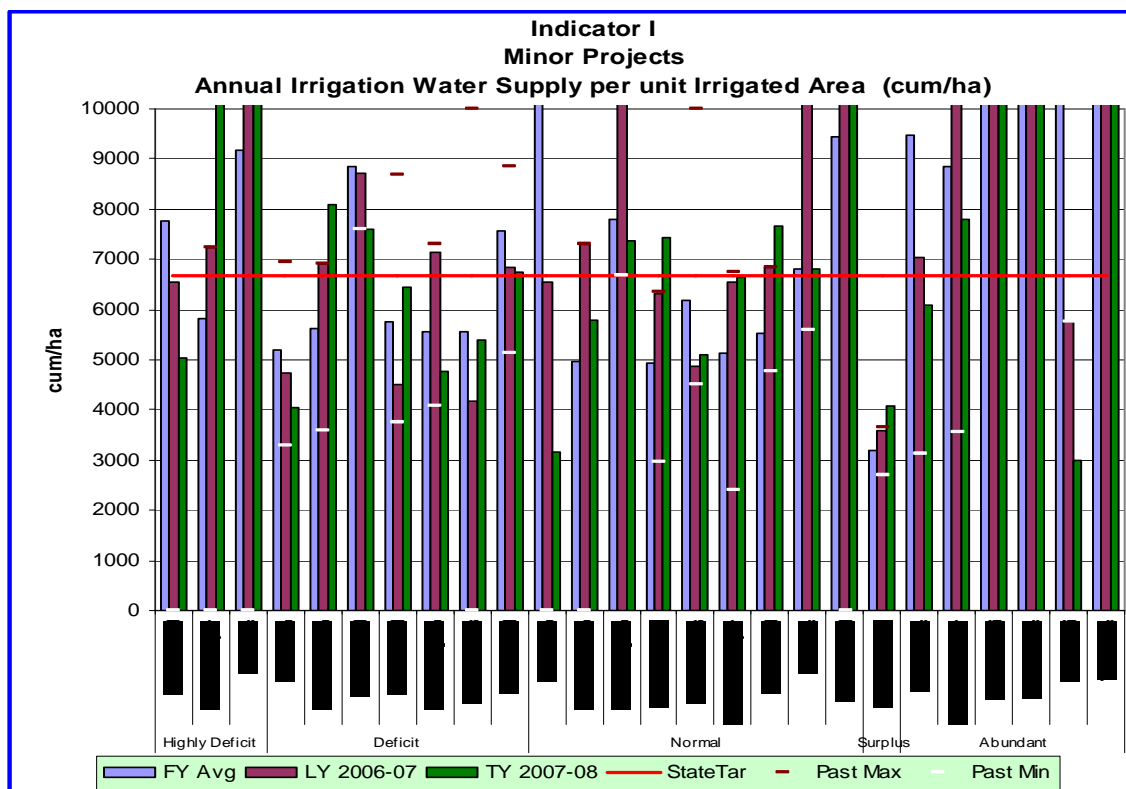
**CIPC Chandrapur:** The 68% recovery has been achieved as that of last year (82 %).

**Abundant Plan Group:**

**K.I.C. Ratnagiri:** In Natuwadi Project 100% recovery has been achieved this year.

**CIPC Chandrapur:** The 100% recovery has been achieved as that of last year (100 %).

# **Indicator of Minor Project**



| Plan group      | Circle          | FY Avg    | LY<br>2006-07 | TY<br>2007-08 | Past Max | Past Min | Avg Per |
|-----------------|-----------------|-----------|---------------|---------------|----------|----------|---------|
| Highly Deficit  | CADA Beed       | 7748      | 6532          | 5045          | 14210    | 0        | 9594    |
|                 | CADA Solapur    | 5812      | 7239          | 11631         | 7239     | 0        |         |
|                 | PIC Pune        | 9183      | 18293         | 12105         | 18293    | 0        |         |
| Deficit         | AIC Akola       | 5186      | 4750          | 4040          | 6931     | 3296     | 6157    |
|                 | BIPC Buldhana   | 5635      | 6922          | 8089          | 6922     | 3589     |         |
|                 | CADA Abad       | 8854      | 8719          | 7610          | 10130    | 7582     |         |
|                 | CADA Beed       | 5770      | 4517          | 6452          | 8694     | 3751     |         |
|                 | CADA Jalgaon    | 5568      | 7136          | 4774          | 7292     | 4074     |         |
|                 | CADA Nashik     | 5561      | 4191          | 5385          | 10000    | 0        |         |
|                 | NIC Nanded      | 7581      | 6851          | 6750          | 8837     | 5116     |         |
|                 | Normal          | AIC Akola | 294930        | 6538          | 3169     | 1737052  |         |
| BIPC Buldhana   |                 | 4957      | 7316          | 5798          | 7316     | 0        |         |
| CADA Jalgaon    |                 | 7789      | 10367         | 7362          | 10367    | 6667     |         |
| CADA Nagpur     |                 | 4930      | 6332          | 7436          | 6332     | 2968     |         |
| CADA Nashik     |                 | 6197      | 4868          | 5115          | 10000    | 4497     |         |
| CIPC Chandrapur |                 | 5135      | 6548          | 6652          | 6748     | 2403     |         |
| NIC Nanded      |                 | 5536      | 6828          | 7680          | 6828     | 4760     |         |
| PIC Pune        |                 | 6824      | 10534         | 6821          | 10534    | 5600     |         |
| YIC Yavatmal    |                 | 9436      | 10615         | 12169         | 14713    | 0        |         |
| Surplus         | CADA Nagpur     | 3202      | 3570          | 4093          | 3641     | 2690     | 4093    |
| Abundant        | CADA Pune       | 9458      | 7031          | 6094          | 19180    | 3125     | 17543   |
|                 | CIPC Chandrapur | 8850      | 10915         | 7786          | 12259    | 3542     |         |
|                 | KIC Ratnagiri   | 20848     | 22135         | 25000         | 24844    | 15111    |         |
|                 | NKIPC Thane     | 33937     | 43323         | 45284         | 43323    | 29688    |         |
|                 | SIC Sangli      | 10306     | 5772          | 3001          | 19476    | 5772     |         |
|                 | TIC Thane       | 23033     | 20101         | 18092         | 27267    | 19276    |         |

Note: 1) Figures in red indicate values exceeding range of graph.

## Observations of Minor Projects

### Indicator I: Annual Irrigation Water Supply per Unit Irrigated Area.

#### Highly deficit Plan Group:

**CADA Beed:** The performance of this circle has decreased over last year from 6532 to 5045 cum/ha. The average value of this year has decreased by 20%. The ratio is well below the State norms. Tintraj has value of 7492 cum/ha which is maximum and Incharna has minimum value of 3263 cum/ha.

**CADA Solapur:** The average performance of this year is 11639 cum/ha, which is well above state norms. The water use is increased by 30% compared to last year.

**PIC Pune:** Average Annual Irrigation Water Supply of Chinchodi Patil M.I.Tank is Rs. 12105 cum/ha. It is double the state target. The fields Officer are advised to take more efforts for better performance.

#### Deficit Plan group:

**AIC Akola:** Annual irrigation water use on all grouped projects under AIC Akola was 4040 cum/ha which was slightly lower than last year water use (4750 cum/ha). However it was low than state norm.

**BIPC Buldana:** Water use on seven projects under the circle taken together was 8089 cum/ha which was high to state norm. Water use on Vidrupa and Shivankhurd was more 10082 cum. & 8507cum.respectively.

**CADA Jalgaon:** The water use is reduced from 7136cum/ha to 4774cum/ha as compared to last year, which is below the state norms.

**CADA Nashik:** The water use is less than state norms since last two years.

**CADA Beed:** The performance has improved over last year it has increased from 4517 to 6452 this year. The average value of this indicator for this circle has increased by 32% over last year; the indicator is well below the state norms. Dhanori has the maximum value of 7871 cum/ha and Hiwarsinga has least value of 4215 cum/ha.

**CADA Aurangabad:** The performance has declined over last year by 12%. The average value of this indicator for the year decreased from 8719 to 7610 cum/ha and still also is above State norms.



**NIC Nanded:** There is drastic decline in performance over last year .The average value of this indicator has decreased for the year from 6851 to zero cum/ha. As Purjal the only project in PG has no water.

**Normal Plan Group:**

**AIC Akola:** Annual water use on Singdoh and Jamwadi was 3169 cum/ha which was less than fixed norm at state level.

**BIPC Buldana:** Water use on Adol, Mohagaon under BIPC Buldana had 12169 & 5798 cum/ha respectively.

**YIC Yeotmal:** Water use on Manjra is 12169 cum/ha, under YIC Yeotmal

**CADA Nagpur:** The average value of this indicator for the year is 7436 cum/ha which is less than State norms. But better than last year figures 6332 cum/ha

**CIPC Chandrapur:** The average value of this indicator for the year is 6652 cum/ha.

**CADA Jalgaon:** Though the water use is reduced as compared to last year, it is above state norms (7362cum/ha).

**CADA Nashik:** The water use is less than the state norms (76%).

**NIC Nanded:** This is an improvement in the performance over past year by over 260%. The average ratio of this indicator for the year 2007-08 has increased from 0.48 to 1.74 which is well above State norms.

**P.I.C. Pune:** Average utilised potential of Two Minor Projects comes to 18 this year. It is same as last year.

**Surplus Plan Group:**

**CADA Nagpur:** Annual water use on projects under CADA Nagpur (5416) was less than state norm due to low water intensive crops grown in the command.

**Abundant Plan Group:**

**CIPC Chandrapur:** Annual water use on Lagam project was less than (7786 cum/ha) state norm & last years performance (10915 cum/ha).

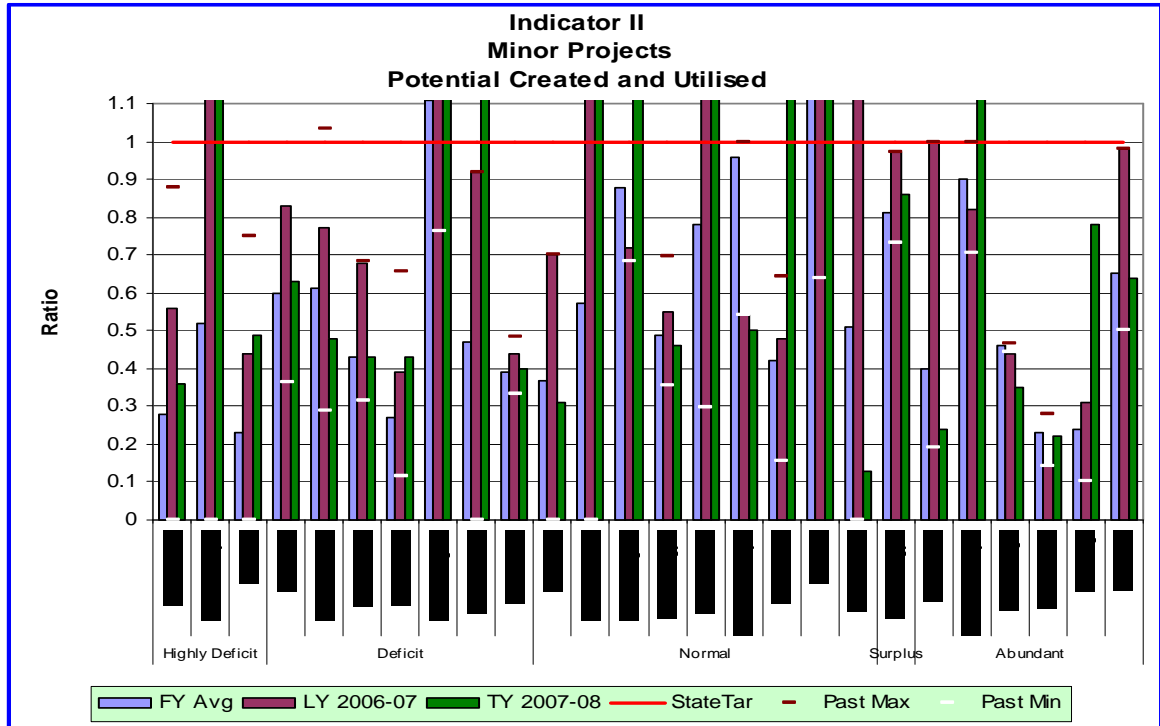
**CADA Pune:** In Thoseghar M.I, projection utilized potential ratio comes to 0.24 it decreases from last year value of 1.00

**N.K.I.P.C. Thane:** Average utilised potential of Two M.I. Projects of this circle comes to 0.22 which is better than last year but below the state target.

**SIC Sangli:** Annual water use on minor project under this circle is 4476 which is less than state norms. And 50% reduced than last year.

**TIC Thane:** The average water use is 18092 cum/ha. Which is nearly double than the state norms. And 10% less than the last year use.

**K.I.C.Ratnagiri:** In Shirval M.I. Project annual utilised potential ratio comes to 0.35, which is below state target.



| Plan group     | Circle        | FY Avg    | LY 2006-07 | TY 2007-08 | Past Max | Past Min | Avg Per |
|----------------|---------------|-----------|------------|------------|----------|----------|---------|
| Highly Deficit | CADA Beed     | 0.28      | 0.56       | 0.36       | 0.88     | 0.00     | 0.8     |
|                | CADA Solapur  | 0.52      | 1.36       | 1.41       | 1.69     | 0.00     |         |
|                | PIC Pune      | 0.23      | 0.44       | 0.49       | 0.75     | 0.00     |         |
| Deficit        | AIC Akola     | 0.60      | 0.83       | 0.63       | 1.30     | 0.36     | 0.7     |
|                | BIPC Buldhana | 0.61      | 0.77       | 0.48       | 1.03     | 0.29     |         |
|                | CADA Abad     | 0.43      | 0.68       | 0.43       | 0.68     | 0.31     |         |
|                | CADA Beed     | 0.27      | 0.39       | 0.43       | 0.65     | 0.12     |         |
|                | CADA Jalgaon  | 1.11      | 1.39       | 1.28       | 2.61     | 0.76     |         |
|                | CADA Nashik   | 0.47      | 0.92       | 1.17       | 0.92     | 0.00     |         |
|                | NIC Nanded    | 0.39      | 0.44       | 0.40       | 0.48     | 0.33     |         |
|                | Normal        | AIC Akola | 0.37       | 0.70       | 0.31     | 0.70     |         |
| BIPC Buldhana  | 0.57          | 1.46      | 1.77       | 1.46       | 0.00     |          |         |
| CADA Jalgaon   | 0.88          | 0.72      | 1.51       | 1.20       | 0.68     |          |         |
| CADA Nagpur    | 0.49          | 0.55      | 0.46       | 0.70       | 0.36     |          |         |
| CADA Nashik    | 0.78          | 1.29      | 1.36       | 1.29       | 0.30     |          |         |
| CIPC           | 0.96          | 0.54      | 0.50       | 1.00       | 0.54     |          |         |
| Chandrapur     |               |           |            |            |          |          |         |
| NIC Nanded     | 0.42          | 0.48      | 1.74       | 0.64       | 0.16     |          |         |
| PIC Pune       | 1.47          | 1.65      | 1.12       | 14.54      | 0.64     |          |         |
| YIC Yavatmal   | 0.51          | 18.13     | 0.13       | 18.13      | 0.00     |          |         |
| Surplus        | CADA Nagpur   | 0.81      | 0.97       | 0.86       | 0.97     | 0.73     | 0.86    |
| Abundant       | CADA Pune     | 0.40      | 1.00       | 0.24       | 1.00     | 0.19     | 0.6     |
|                | CIPC          | 0.90      | 0.82       | 1.15       | 1.00     | 0.70     |         |
|                | Chandrapur    |           |            |            |          |          |         |
|                | KIC Ratnagiri | 0.46      | 0.44       | 0.35       | 0.47     | 0.45     |         |
|                | NKIPC Thane   | 0.23      | 0.14       | 0.22       | 0.28     | 0.14     |         |
|                | SIC Sangli    | 0.24      | 0.31       | 0.78       | 1.86     | 0.10     |         |
|                | TIC Thane     | 0.65      | 0.98       | 0.64       | 0.98     | 0.50     |         |

Note:1) Figures in red indicate values exceeding range of graph  
2) Figures in red & blue excluded for Avg Per

## **Indicator II: Potential Utilised and created**

### **Highly deficit Plan Group:**

**CADA Beed:** The performance of this indicator has declined over the past year by 30%. The average ratio of this indicator has decreased from 0.56 to 0.36 for the year 2007-08. And also below State norms.

**PIC Pune:** The utilization potential of Chinchodi Patil M.I.Tank is 0.49 which is less than state norms.

### **Deficit Plan Group:**

**AIC Akola:** Output per unit irrigated area on all project considered together under AIC Akola are exorbitantly high. Out put on Shekdari Rs. 172461/ha, needs to be verified by field authorities

**BIPC Buldana:** Output per unit irrigated area on all project considered together under BIPC Buldhana out put was high. It was more than Rs. 25000/ha, compared to state target due to cash crops grown in the command.

**CADA Jalgaon:** The ratio is one for last three years, which is up to the State target.

**CADA Nashik:** The ratio is increased by 9% as compared to last year which is up to the state target.

**CADA Beed:** The performance of this indicator has increased slightly over last year by 5%. The average ratio of the indicator for the year 2007-08 has increased 0.39 to 0.43 and is below State norms. Hiwarsinga has maximum potential utilized i.e., 0.71 and in Dhanori the potential utilized is zero.

**CADA Aurangabad:** The performance of this indicator has decreased over last year by 25%. The average ratio of this indicator for the year has decreased from 0.68 to 0.43 but still it has to attain State norms.

**NIC Nanded:** It has slight decreased over past year by 5%. The average ratio of this indicator has decreased for 2007-08 from 0.44 to 0.40 and is below State norms.

### **Normal Plan Group:**

**AIC Akola:** Actual potential utilisation compared to created potential on projects under AIC Akola was 31%.

**BIPC Buldana:** Actual potential utilisation compared to created potential on projects under BIPC Buldhana was 100%.

**CADA Jalgaon:** The ratio is improved this year and it is with the state norms.

**CADA Nashik:** The ratio is one for last three years which is up to the State target.

**YIC Yeotmal:** Actual potential utilisation compared to created potential on projects under YIC was 13%

**P.I.C. Pune:** Average utilised potential of Two Minor Projects comes to 18 this year. It is same as last year.

**Surplus Plan Group:**

**CADA Nagpur:** Potential utilisation was 86% on all projects under this circle.

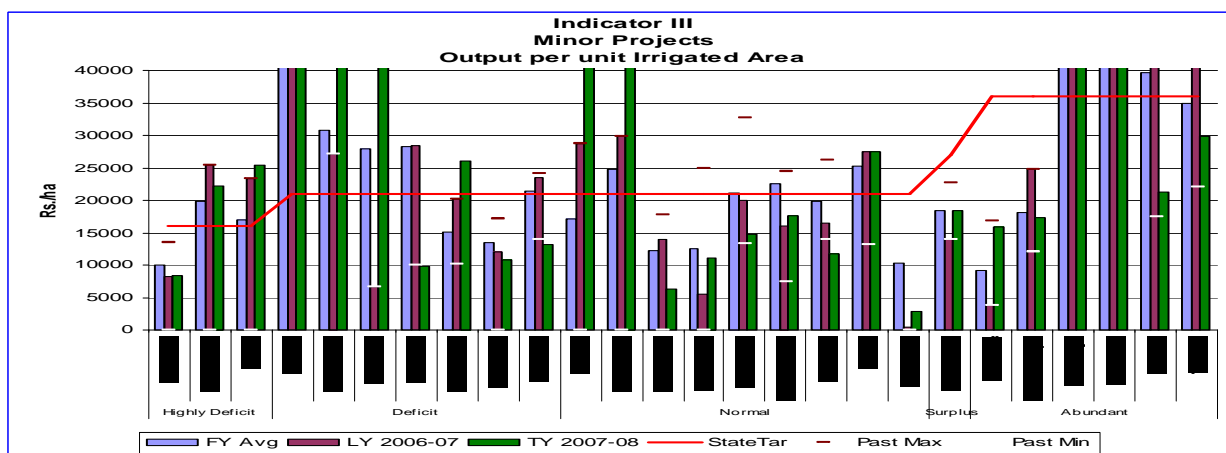
**Abundant Plan Group:**

**CIPC Chandrapur:** Potential utilisation was 115% on and average on projects under this circle.

**CADA Pune:** In Thoseghar M.I, projection utilized potential ratio comes to 0.24 it decreases from last year value of 1.00

**N.K.I.P.C. Thane:** Average utilised potential of Two M.I. Projects of this circle comes to 0.22 which is better than last year but below the state target.

**K.I.C.Ratnagiri:** In Shirval M.I. Project annual utilised potential ratio comes to 0.35 which is below state target.



| Plan group     | Circle          | FY Avg | LY 2006-07 | TY 2007-08 | Past Max | Past Min | Avg Per |
|----------------|-----------------|--------|------------|------------|----------|----------|---------|
| Highly Deficit | CADA Beed       | 9999   | 8176       | 8401       | 13518    | 0        | 18696   |
|                | CADA Solapur    | 19896  | 25446      | 22296      | 25446    | 0        |         |
|                | PIC Pune        | 17007  | 23343      | 25391      | 23343    | 0        |         |
| Deficit        | AIC Akola       | 751219 | 2710239    | 144382     | 2710239  | 101094   | 43335   |
|                | BIPC Buldhana   | 30802  | 27155      | 45568      | 48695    | 27155    |         |
|                | CADA Abad       | 27911  | 6667       | 53659      | 55310    | 6667     |         |
|                | CADA Beed       | 28235  | 28452      | 9769       | 53792    | 9946     |         |
|                | CADA Jalgaon    | 15050  | 20173      | 26017      | 20173    | 10220    |         |
|                | CADA Nashik     | 13468  | 12088      | 10855      | 17111    | 0        |         |
|                | NIC Nanded      | 21486  | 23413      | 13097      | 24140    | 13983    |         |
| Normal         | AIC Akola       | 17222  | 28740      | 45333      | 28740    | 0        | 19925   |
|                | BIPC Buldhana   | 24721  | 29844      | 42105      | 29844    | 0        |         |
|                | CADA Jalgaon    | 12165  | 13899      | 6368       | 17715    | 0        |         |
|                | CADA Nagpur     | 12533  | 5530       | 11169      | 24897    | 0        |         |
|                | CADA Nashik     | 21131  | 19973      | 14723      | 32724    | 13358    |         |
|                | CIPC Chandrapur | 22601  | 15964      | 17586      | 24417    | 7390     |         |
|                | NIC Nanded      | 19876  | 16565      | 11680      | 26112    | 13952    |         |
|                | PIC Pune        | 25269  | 27507      | 27526      | 50141    | 13117    |         |
|                | YIC Yavatmal    | 10299  | 457        | 2831       | 100000   | 0        |         |
| Surplus        | CADA Nagpur     | 18361  | 13891      | 18406      | 22735    | 13891    | 18406   |
| Abundant       | CADA Pune       | 9226   | 3770       | 15906      | 16875    | 3770     | 63905   |
|                | CIPC Chandrapur | 18136  | 24700      | 17299      | 24700    | 12094    |         |
|                | KIC Ratnagiri   | 120508 | 137843     | 151029     | 137843   | 90200    |         |
|                | NKIPC Thane     | 79784  | 153113     | 148038     | 153113   | 50628    |         |
|                | SIC Sangli      | 39740  | 51844      | 21343      | 51844    | 17525    |         |
|                | TIC Thane       | 34843  | 45670      | 29814      | 59317    | 22057    |         |

Note: 1) Figures in red indicate values exceeding range of graph.

### **Indicator III: Output Per Unit Irrigated Area (Rs./ha)**

#### **Highly deficit Plan Group:**

**CADA Beed:** The average performance of this circle has improved slightly over past year. The Average value of this indicator has slightly increased from 8176 to 8401 Rs. /ha which is still 28% below State norms of 16,000 Rs/ha.

**PIC Pune:** In Chinchodi Patil M.I. Tank output comes to Rs.25391/ha. The performance is better as compared to state target.

#### **Deficit Plan Group:**

**AIC Akola:** Output per unit irrigated area on all project considered together under AIC Akola are exorbitantly high. Out put on Shekdari Rs. 172461/ha, needs to be verified by field authorities.

**BIPC Buldana:** Out put was high. It was more than Rs. 25000/ha, compared to state target due to cash crops grown in the command.

**CADA Beed:** This is a decrease of 68% over last year. The average value of this indicator for 2007-08 has decreased from 28452 to 9769Rs./ha. Bhutekarwadi has the average of 7128Rs. /ha. The average value of the circle under this PG is 57% below State norms i.e., 21,000 Rs/ha.

**CADA Aurangabad:** Tandulwadi project has output per unit irrigated area of 53658 which is 2.55 times state average.

**NIC Nanded:** The average performance of this circle has decreased from Rs.23413 to 13097/ha and also decreased over past year performance.

**CADA Jalgaon:** The out put is increased by 29% as compared to last year and it is above state norms.

**CADA Nashik:** The out put is reduced to 90% as compared to last year and which is 52% of the State target.

#### **Normal Plan Group:**

**AIC Akola:** On projects under AIC Akola output was excellent i.e. more than Rs. 25000/ha compared to state target.

**BIPC Buldana:** Out put was excellent i.e. more than Rs. 25000/ha compared to state target.

**NIC Nanded:** There is 30% decline in performance over last year very below State norms. The average value of indicator has decreased from 16565 to 11680 Rs/ha for 2007-08.

**CADA Nagpur:** Out put on projects under the circle were low (Rs. 11169 /ha) than state target & better than last years performance (Rs. 5530 /ha)

**CIPC Chandrapur:** Out put on projects under the circle were low (Rs. 17586 /ha) than state target & better than last years performance (Rs.15964 /ha)

**P.I.C. Pune:** Average output in two Minor Project of this circle comes to Rs. 27525/ha. This is below than last year and state target.

**CADA Jalgaon:** The out put is 30% to the state norms only.

**CADA Nashik:** The out put is reduced by 36% as compared to last year which is 70% of the state norms.

**Surplus Plan Group:**

**CADA Nagpur:** Out put on projects under the circle were better (Rs. 18406 /ha) in comparison with state target as well as last year out put (Rs. 13891 /ha)

**Abundant Plan Group:**

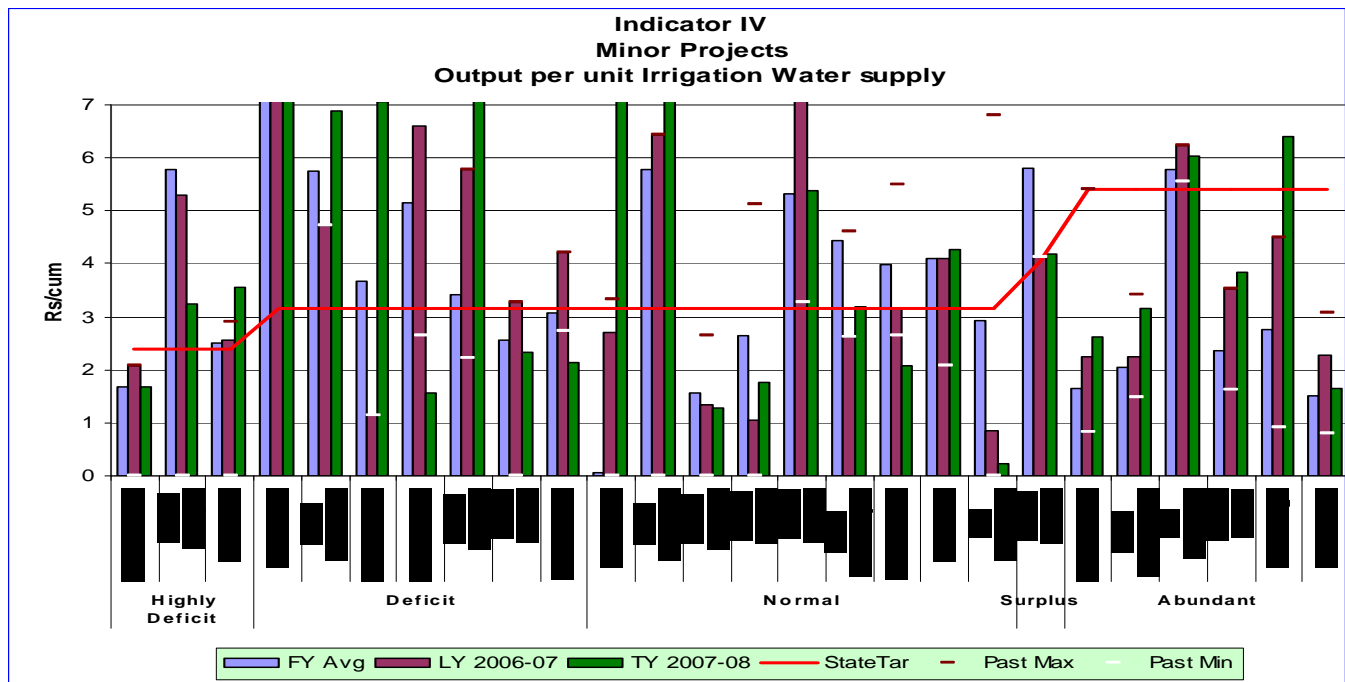
**CIPC Chandrapur:** Out put on projects under the circle were less (Rs. 17299 /ha) in comparison with state target as well as last year out put (Rs. 24700 /ha)

**CADA Pune:** Annual output in Thoseghar M.I. Project comes to Rs. 15906/ha this year, increased decrease from Rs. 3770/ha of last year.

**N.K.I.P.C., Thane:** Average Agricultural output of Two Minor Projects is Rs. 1, 48,038/ha which increased from Rs. 96649/ha of last year.

**K.I.C. Ratnagiri:** In Shirval M.I. Project agricultural output comes to Rs. 1, 51,029/ha which is increased from last year.





| Plangroup      | Circle        | FY Avg | LY 2006-07 | TY 2007-08 | Past Max | Past Min | Avg Per | State Tar |
|----------------|---------------|--------|------------|------------|----------|----------|---------|-----------|
| Highly Deficit | CADA Beed     | 1.67   | 2.09       | 1.67       | 2.09     | 0.00     | 2.8     | 2.09      |
|                | CADA Solapur  | 5.77   | 5.30       | 3.25       | 10.24    | 0.00     |         |           |
|                | PIC Pune      | 2.50   | 2.57       | 3.55       | 2.91     | 0.00     |         |           |
| Deficit        | AIC Akola     | 141.59 | 520.33     | 29.18      | 520.33   | 17.60    | 8.4     | 3.00      |
|                | BIPC Buldhana | 5.75   | 4.73       | 6.88       | 13.57    | 4.73     |         |           |
|                | CADA Abad     | 3.66   | 1.14       | 7.05       | 9.06     | 1.14     |         |           |
|                | CADA Beed     | 5.14   | 6.60       | 1.56       | 9.44     | 2.65     |         |           |
|                | CADA Jalgaon  | 3.42   | 5.78       | 9.93       | 5.78     | 2.22     |         |           |
|                | CADA Nashik   | 2.56   | 3.27       | 2.32       | 3.27     | 0.00     |         |           |
|                | NIC Nanded    | 3.07   | 4.20       | 2.13       | 4.20     | 2.72     |         |           |
| Normal         | AIC Akola     | 0.05   | 2.70       | 7.56       | 3.32     | 0.00     | 3.9     | 3.00      |
|                | BIPC Buldhana | 5.79   | 6.43       | 9.10       | 6.43     | 0.00     |         |           |
|                | CADA Jalgaon  | 1.56   | 1.34       | 1.29       | 2.66     | 0.00     |         |           |
|                | CADA Nagpur   | 2.64   | 1.04       | 1.75       | 5.11     | 0.00     |         |           |
|                | CADA Nashik   | 5.31   | 8.00       | 5.38       | 8.00     | 3.27     |         |           |
|                | CIPC          | 4.45   | 2.63       | 3.19       | 4.61     | 2.63     |         |           |
|                | Chandrapur    |        |            |            |          |          |         |           |
|                | NIC Nanded    | 3.99   | 3.17       | 2.09       | 5.49     | 2.65     |         |           |
|                | PIC Pune      | 4.10   | 4.09       | 4.27       | 8.64     | 2.08     |         |           |
|                | YIC Yavatmal  | 2.94   | 0.84       | 0.23       | 6.80     | 0.00     |         |           |
| Surplus        | CADA Nagpur   | 5.80   | 4.12       | 4.18       | 7.68     | 4.12     | 4.2     | 4.00      |
| Abundant       | CADA Pune     | 1.66   | 2.26       | 2.61       | 5.40     | 0.82     | 3.9     | 5.00      |
|                | CIPC          | 2.05   | 2.26       | 3.15       | 3.41     | 1.48     |         |           |
|                | Chandrapur    |        |            |            |          |          |         |           |
|                | KIC Ratnagiri | 5.78   | 6.23       | 6.04       | 6.23     | 5.55     |         |           |
|                | NKIPC Thane   | 2.35   | 3.53       | 3.85       | 3.53     | 1.61     |         |           |
|                | SIC Sangli    | 2.77   | 4.49       | 6.39       | 4.49     | 0.92     |         |           |
|                | TIC Thane     | 1.51   | 2.27       | 1.65       | 3.08     | 0.81     |         |           |

Note: 1) Figures in red indicate values exceeding range of graph.2) Figures in red & blue excluded for Avg Per

## **Indicator IV:Output per Unit Irrigation Water Supply (Rs. /cum)**

### **Highly deficit Plan Group:**

**CADA Beed:** It has slight improvement over last year's performance but below state norms. The average value of this indicator has increased from 2.09 to 1.67 for 2007-08.

**PIC Pune:** In Chinchodi Patil M.I.Tank the output per unit water supply comes to Rs. 4.00/ha. It is above the state norms.

### **Deficit Plan Group:**

**AIC Akola:** Output per unit water supply observed on projects under AIC Akola was exceptionally high on account of just high out put observed on Shekdari project (3.88).

**BIPC Buldana:** Output per unit water supply observed on project was Rs 6.88/ cum which was close to target.

**CADA Beed:** It has declined in performance over last year, and is below state norms of 3.15 i.e. the average ratio of 2007-08 from 6.60 to 1.56. Bhutekarwadi project has the minimum value of the indicator i.e., Rs 0.98 /cum.

**CADA Aurangabad:** The performance of Tandulwadi has improved over last year from Rs 1.14 to 7.05/cum., for the year 2007-08 there is an improvement of 80%.And is twice the state average.

**NIC Nanded:** The performance has decreased over last year by 50% and also below its state norms. The average value of indicator for 2007-08 has decreased from 4.20 to 2.13.

**CADA Jalgaon:** The out put per cum is more than state norms and 1.7 times to last year performance.

**CADA Nashik:** The out put per cum was more than state norms in last year. However the performance is lowered by 41%,which is below state norm.

### **Normal Plan Group:**

**AIC Akola:** Output under this circle was higher due to low water use per unit irrigated area.

**BIPC Buldana:** Output under this circle was higher due to low water use per unit irrigated area.

**YIC Yeotmal:** However it was observed less on projects under this circle.

**CADA Nagpur:** The performance for this indicator is better (.75m) as compare to last year performance (Rs.1.04m)

**CIPC Chandrapur:** The performance for this indicator is better (Rs. 3.19 compare to last year performance (Rs.2.63cum)

**NIC Nanded:** There is decline over last year's performance from 3.17 to 2.09 this year, and also the average ratio is lesser than state norms.

**CADA Jalgaon:** The out put is well below (41%) the state norms

**CADA Nashik:** The out put per cum is 1.7 times the state norms but value is reduced by 49% to last year value.

**PIC Pune:** Average output per unit water supply in three Minor Projects comes Rs. 4.00/ha increased from Rs. 2.66/cum of last year.

#### **Surplus Plan Group:**

**CADA Nagpur:** Output per unit water supply observed on projects under this circle in group was Rs 4.18m as compare to last year performance (Rs. 4.12m) .

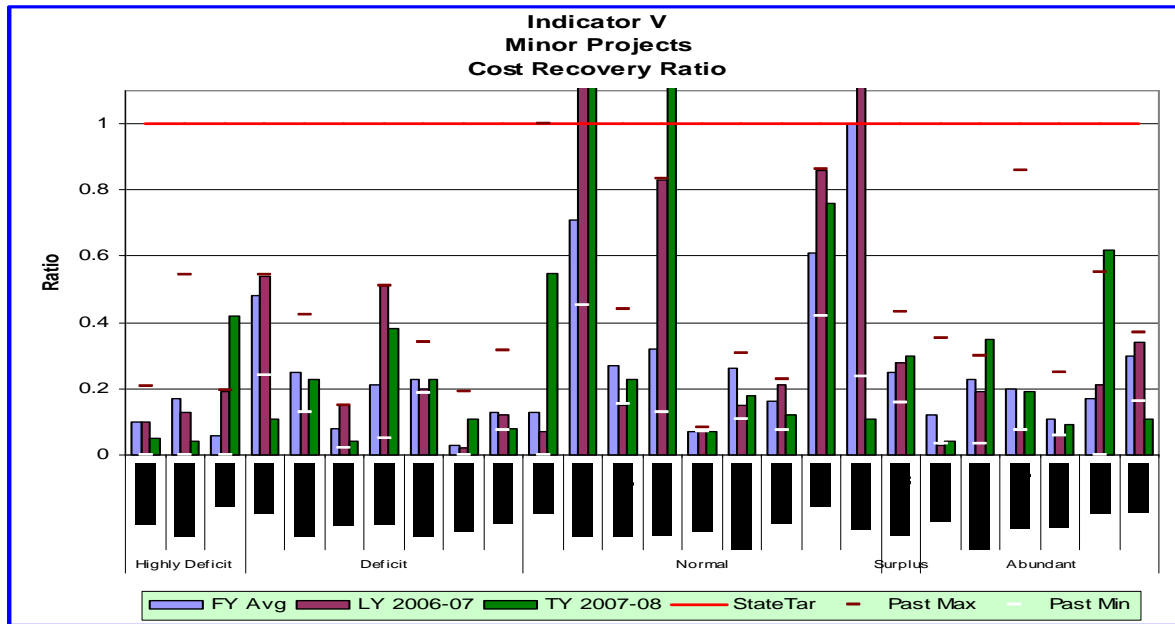
#### **Abundant Plan Group:**

**CIPC Chandrapur:** Out put on projects under the circle was (Rs. 3.15cum) I as compare to last year performance (Rs.2.26)

**Abundant: CADA Pune:** In Thoseghar M.I. Project the output per unit irrigated water increased from Rs.2.00/cum of last year to Rs. 2.60/cum this year.

**N.K.I.P.C. Thane:** Average agricultural output of two M.I. Projects increase from Rs. 3.00/cum of last year to Rs. 3.85. / Cum this year. But it is below the state target.

**K.I.C. Ratnagiri:** In Shirval Project the output is increased from Rs. 5.55/cum of last year to Rs. 6.00/cum this year and it is above state target.



| Plan group     | Circle          | FY Avg | LY 2006-07 | TY 2007-08 | Past Max | Past Min | Avg Per |
|----------------|-----------------|--------|------------|------------|----------|----------|---------|
| Highly Deficit | CADA Beed       | 0.10   | 0.10       | 0.05       | 0.21     | 0.00     | 0.2     |
|                | CADA Solapur    | 0.17   | 0.13       | 0.04       | 0.54     | 0.00     |         |
|                | PIC Pune        | 0.06   | 0.19       | 0.42       | 0.19     | 0.00     |         |
| Deficit        | AIC Akola       | 0.48   | 0.54       | 0.11       | 0.54     | 0.24     | 0.2     |
|                | BIPC Buldhana   | 0.25   | 0.13       | 0.23       | 0.42     | 0.13     |         |
|                | CADA Abad       | 0.08   | 0.15       | 0.04       | 0.15     | 0.02     |         |
|                | CADA Beed       | 0.21   | 0.51       | 0.38       | 0.51     | 0.05     |         |
|                | CADA Jalgaon    | 0.23   | 0.20       | 0.23       | 0.34     | 0.19     |         |
|                | CADA Nashik     | 0.03   | 0.02       | 0.11       | 0.19     | 0.00     |         |
|                | NIC Nanded      | 0.13   | 0.12       | 0.08       | 0.32     | 0.08     |         |
| Normal         | AIC Akola       | 0.13   | 0.07       | 0.55       | 1.00     | 0.00     | 0.6     |
|                | BIPC Buldhana   | 0.71   | 1.54       | 1.80       | 1.54     | 0.45     |         |
|                | CADA Jalgaon    | 0.27   | 0.15       | 0.23       | 0.44     | 0.15     |         |
|                | CADA Nagpur     | 0.32   | 0.83       | 1.55       | 0.83     | 0.13     |         |
|                | CADA Nashik     | 0.07   | 0.07       | 0.07       | 0.08     | 0.07     |         |
|                | CIPC Chandrapur | 0.26   | 0.15       | 0.18       | 0.31     | 0.11     |         |
|                | NIC Nanded      | 0.16   | 0.21       | 0.12       | 0.23     | 0.07     |         |
|                | PIC Pune        | 0.61   | 0.86       | 0.76       | 0.86     | 0.42     |         |
|                | YIC Yavatmal    | 1.00   | 18.00      | 0.11       | 18.00    | 0.24     |         |
| Surplus        | CADA Nagpur     | 0.25   | 0.28       | 0.30       | 0.43     | 0.16     | 0.3     |
| Abundant       | CADA Pune       | 0.12   | 0.03       | 0.04       | 0.35     | 0.03     | 0.2     |
|                | CIPC Chandrapur | 0.23   | 0.19       | 0.35       | 0.30     | 0.04     |         |
|                | KIC Ratnagiri   | 0.20   | 0.08       | 0.19       | 0.86     | 0.07     |         |
|                | NKIPC Thane     | 0.11   | 0.06       | 0.09       | 0.25     | 0.06     |         |
|                | SIC Sangli      | 0.17   | 0.21       | 0.62       | 0.55     | 0.00     |         |
|                | TIC Thane       | 0.30   | 0.34       | 0.11       | 0.37     | 0.16     |         |

Note: 1) Figures in red indicate values exceeding range of graph.

2) Figures in blue excluded for Avg Per

## Indicator V: Cost Recovery Ratio

**CADA Beed:** The performance of this indicator has gone down by 5% and the average ratio has gone 94% below the norms. The average value of this indicator has decreased from 0.1 to 0.05 for the year 2007-08.

**PIC Pune:** The ratio for Chinchodi Patil M.I.Tank comes to 0.42 this year. It is below the state norms.

### Deficit Plan Group:

**AIC Akola & BIPC Buldana:** Ratio was lower on projects under AIC Akola (0.11), probably due to cash crops grown in command. On BIPC's projects, ratio has poor value on account of increased O & M cost, and low realization of revenue recovery. (0.23)

**CADA Jalgaon:** The ratio is only 0.20, which is far below the state norms since last year.

**CADA Nashik:** The ratio is reduced from 0.03 to 0.02 as compared to last year and below the state norms.

**CADA Beed:** The performance has decreased over the past year by 15% But the average ratio has decreased from 0.51 to 0.38 is 64% below State norms.

**CADA Aurangabad:** The performance of this circle under PG has declined by 11% over past year. Tandulwadi the only project in this PG has the indicator value of 0.04. To make state achievement efforts of around 99% is to be targeted to achieve this.

**NIC Nanded:** There is drastic decline of over past performance. The average value has decreased from 0.12 to 0.08, and the State norms are 100% ahead of it.

### Normal Plan Group:

**AIC Akola, BIPC Buldana & YIC Yeotmal:** The ratio was found exceptionally high on projects under BIPC Buldana but it was low on projects under YIC Yeotmal (0.11) and on projects under AIC Akola (0.55).

**NIC Nanded:** There is decline of 9% over past performance. The average value of this indicator has decreased from 0.21 to 0.12 yet 88% efforts are needed to gain State norms.

**CADA Jalgaon:** The ratio is 0.23 which is far below the state norm..

**CADA Nashik:** The ratio is 0.07 since last year which is below the state norms.

**P.I.C. Pune:** Average cost recovery ratio of two M.I. Projects increases from 0.63 of last year to 0.76 this year.

**AIC Akola, BIPC Buldana & YIC Yeotmal:** The ratio was found satisfactory on projects under BIPC Buldana but it was exceptionally high on projects under YIC Yeotmal (18) and low on projects under AIC Akola (0.07).

**PIC Pune:** Average cost recovery ratio of three M.I. Projects decreases from 0.63 of last year to 0.58 this year.

**CADA Nagpur:** Average cost recovery ratio of M.I. Projects under this circle has increased from 0.83 of last year to 1.55 year.

**CIPC Chandrapur:** Average cost recovery ratio of M.I. Projects under this circle has increased from 0.15 of last year to 0.18 this year.

#### **Surplus Plan Group:**

**CADA Nagpur:** Cost recovery ratio was low (0.30) compared to state norm but it was more than its last year value (0.28).

#### **Abundant Plan Group:**

**CIPC Chandrapur:** Cost recovery ratio was low (0.35) compared to state norm but better than its last year value (0.19).

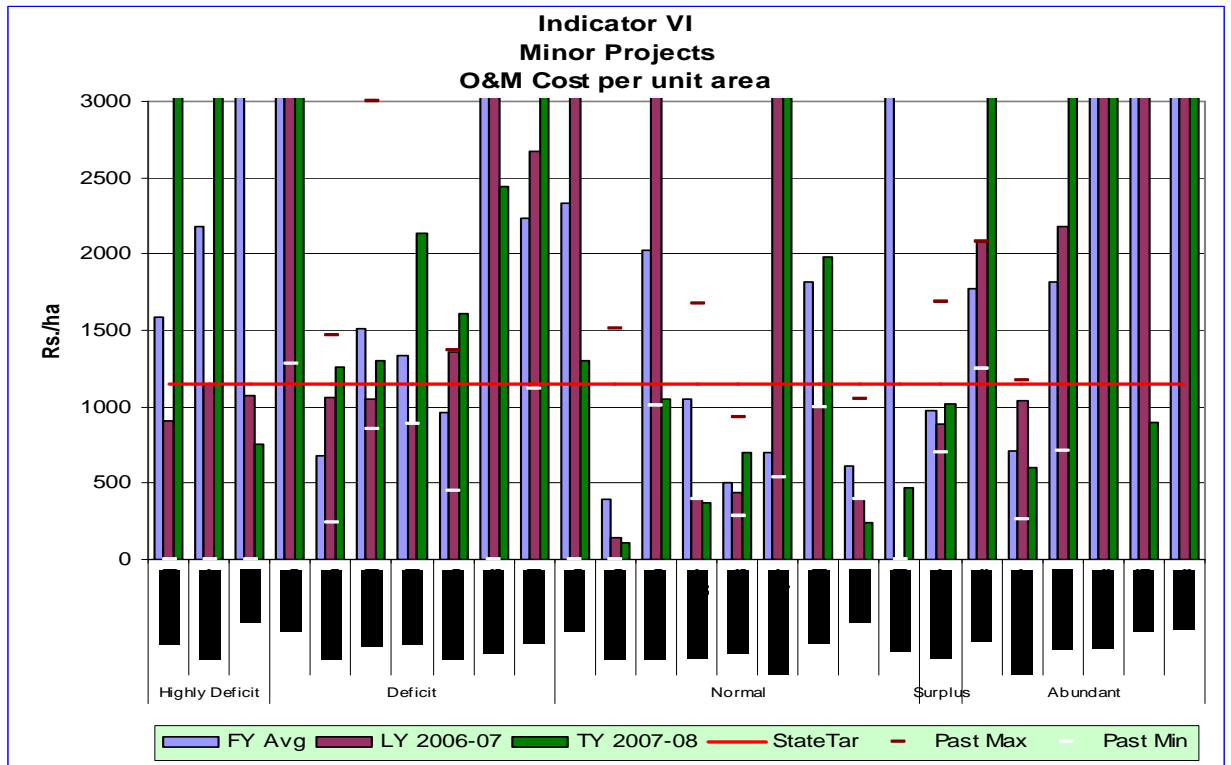
**CADA Pune:** In Thoseghar Project the cost recovery ratio reduces considerably from 0.33 last year to 0.03 this year.

#### **Abundant:**

**CADA Pune:** In Thoseghar Project the cost recovery ratio increased from 0.03 last year to 0.04 this year.

**N.K.I.P.C. Thane:** Average cost recovery ratio of two M.I. Project comes to 0.09 this year is very much low as compared to state target.

**K.I.C. Ratnagiri:** In Shirval Project the cost recovery ratio increased from 0.08 last year to 0.19 this year. It is very much below state target.



| Plan group      | Circle          | FY Avg    | LY 2006-07 | TY 2007-08 | Past Max | Past Min | Avg Per |
|-----------------|-----------------|-----------|------------|------------|----------|----------|---------|
| Highly Deficit  | CADA Beed       | 1591      | 907        | 3031       | 4276     | 0        | 2815    |
|                 | CADA Solapur    | 2178      | 1151       | 4659       | 5890     | 0        |         |
|                 | PIC Pune        | 3400      | 1077       | 756        | 5958     | 0        |         |
| Deficit         | AIC Akola       | 3942      | 11088      | 3647       | 11088    | 1285     | 2362    |
|                 | BIPC Buldhana   | 681       | 1062       | 1261       | 1469     | 244      |         |
|                 | CADA Abad       | 1515      | 1056       | 1298       | 3000     | 852      |         |
|                 | CADA Beed       | 1334      | 887        | 2133       | 3006     | 887      |         |
|                 | CADA Jalgaon    | 964       | 1353       | 1608       | 1363     | 445      |         |
|                 | CADA Nashik     | 3297      | 3407       | 2442       | 4787     | 0        |         |
|                 | NIC Nanded      | 2235      | 2674       | 4143       | 3193     | 1114     |         |
|                 | Normal          | AIC Akola | 2331       | 4938       | 1307     | 4938     |         |
| BIPC Buldhana   | 393             | 145       | 110        | 1512       | 0        |          |         |
| CADA Jalgaon    | 2031            | 3028      | 1050       | 4310       | 1005     |          |         |
| CADA Nagpur     | 1049            | 398       | 367        | 1678       | 398      |          |         |
| CADA Nashik     | 499             | 433       | 704        | 933        | 286      |          |         |
| CIPC Chandrapur | 696             | 3381      | 3318       | 4238       | 541      |          |         |
| NIC Nanded      | 1822            | 998       | 1987       | 3104       | 998      |          |         |
| PIC Pune        | 611             | 399       | 244        | 1056       | 399      |          |         |
| YIC Yavatmal    | 66727           | 0         | 476        | 1462956    | 0        |          |         |
| Surplus         | CADA Nagpur     | 974       | 883        | 1015       | 1686     | 706      | 1015    |
| Abundant        | CADA Pune       | 1770      | 2081       | 9359       | 2081     | 1250     | 6035    |
|                 | CIPC Chandrapur | 707       | 1038       | 607        | 1166     | 260      |         |
|                 | KIC Ratnagiri   | 1816      | 2180       | 3686       | 3355     | 711      |         |
|                 | NKIPC Thane     | 6668      | 14210      | 11835      | 14210    | 3025     |         |
|                 | SIC Sangli      | 7753      | 3844       | 896        | 15571    | 3844     |         |
|                 | TIC Thane       | 3550      | 3182       | 9824       | 3956     | 3182     |         |

Note: 1) Figures in red indicate values exceeding range of graph.

2) Figures in red excluded Avg Per

## **Indicator VI: O & M Cost Per Unit Irrigated Area (Rs./ha)**

### **Highly deficit Plan Group:**

**CADA Beed:** There is an increase in this value over last year. The O & M cost for this year has increased from Rs.907 to 3030 /ha which is above State norms of Rs.1150 /ha Kinhi project has the maximum value of Rs. 5877/ha. Tintraj has the minimum value of Rs.584/ha.

**PIC Pune:** The O & M cost per unit irrigated area for Chinchodi Patil M.I. Tank is Rs. 756/ha it is below the state target.

### **Deficit Plan Group:**

**AIC Akola & BIPC Buldana:** The O & M cost per unit area irrigated on Vyagra (Rs18237 .41/ha) and Mozari (Rs12722.68/ha) under AIC project was on account of meager potential utilisation on these projects. It was Rs 12630.59 /ha on projects under BIPC Buldana which was very high than state norm.

**CADA Beed:** The average value of the indicator has increased for the year 2007-08 from Rs.887 to 2132/ha. It has increased over last year by 56%. It is above the state norms. Hiwarsinga project has the maximum value of Rs.4824 /ha. Dhanori project has zero value of the indicator.

**CADA Aurangabad:** There is increase in O & M cost over last year. The average value of the indicator has increased for the year 2007-08 from Rs. 1056 to 1298/ha, which is slightly above the state norms. Tandulwadi is the only representing project in the PG which has the above value.

**NIC Nanded:** There is increase in the average value of the indicator by 35%. The average value for the year 2007-08 has increased from Rs.2674 to 4142/ha. The value is above 3.6 times the State norms.

**CADA Jalgaon:** The O & M cost per unit area is increased by 40% to state norms.

**CADA Nashik:** The O & M cost per unit area is two times more than the state norms.

### **Normal Plan Group:**

**AIC Akola, BIPC Buldana & YIC Yeotmal:** The ratio was high (Rs 1306.67/ha) on account of more expenditure on Singdoh project (AIC Akola) and low potential utilisation. Where as, it was Rs 109.51/ha on projects under BIPC Buldana. Reasons for much deviation in achievement from target needs to be sorted out at field level.

**NIC Nanded:** The average value of O & M cost under the circle has increased from 998 (2006-07) to 1987 which is also above the State norms.



**CADA Jalgaon:** The O & M cost per unit area is lowered from Rs3027/ha to Rs1050/ha, which is below the state norms.

**CADA Nashik:** The O & M cost per unit area is well below the state norms.

**CADA Nagpur:** The ratio is (Rs 367 /ha) on projects under the circle as compared to last years Rs.398 /ha

**CIPC Chandrapur:** The ratio is (Rs 3318 /ha) on projects under the circle as compared to last y ears (Rs.3381 /ha)

**PIC Pune:** Average O & M cost per unit irrigated area of two M.I. Projects is decreased to Rs. 244/ha, from Rs. 734/ha, of last year, increased to Rs. 734/ha.from Rs. 460/ha, of last year.

**Surplus Plan Group:**

**CADA Nagpur:** The ratio is (Rs.1015/ha) on projects under the circle as compared to last year (Rs. 883 /ha)

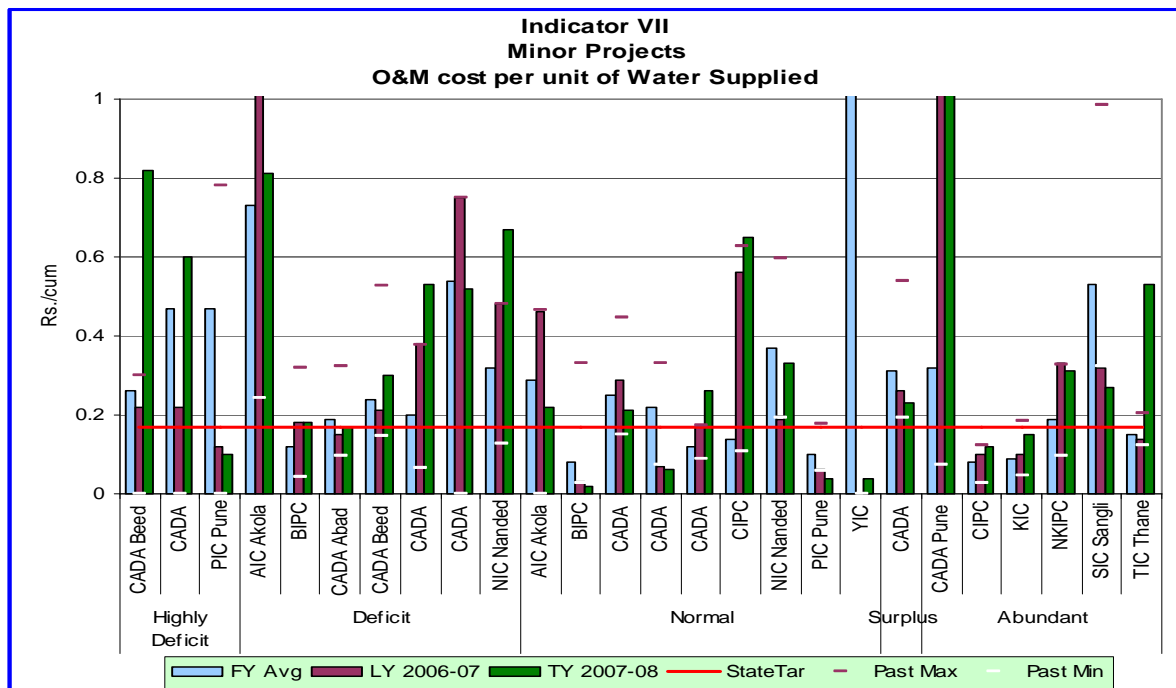
**Abundant Plan Group:**

**CIPC Chandrapur:** The ratio was well within state norm on projects (Rs.607 /ha) & in comparison with last years performance (Rs.1038/ha) under the circle.

**CADA Pune:** In Thoseghar M.I. Project the O & M Cost ratio increase from Rs.2021/ha to Rs. 9359/ha. The performance is very poor as compared to state norms and last year.

**N.K.I.P.C. Thane:** Average O & M Cost ratio of two M.I. Project decrease from Rs. 16607/ha of last year to Rs. 11835/ha this year.

**K.I.C. Ratnagiri:** In Shirval Project the O & M Cost ratio increase from Rs. 2180/ha to Rs. 3686/ha this year. The performance is poor as compared to state target.



| Plan group     | Circle          | FY Avg   | LY 2006-07 | TY 2007-08 | Past Max | Past Min | Avg Per |
|----------------|-----------------|----------|------------|------------|----------|----------|---------|
| Highly Deficit | CADA Beed       | 0.26     | 0.22       | 0.82       | 0.30     | 0.00     | 0.51    |
|                | CADA Solapur    | 0.47     | 0.22       | 0.60       | 32.13    | 0.00     |         |
|                | PIC Pune        | 0.47     | 0.12       | 0.10       | 0.78     | 0.00     |         |
| Deficit        | AIC Akola       | 0.73     | 2.04       | 0.81       | 2.04     | 0.24     | 0.45    |
|                | BIPC Buldhana   | 0.12     | 0.18       | 0.18       | 0.32     | 0.04     |         |
|                | CADA Abad       | 0.19     | 0.15       | 0.17       | 0.32     | 0.10     |         |
|                | CADA Beed       | 0.24     | 0.21       | 0.30       | 0.53     | 0.14     |         |
|                | CADA Jalgaon    | 0.20     | 0.38       | 0.53       | 0.38     | 0.07     |         |
|                | CADA Nashik     | 0.54     | 0.75       | 0.52       | 0.75     | 0.00     |         |
|                | NIC Nanded      | 0.32     | 0.48       | 0.67       | 0.48     | 0.13     |         |
| Normal         | AIC Akola       | 0.29     | 0.46       | 0.22       | 0.46     | 0.00     | 0.20    |
|                | BIPC Buldhana   | 0.08     | 0.03       | 0.02       | 0.33     | 0.03     |         |
|                | CADA Jalgaon    | 0.25     | 0.29       | 0.21       | 0.45     | 0.15     |         |
|                | CADA Nagpur     | 0.22     | 0.07       | 0.06       | 0.33     | 0.07     |         |
|                | CADA Nashik     | 0.12     | 0.17       | 0.26       | 0.17     | 0.09     |         |
|                | CIPC Chandrapur | 0.14     | 0.56       | 0.65       | 0.63     | 0.11     |         |
|                | NIC Nanded      | 0.37     | 0.19       | 0.33       | 0.60     | 0.19     |         |
|                | PIC Pune        | 0.10     | 0.06       | 0.04       | 0.18     | 0.06     |         |
| YIC Yavatmal   | 19.08           | No Water | 0.04       | 99.44      | 0.00     |          |         |
| Surplus        | CADA Nagpur     | 0.31     | 0.26       | 0.23       | 0.54     | 0.19     | 0.23    |
| Abundant       | CADA Pune       | 0.32     | 1.25       | 1.54       | 1.25     | 0.07     | 0.49    |
|                | CIPC Chandrapur | 0.08     | 0.10       | 0.12       | 0.12     | 0.03     |         |
|                | KIC Ratnagiri   | 0.09     | 0.10       | 0.15       | 0.18     | 0.05     |         |
|                | NKIPC Thane     | 0.19     | 0.33       | 0.31       | 0.33     | 0.10     |         |
|                | SIC Sangli      | 0.53     | 0.32       | 0.27       | 0.98     | 0.32     |         |
|                | TIC Thane       | 0.15     | 0.14       | 0.53       | 0.21     | 0.12     |         |

Note: 1) Figures in red indicate values exceeding range of graph.

2) Figures in red & blue excluded foe Avg.Per

## **Indicator VII: Annual O & M Cost per Unit Water Supply (Rs. /cum)**

### **Highly deficit Plan Group:**

**CADA Beed:** The average performance of this indicator has increased from Rs.0.22 to 0.82 per cum for this year 3.8 times the state norms. Incharna project has the maximum value of this indicator that is Rs.1.02/cum and Tintraj has the least value of Rs0.13/cum.

**PIC Pune:** In Chinchodi Patil M.I.Tank the O. & M. cost per unit water supply is Rs. 0.10/ha, which is below the state norms.

### **Deficit Plan Group:**

**AIC Akola & BIPC Buldana:** Due to moderate O & M expenditure and economic water use, the ratio has very high value (0.81) compared to state norm on projects under AIC Akola (Deficit). It was just high to state norm on projects under BIPC Buldana.

**CADA Beed:** The average value of this indicator for minor project under this circle has retained its last year's value 0.11; still it is below state target. Bhutekarwadi has ratio of 0.14 which is better than the rest of the projects, the field officers have to take efforts to achieve state target.

**CADA Jalgaon:** The O & M cost per unit of water supplied is 3 times more than the state norms. The cost is increasing for last four years.

**CADA Nashik:** The O & M cost per unit of water supplied is 3 times more than state norms. The cost is increasing for last four years.

**CADA Aurangabad:** The average value of this indicator for minor projects under this circle has decreased from 0.02 to 0.01. It has again declined over last year's performance. It has to take efforts in revenue collection to achieve state target.

**NIC Nanded:** The average value this indicator for minor project under this circle is 0.06. It is below 1/3rd ratio state target.

### **Normal Plan Group:**

**AIC Akola, BIPC Buldana:** Excessive O & M expenditure on projects under AIC Akola might have resulted high value (Rs 0.22/cum) compared to state norm of Rs 0.16/cum.

**CADA Nagpur:** O & M Cost per unit water supplied is Rs. 0.06 /cum as compare to Rs. 0.07 /cum during last year

**CIPC Chandrapur:** O & M Cost per unit water supplied is Rs. 0.65 /cum as compare to Rs. 0.56 /cum during last year

**NIC Nanded:** The performance indicator has improvement over past year from 0.19 to 0.33 still little above State norms.

**CADA Jalgaon:** The O & M cost per unit of water supplied is 1.2 times more than the state norms.

**CADA Nashik:** The O & M cost per unit of water supplied is 1.5 times more than the state norms.

**P.I.C. Pune:** Average O & M Cost per unit of water supply of Two M.I. Project decreases to Rs. 0.04/cum this year from Rs. 0.10/cum last year it is also below the state target.

**Surplus:**

**CADA Nagpur:** O&M cost per unit area irrigated on projects under the circle has more value (Rs 0.23/ha) than state norm and on projects under other s.

**Abundant Plan Group:**

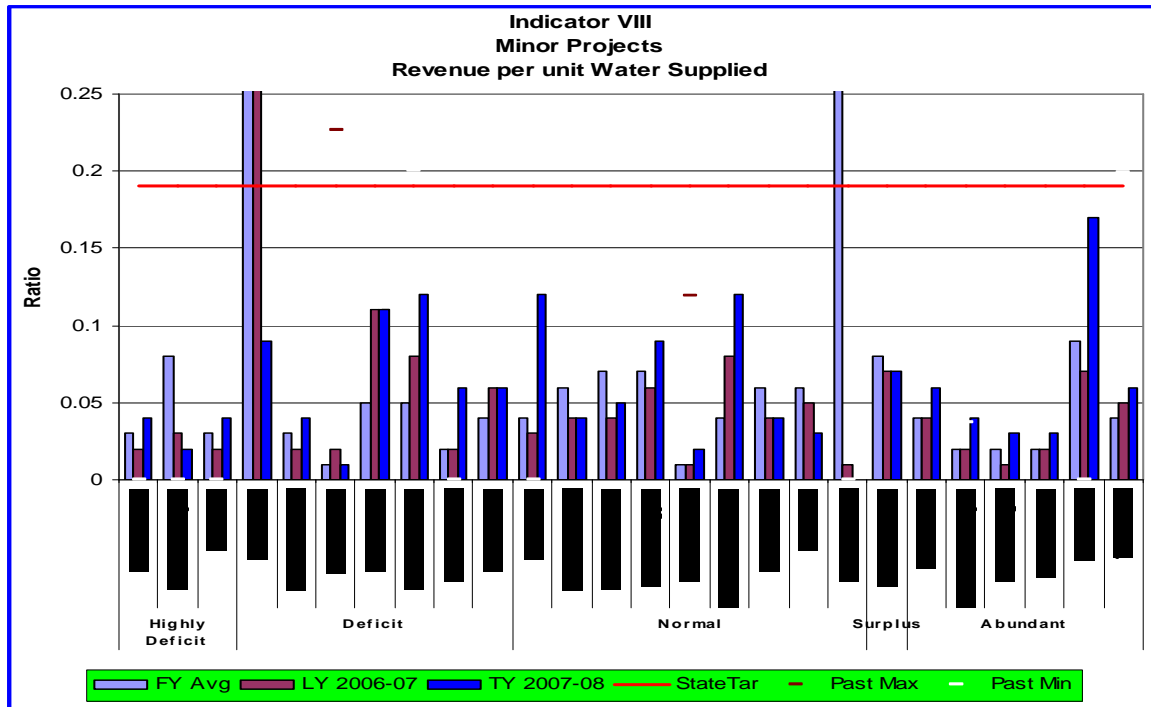
**CADA Pune :** In Thoseghar M.I. Project the O & M Cost per unit water supply increased to Rs. 1.25/ cum this year from Rs. 0.30/cum of last year. It is also above the state target Field Officer to do needful for excess expenditure on maintenance.

**CIPC Chandrapur:** O & M Cost per unit water supplied is Rs. 0.12 /cum as compare to Rs. 0.10 /cum during last year

**CADA : Pune :** In Thoseghar M.I. Project the O & M Cost per unit water supply increased to Rs. 1.54/ cum this year from Rs. 0.25/cum of last year. It is also above the state target Field Officer to do needful for excess expenditure on maintenance.

**N.K.I.P.C. Thane :** Average O & M Cost per unit water supply of two Minor Projects decreases from Rs. 0.43/cum to Rs. 0.31 this year.

**K.I.C., Ratnagiri :** In Shirval M.I. Project the O & M Cost per unit water supply increased from Rs. 8.10/cum of last year to Rs. 0.15/cum this year. This is within the state norms.



| Plan group     | Circle        | FY Avg | LY 2006-07 | TY 2007-08  | Past Max | Past Min | Avg Per |
|----------------|---------------|--------|------------|-------------|----------|----------|---------|
| Highly Deficit | CADA Beed     | 0.03   | 0.02       | 0.04        | 0.50     | 0.00     | 0.03    |
|                | CADA Solapur  | 0.08   | 0.03       | 0.02        | 4.21     | 0.00     |         |
|                | PIC Pune      | 0.03   | 0.02       | 0.04        | 0.42     | 0.00     |         |
| Deficit        | AIC Akola     | 0.35   | 1.11       | 0.09        | 11.08    | 0.81     | 0.07    |
|                | BIPC Buldhana | 0.03   | 0.02       | 0.04        | 1.05     | 0.18     |         |
|                | CADA Abad     | 0.01   | 0.02       | 0.01        | 0.23     | 0.03     |         |
|                | CADA Beed     | 0.05   | 0.11       | 0.11        | 1.05     | 0.11     |         |
|                | CADA Jalgaon  | 0.05   | 0.08       | 0.12        | 0.76     | 0.20     |         |
|                | CADA Nashik   | 0.02   | 0.02       | 0.06        | 0.54     | 0.00     |         |
|                | NIC Nanded    | 0.04   | 0.06       | 0.06        | 0.59     | 0.32     |         |
| Normal         | AIC Akola     | 0.04   | 0.03       | 0.12        | 0.44     | 0.00     | 0.06    |
|                | BIPC Buldhana | 0.06   | 0.04       | 0.04        | 2.20     | 0.39     |         |
|                | CADA Jalgaon  | 0.07   | 0.04       | 0.05        | 1.96     | 0.42     |         |
|                | CADA Nagpur   | 0.07   | 0.06       | 0.09        | 1.01     | 0.22     |         |
|                | CADA Nashik   | 0.01   | 0.01       | 0.02        | 0.12     | 0.06     |         |
|                | CIPC          | 0.04   | 0.08       | 0.12        | 0.83     | 0.31     |         |
|                | Chandrapur    |        |            |             |          |          |         |
|                | NIC Nanded    | 0.06   | 0.04       | 0.04        | 0.67     | 0.40     |         |
|                | PIC Pune      | 0.06   | 0.05       | 0.03        | 0.88     | 0.44     |         |
|                | YIC Yavatmal  | 19.04  | 0.01       | No<br>recov | 994.34   | 0.00     |         |
| Surplus        | CADA Nagpur   | 0.08   | 0.07       | 0.07        | 1.17     | 0.57     | 0.07    |
| Abundant       | CADA Pune     | 0.04   | 0.04       | 0.06        | 1.00     | 0.19     | 0.07    |
|                | CIPC          | 0.02   | 0.02       | 0.04        | 0.36     | 0.04     |         |
|                | Chandrapur    |        |            |             |          |          |         |
|                | KIC Ratnagiri | 0.02   | 0.01       | 0.03        | 0.40     | 0.04     |         |
|                | NKIPC Thane   | 0.02   | 0.02       | 0.03        | 0.29     | 0.17     |         |
|                | SIC Sangli    | 0.09   | 0.07       | 0.17        | 5.45     | 0.00     |         |
|                | TIC Thane     | 0.04   | 0.05       | 0.06        | 0.76     | 0.20     |         |

Note: 1) Figures in red indicate values exceeding range of graph and not considered for avg .

## **Indicator VIII: Revenue Per Unit of Water Supplied (Rs. /cum)**

### **Highly deficit Plan Group:**

**CADA Beed:** The average value of this indicator for minor project under this circle has decreased from 0.02 to 0.04. Except Incharna which has indicator value of 0.11, the rest of the projects have very low ratio.

**PIC Pune:** In Chinchodi Patil M.I.Tank the revenue per unit water supply is Rs.0.10/ha which is below the state norms.

### **Deficit Plan Group:**

**AIC Akola, BIPC Buldana:** Revenue collected per unit water supplied on all projects under all plan groups was less than 0.12/ cum against state norm of Rs.0.19 /cum. This suggests low revenue recovery.

**CADA Beed:** The average value of this indicator for minor project under this circle has retained its last year's value 0.11; still it is below state target. Bhutekarwadi has ratio of 0.14 which is better than the rest of the projects, the field officers have to take efforts to achieve state target.

**CADA Aurangabad:** The average value of this indicator for minor projects under this circle has decreased from 0.02 to 0.01. It has again declined over last year's performance. It has to take efforts in revenue collection to achieve state target.

**NIC Nanded:** The average value this indicator for minor project under this circle is 0.06. It is below 1/3rd ratio state target.

**CADA Jalgaon:** There is 63% recovery in this year (07-08) as compared to state norms.

**CADA Nashik:** The value is 0.06. This shows that there is only 30% recovery with compared to state target.

### **Normal Plan Group:**

**NIC Nanded:** The average value of this indicator for minor projects under the circle is 0.04. But it is still below state norms.

**CADA Nagpur:** The average value of this indicator for minor projects under the circle is 0.09. But it is still below state norms and better in comparison with last years performance 0.06.

**CIPC Chandrapur:** The average value of this indicator for minor projects under the circle is 0.12. But it is still below state norms and better in comparison with last years performance 0.08.

**CADA Jalgaon:** The indicator value is 0.05, which is far below the state norms. This shows that very less (26%) recovery is achieved with compared to state target.

**CADA Nashik:** The indicator value is 0.02 which far below the state norms.

**PIC Pune:** Average revenue per unit water supplied of two M.I. Projects is same (Rs. 0.03/cum) this year it is below the state norms.

**Surplus Plan Group:**

**CADA Nagpur:** The average value of this indicator for minor projects under the circle is 0.07. But it is still below state norms and same as last year's performance 0.07.

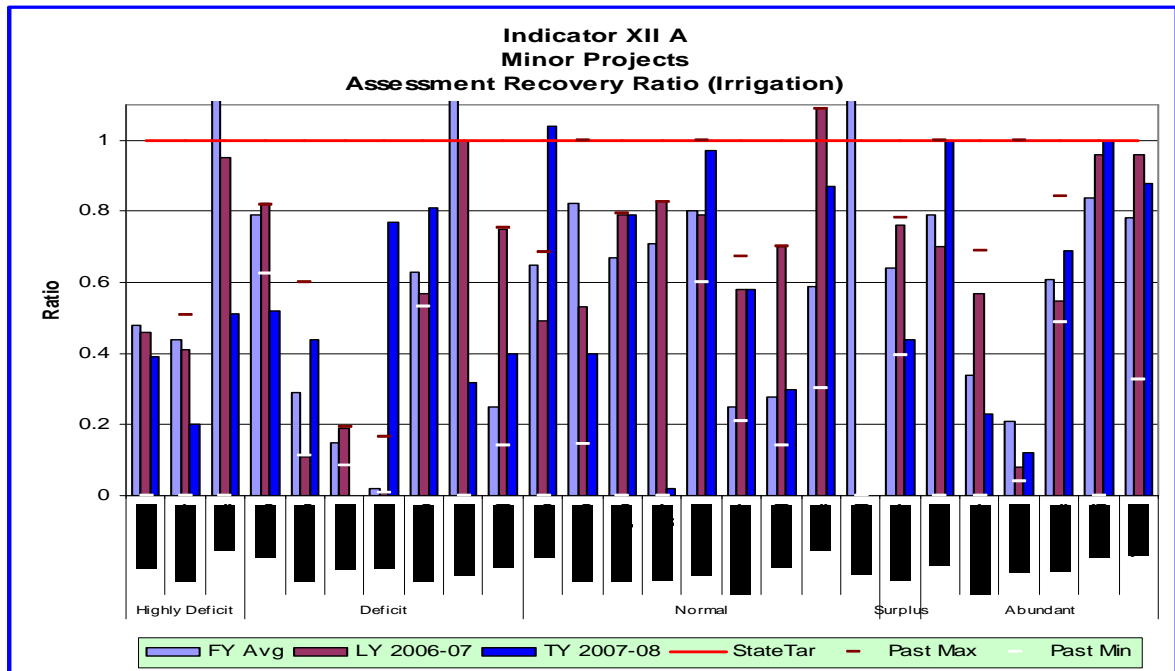
**Abundant Plan Group:**

**CIPC Chandrapur:** The average value of this indicator for minor projects under the circle is 0.04. But it is still below state norms and better in comparison with last years performance 0.02.

**CADA Pune:** In Thoseghar M.I. Project the revenue per unit water supply increased from Rs. 0.04/cum to Rs. 0.06/cum this year. It is also below state norms.

**N.K.I.P.C. Thane:** Average revenue per unit water supplied of Two Minor Projects is same as Rs. 0.03/cum last year. It is also below state norms.

**K.I.C.Ratnagiri:** In Shirval M.I. Tank revenue per unit of water supply is same (Rs. 0.03/cum) as last year. But it is very low as compared to state norms.



| Plan group     | Circle          | FY Avg | LY 2006-07 | TY 2007-08 | Past Max | Past Min | Avg Per |
|----------------|-----------------|--------|------------|------------|----------|----------|---------|
| Highly Deficit | CADA Beed       | 0.48   | 0.46       | 0.39       | 1.76     | 0.00     | 0.37    |
|                | CADA Solapur    | 0.44   | 0.41       | 0.20       | 0.51     | 0.00     |         |
|                | PIC Pune        | 2.78   | 0.95       | 0.51       | 10.00    | 0.00     |         |
| Deficit        | AIC Akola       | 0.79   | 0.82       | 0.52       | 0.82     | 0.62     | 0.47    |
|                | BIPC Buldhana   | 0.29   | 0.11       | 0.44       | 0.60     | 0.11     |         |
|                | CADA Abad       | 0.15   | 0.19       | No Recov   | 0.19     | 0.08     |         |
|                | CADA Beed       | 0.02   | 0.01       | 0.77       | 0.17     | 0.01     |         |
|                | CADA Jalgaon    | 0.63   | 0.57       | 0.81       | 1.15     | 0.53     |         |
|                | CADA Nashik     | 9.74   | 1.00       | 0.32       | 30.77    | 0.00     |         |
|                | NIC Nanded      | 0.25   | 0.75       | 0.40       | 0.75     | 0.14     |         |
| Normal         | AIC Akola       | 0.65   | 0.49       | 1.04       | 0.69     | 0.00     | 0.55    |
|                | BIPC Buldhana   | 0.82   | 0.53       | 0.40       | 1.00     | 0.15     |         |
|                | CADA Jalgaon    | 0.67   | 0.79       | 0.79       | 0.79     | 0.00     |         |
|                | CADA Nagpur     | 0.71   | 0.83       | 0.02       | 0.83     | 0.00     |         |
|                | CADA Nashik     | 0.80   | 0.79       | 0.97       | 1.00     | 0.60     |         |
|                | CIPC Chandrapur | 0.25   | 0.58       | 0.58       | 0.67     | 0.21     |         |
|                | NIC Nanded      | 0.28   | 0.70       | 0.30       | 0.70     | 0.14     |         |
|                | PIC Pune        | 0.59   | 1.09       | 0.87       | 1.09     | 0.30     |         |
|                | YIC Yavatmal    | 1.82   | No Recov   | No Recov   | 1.90     | 0.00     |         |
| Surplus        | CADA Nagpur     | 0.64   | 0.76       | 0.44       | 0.78     | 0.39     | 0.44    |
| Abundant       | CADA Pune       | 0.79   | 0.70       | 1.00       | 1.00     | 0.00     | 0.65    |
|                | CIPC Chandrapur | 0.34   | 0.57       | 0.23       | 0.69     | 0.00     |         |
|                | KIC Ratnagiri   | 0.21   | 0.08       | 0.12       | 1.00     | 0.04     |         |
|                | NKIPC Thane     | 0.61   | 0.55       | 0.69       | 0.84     | 0.49     |         |
|                | SIC Sangli      | 0.84   | 0.96       | 1.00       | 1.20     | 0.00     |         |
|                | TIC Thane       | 0.78   | 0.96       | 0.88       | 3.03     | 0.33     |         |

Note: 1) Figures in red indicate values exceeding range of graph and not considered for avg .



## **Indicator XII (A): Assessment Recovery Ratio (Irrigation)**

### **Highly deficit Plan Group:**

**CADA Beed:** The average value of the indicator under this circle has decreased from 0.46 to 0.39. Tintraj has the lowest recovery ratio that is 0.12 & Bagalwadi has the highest assessment recovery ratio that is 0.75.

**PIC Pune:** In Chinchodi Patil M.I.Tank the assessment recovery ratio comes to 0.51. It is below state norms

### **Deficit Plan Group:**

**AIC Akola & BIPC Buldana:** Recovery of irrigation revenue against assessment on projects under AIC Akola was low to the state target and than last year revenue recovery. Same is the case with projects under BIPC Buldana.

**CADA Beed:** The average value of the indicator under this circle has increased from 0.01 to 0.77. Hiwarsinga has the lowest recovery ratio that is 0.0 & Bhutekarwadi has the highest assessment recovery that is 0.97.

**CADA Aurangabad:** The average value of the indicator under this circle has decreased from 0.19 to 0.0. Tandulwadi is the only project under this plan group & which has no recovery.

**NIC Nanded:** The average value of the indicator under this circle has decreased from 0.75 to 0.4. Wasur, Daryapur Hiwarsinga has the lowest recovery ratio that is 0.0 & Panshawadi has the highest assessment recovery that is 1.0.

**CADA Jalgaon:** The ratio is 0.81 which is nearer to state norms.

**CADA Nashik:** The ratio is 0.32, which is far below the State norms.

**AIC Akola & BIPC Buldana:** Recovery of irrigation revenue against assessment on projects under AIC Akola was close to the state target and more than last year revenue recovery. However reverse is the case with projects under BIPC Buldana.

### **Normal Plan Group:**

**CADA Nagpur:** Revenue recovery under this circle is more during this year (0.02) as compare to last years performance (0.83)

**CIPC Chandrapur:** Revenue recovery under this circle is more during this year (0.58) as compare to last years performance (0.58)

**NIC Nanded:** The average value of the indicator under this circle has decreased from 0.7 to 0.3.

**CADA Jalgaon:** The ratio is 0.79 since last year, which is nearer to state norms.

**CADA Nashik:** The ratio is improved from 0.79 to 0.97 as compared to last year which is just close to state norms.

**PIC Pune:** Average assessment recovery ratio of three M.I. Projects decreases from 1.00 this year.

**AIC Akola, BIPC Buldana:** Revenue recovery on projects under CADA Nagpur appears to be satisfactory (0.83)

**PIC Pune:** Average assessment recovery ratio of three M.I. Projects increases from 0.66 of last year to 1.00 this year.

**Surplus Plan Group:**

**CADA Nagpur:** Revenue recovery under this circle is less during this year (0.44) but less as compare to last years performance (0.76)

**Abundant Plan Group:**

**CIPC Chandrapur:** Revenue recovery on projects under CIPC Chandrapur was low (0.23) than last year recovery of 0.57

**CADA Pune:** In Thoseghar M.I. tank ratio increases from 0.70 of last year to 1.00 this year.

**N.K.I.P.C. Thane:** Average assessment recovery ratio of two M.I. Projects increased this year to 0.69 from 0.55 last year. But it is below state norms.

**K.I.C.Ratnagiri:** In Shirval Project the ratio increases to 0.12 this year from 0.08 of last year. It is also below the state norms.

## **Chapter-V**

### **Action Taken Report**

Benchmarking process involves number of steps, right from Indicators selection to Monitoring of results obtained through action taken on last years performance deficiencies. Where the Benchmarking of irrigation projects has been a routine process of performance evaluation, preparation of a comprehensive, problem specific action plan for every individual irrigation projects based on the outcome of last year performance & its effective implementation plays an important role in securing the desired improvement.

Since last four years, Water Resources Department is using Benchmarking as an effective tool to evaluate the performances of irrigation projects. Project wise, Indicator wise results along with probable causes for low performances compared to past achievement as well as state targets were made available to field officers with the intention and directives to prepare and implement a project wise consolidated complete action plan. Field officers were stressed to submit the out come of such action plans with its details. Project authorities are no doubt taking the cognizance of the low performances and are taking suitable action to seek the desired improvement in Irrigation Management. But the information gathered so far indicates that instead of preparing a detail, integrated action plan, actions are taken in the form of a single activity.

Only one action taken report for Suki project under CADA Nashik is received in this year. However, as the report is not a broad action plan it is not incorporated in this chapter.

## Chapter 6

### Benchmarking of Water Users Association's - A Case Study

Till the end of June 2007, a potential to the tune of 4.331 Mha has been created in the state. At present, the Irrigation Management of created irrigation potential is managed at Water Resources Department level with 0.393 Mha managed by the 806 Water Users Associations working on Major / Medium and 240 on Minor projects. These WUA's are registered under co-operative act.

Water Resources Department, GOM has categorically taken the decision of handing over the total potential created on all projects to the Water Users Associations by the end of year 2009. Accordingly, an act namely MMISF Act 2005 has been passed in the State Assembly.

At present, Maharashtra Water sector Improvement Program (MWSIP) is under implementation through which a potential to the tune of 0.67 Mha on 286 projects shall be handed over to 1539 WUAs in the stipulated period. The MMISF act 2005 is made applicable to the projects under MWSIP. The cost of the project is Rupees 1700 crores and it is aided by the World Bank. Above mentioned act is made applicable to all projects under MWSIP.

For evaluating the irrigation performance of irrigation projects and bringing about necessary improvement in Irrigation Water Management, the state is using Benchmarking as an effective management tool for last four years.

Considering huge public capital investment in construction of number of projects along with large amount of funds investment involved in rehabilitation of irrigation system before its handing over to WUAs, evaluation of the performance of each individual WUA each year by Benchmarking was felt necessary and was under consideration for last two years. Benchmarking of WUAs will help to determine and bring necessary improvement in the over all functioning of each WUA. Also it will help the WR Department to ascertain whether the objectives of handing over the Irrigation Management to WUAs are attained or not.

#### 6.1 Objectives of Benchmarking of WUAs

1. To determine the participation of beneficiaries in working of WUA'S.
2. To ascertain whether the WUA is getting the water as per sanctioned water quota and management funds/share of revenue collected as per the agreement and guidelines or not.
3. To check the increase in area irrigated and Out Put after the irrigation management is handed over to WUA
4. To determine per ha water use (excluding well/ river lift ) in the jurisdiction of WUA
5. To check the conjunctive use of wells in the command of WUA.
6. To determine the financial status / self sustainability of WUA.

- 7 To check whether water is judiciously/ equitably supplied to beneficiaries at Head, Middle and Tail reaches of the canal system under the jurisdiction of WUA
- 8 To fix the area of problems so as to take suitable action to bring necessary changes in the working of WUA and improve the performance of a distribution system, ultimately of the project.
- 9 To create a sense of responsibility /accountability among the office bearers of WUA and discipline among members of the association.

## **6.2 Proforma for data submission for Benchmarking of WUA:**

For calling the data/information for benchmarking of WUA, Proforma 1 and 3 are designed in regional language (Marathi). These Proforma in English are shown on subsequent pages of this report.

For accurate evaluation of performance of WUA, 9 indicators are designed and shown in Proforma 2 in subsequent pages of this report.

## **6.3 Selection of WUA for benchmarking study:**

Looking to the large number of WUA's formed so far, to initialize the process as a case study, it was decided to call the data of two WUAs established on major project from each revenue division. Secondly, preference was given to WUAs which are in working for a longer range of period.

Accordingly, data for 11 WUAs on 7 Major projects from 5 Irrigation circles has been analyzed broadly in this typical study.

Plan group wise classification of these WUAs shows that, 1, 4, 5 and 1 WUA in number, belongs to Highly Deficit, Deficit, and Normal and Abundant plan group respectively.

## **6.4 Methodology adopted for Benchmarking:**

Considering the WUA selected are in limited numbers and it is a case study, Benchmarking is carried out by

- i) comparing the performances of individual WUA with state target
- ii) Comparing the performances of two WUA's on the same project,
- iii) Comparing the performances of two WUA's from two different projects but from same plan group and
- iv) Incase of some indicators, Benchmarking is carried out by comparing the performances of WUA's from two different Plan groups also.

## **6.5 Targets:**

Targets for indicator 1 to 3, 6, 7 & 9 are shown in Proforma 2 and are self explanatory.

Target for indicator IV (Annual water use per unit area irrigated) is decided by reducing the target for BM of irrigation projects (7692 cum/ha) by 30% for transit losses in canal as the water supplied to WUA'S is measured at off taking of the concerned Distributory /Minor. Thus target becomes 5384 cum/ha.

Target for indicator V (Annual expenditure per ha for irrigation management) for a WUA is evaluated as follows:

Total command area of a WUA: 200 ha (Presumption)  
Salary of Staff and other mandatory expenditure for IWM per annum

| S.N. | Item                               | Amount   |
|------|------------------------------------|----------|
| 1    | Salary of One Canal inspector      | Rs 36000 |
| 2    | Salary of One Labour               | Rs 18000 |
| 3    | Office Building Rent               | Rs 6000  |
| 4    | Maintenance of distribution system | Rs 4000  |
| 5    | Telephone/ electricity bill        | Rs 12000 |
| 6    | Report publication etc             | Rs 3000  |
| 7    | Stationary                         | Rs 1000  |
|      | Total                              | Rs 80000 |

$$\begin{aligned} \text{Annual expenditure per unit area irrigated} &= \frac{80000}{200} \\ &= \text{Rs } 400 / \text{ha} \end{aligned}$$

## 6.6 Indicator wise analysis

As mentioned here before, data of 2007-08 year for Benchmarking of WUA was received from some selected WUA'S in prescribed Proforma and indicator values were obtained as shown in table 1.

Indicator wise, WUA wise findings along with charts are given in Chart I to IX Due to insufficient availability of data Indicator III (Ratio of Actual Area irrigated to the Area Irrigated before functioning of WUA) and Indicator VI (Ratio of annual expenditure by WUA to recovered water charges) are not evaluated for this year. However evaluation of WUA in respect of these indicators shall be carried out from next year.

### **Indicator I: Percentage of WUA'S member to total beneficiaries in command of WUA**

Except WUA's on Mula and Waghad Projects, WUAs on remaining projects has membership ranging between 52 to 85 %. It is opined that, to increase farmers participation in irrigation water management & to increase the efficiency of WUA'S, 100% membership should be developed on each WUA.

### **Indicator II: Percentage of Water supplied to the sanctioned Water quota**

In Pandurang ( CADA Solapur ) & Bhagawati (CADA Beed) WUAs, water

is supplied as per standard water quota. However ,in rest of the WUAs, the percentage of water supplied ranges from 17 to 80%.

**Indicator IV: Annual Irrigation water use per unit area Irrigated (Cum/ha)**

1. Water use per unit area irrigated on WUA under Highly deficit & deficit plan groups is more than that in normal plan group.
2. In Purna WUA(NIC Nanded) annual irrigation water supply per unit area irrigated exceeds state norm .

**Indicator V : Annual expenditure per Ha by WUA for irrigation management (Rs /ha)**

Annual expenditure per Ha for irrigation management in all WUA's except Pandurang( CADA Solapur) and Shukhleshwar( CADA Beed) exceeds state target. These WUA's should take proper measures to maintain the economic sustainability.

**Indicator VII : Ratio of Water revenue remitted to Govt. to Actual water revenue recovered**

No WUA except Shukleshwar and Bhagwati ( CADA Beed ) had paid the recovered water charges to the Govt. The remittance of revenue ranges from 30% to 72%.

**Indicator VIII : Annual Output per ha of area irrigated (Rs/ha)**

1. Out put per ha on all WUA's except Godawari WUA on Purna project appears to be satisfactory as compared to the fixed norm.
2. In general, out put per ha observed on WUA's in normal plan group was more than that observed on WUA's in deficit plan group.

**Indicator IX :Equity performance**

From the available data it reveals that, water was not supplied to all beneficiaries in the command by respective WUA's except Krishna and Godawari on Purna project.

**6.7 Action Ahead**

1. At present looking to large numbers of WUAs, Benchmarking of selected WUAs on Major project is possible at State level. After handing over of total irrigation management of project to WUA, Benchmarking of apex (Canal, Dystributory) WUAs would be feasible at State level.
2. In case of Medium and Minor projects which are totally handed over to WUAs for irrigation management, Benchmarking of WUAs on Medium and

Minor projects could be entrusted to concerned Sub divisions and Divisions respectively. In case of Major projects, Benchmarking of WUAs on Canal can be carried out at circle level.

3. To bring about necessary improvement in functioning of WUAs, monitoring of Benchmarking of Major, Medium and Minor project's WUAs at concerned Division, Circle and Chief Engineer level will be desirable.



**Prescribed format for Information to be submitted for Benchmarking of Water User Association (Proforma 1)**

Irrigation Year :

| Name of Project | Name of Circle | Basin No. | Name of Water User Association | Number of beneficiaries in command of WUA | Number of WUA members | Sanction Quota of WUA as per agreement (TCM) |       |             |       | Actual quota received to WUA (TCM) |       |             |       |
|-----------------|----------------|-----------|--------------------------------|---|-----------------------|--|-------|-------------|-------|------------------------------------|-------|-------------|-------|
|                 |                |           |                                |   |                       | Kharif                                       | Rabbi | Hot weather | Total | Kharif                             | Rabbi | Hot weather | Total |
| 1               | 2              | 3         | 4                              | 5   | 6                     | 7  | 8     | 9           | 10    | 11                                 | 12    | 13          | 14    |
|                 |                |           |                                |   |                       |  |       |             |       |                                    |       |             |       |

| Annual crop area measured in command of WUA before establishment (ha) | Crop area measured during irrigation year (ha) | Total area irrigated in irrigation year (ha) | Expenditure on irrigation management during irrigation year (Rs) | Water cess recovery during irrigation year (Rs) | Water cess paid to Govt.during irrigation year (Rs.) | Annual income during irrigation year (Rs.) | Number of WUA members in total length of channel |        |      | Number of WUA members as per actual area irrigated during the year |        |      |
|---|--|--|--|---|--|--|--|--------|------|--|--------|------|
|   |  |  |  |   |  |  | Head   | Middle | Tail | Head   | Middle | Tail |
| 15  | 16   | 17   | 18   | 19  | 20   | 21   | 22   | 23     | 24   | 25   | 26     | 27   |
|   |  |  |  |   |  |  |  |        |      |  |        |      |

| <b>Details of Indicators used for Benchmarking of Water User Association (Proforma 2)</b> |  |                                    |  |
|---|--|------------------------------------|--|
| <b>Indicator No.</b>  | <b>Indicator</b>   | <b>Target / Achievement</b>        | <b>Purpose of Indicator</b>  |
| Indicator No. I   | Percentage of WUA members to total beneficiaries in Command of WUA                 | 100%                               | To check the participation of beneficiaries in the Irrigation Management of WUA  |
|   | (Column 6 /Column 5)* 100  |                                    |  |
| Indicator No. II  | Percentage of water supplied to sanction quota                                     | 100%                               | To check the actual water quota received as compared to the sanction water quota during the irrigation year.   |
|   | (Column 14 /Column 10)* 100  |                                    |  |
| Indicator No. III   | Ratio of actual area irrigated to the area irrigated before functioning of the WUA | More than 1                        | To check whether area irrigated is increased or decreased after the formation of WUA.  |
|   | (Column 16 /Column 15)   |                                    |  |
| Indicator No. IV  | Annual irrigation water use per unit area irrigated (Cum/ha)                       | Less than 5382 Cum                 | To check the economic, efficient use of water in irrigation management.  |
|   | (Column 14 x 1000/Column 17)   |                                    |  |
| Indicator No. V   | Annual expenditure per ha for irrigation management (Rs/ha)                        | Rs. 400/ha                         | To check whether the expenditure for irrigation management is economic or not.   |
|   | (Column 18 /Column 16)   |                                    |  |
| Indicator No. VI  | Ratio of annual expenditure to recovered water charges                             | More than 1                        | To check and decide the self sustainability of WUA.  |
|   | (Column 19 /Column 18)   |                                    |  |
| Indicator No. VII   | Ratio of water revenue remitted to Govt. to actual water revenue recovered         | More than 1                        | To check the actual remittance of water revenue to Govt. from the collected water charges.   |
|   | (Column 20 /Column 19)   |                                    |  |
| Indicator No. VIII  | Annual Output per ha of area irrigated (Rs/ha)                                     | As per State target for project BM | To check actual increase in income of beneficiaries due to freedom of crops and participation of farmers in irrigation management.   |
|   | (Column 21 /Column 16)   |                                    |  |
| Indicator No. IX  | Equity Performance   |                                    | To check equitable distribution of water in head, middle & tail reaches of WUA. Reaches are defined by equally dividing the total beneficiaries in three reaches namely head, middle and tail. |
|   | Head   | One                                |  |
|   | (Column 25 /Column 22)   |                                    |  |
|   | Middle   | One                                |  |
| (Column 26 /Column 23)  |  |                                    |  |
| Tail  | One  |                                    |  |
| (Column 27 /Column 24)  |  |                                    |  |

**Circle wise Ancillary information of WUA in Highly Deficit & Abundant Plan group (Proforma 3)**

| <b>Sr. No.</b> | <b>Item /Circle</b>   | <b>CADA Solapur</b>  | <b>SIC Sangli</b>  |
|----------------|---|--|--|
|                | Project   | Bhima (Ujani)  | Warna  |
|                | Name of WUA   | Pandurang  | Nanaksingh   |
| 1              | Jurisdiction of WUA   | Dy No.35 On Ujani LBC  | Dy No.1,2,3  |
| 2              | ICA of WUA  | 117 ha   | 111 ha   |
| 3              | Is WUA included in MWSIP?   | No   | No   |
| 4              | Date of handing over of IWM (command area) to the WUA   | 12-12-1994   | 6-8-2004   |
| 5              | No of wells in command area of WUA  |  |  |
|                | a) Before handing over  | 50   | 0  |
|                | b) Total as on today  | 58   | 0  |
| 6              | Subsidy received during the irrigation year   | 0  | 0  |
| 7              | Year for which subsidy is not received  |  | 2004-05, 2005-06, 2006-07  |
| 8              | Dose the well water was used as an additional source for irrigation during the irrigation year      | Yes  | No   |
| 9              | Area under perennial crops during the irrigation year   | 58 ha  | 26.60 ha   |
| 10             | No. of staff employed for irrigation management by WUA  | 2  | 3  |
| 11             | Does water supply was on volumetric basis or not  | Volumetric basis   | Volumetric basis   |
| 12             | Assessment of water charges were on volumetric basis or as per crop area measurement                | On volumetric basis  | On volumetric basis  |
| 13             | Percentage of actual live storage to the design storage in the reservoir during the irrigation year | 100%   | 100%   |
| 14             | Reasons for less achievements compared to the set target during the irrigation year                 | 1) There is conjunctive use of wells & canal.<br>2) There is no recovery of pending arrears. | 1) Deteriorated disnet system.<br>2) Fill Irrigation potential is not created.<br>3) Association is in preliminary stage |

**Circle wise Ancillary information of WUA in Deficit Plan group (Proforma 3)**

| Sr. No. | Item /Circle  | CADA Beed   |                                       |
|---------|---|---|---------------------------------------|
|         |   | Majalgaon   |                                       |
|         |   | Bhagwati  | Shukleshwar                           |
|         | Project   |   |                                       |
|         | Name of WUA   |   |                                       |
| 1       | Jurisdiction of WUA   | Minor No.1 to 7/<br>Tilsmukh branch/<br>MRBC  | Minor No.8/ GM Branch<br>Canal / MRBC |
| 2       | ICA of WUA  | 555 ha  | 725 ha                                |
| 3       | Is WUA included in MWSIP?   | No  | No                                    |
| 4       | Date of handing over of IWM (command area) to the WUA   | 25-03-1998  | 9-10-1998                             |
| 5       | No of wells in command area of WUA  |   |                                       |
|         | a) Before handing over  | 2   | 68                                    |
|         | b) Total as on today  | 61 (33 wells, 28 Bore wells)  | 93                                    |
| 6       | Subsidy received during the irrigation year   | 0   | 0                                     |
| 7       | Year for which subsidy is not received  | Nil   | Nil                                   |
| 8       | Dose the well water was used as an additional source for irrigation during the irrigation year      | Yes   | Yes                                   |
| 9       | Area under perennial crops during the irrigation year   | 311 ha  | 159.88ha                              |
| 10      | No. of staff employed for irrigation management by WUA  | 2   | 2                                     |
| 11      | Does water supply was on volumetric basis or not  | Volumetric basis  | Volumetric basis                      |
| 12      | Assessment of water charges were on volumetric basis or as per crop area measurement                | On volumetric basis   | On volumetric basis                   |
| 13      | Percentage of actual live storage to the design storage in the reservoir during the irrigation year | 100%  | 84%                                   |
| 14      | Reasons for less achievements compared to the set target during the irrigation year                 | 1) Less response of members to WUA<br>2) Due to more numbers of wells in command there was low response to canal irrigation<br>3) Trend of cultivators towards cash crops |                                       |

| Sr. No. | Item /Circle  | NIC Nanded  |                                    |
|---------|---|---|------------------------------------|
|         |   | Purna   |                                    |
|         | Project   |   |                                    |
|         | Name of WUA   | Krishna   | Godawari                           |
| 1       | Jurisdiction of WUA   | Malegaon Minor /Dour Minor / camp colony DO No.5 to 9 | Kamtha Minor 1,2,3/ Do No.10 to 15 |
| 2       | ICA of WUA  | 1036 ha   | 619 ha                             |
| 3       | Is WUA included in MWSIP?   | No  | No                                 |
| 4       | Date of handing over of IWM (command area) to the WUA   | 3.7.1991  | 3.7.1991                           |
| 5       | No of wells in command area of WUA  |   |                                    |
|         | a) Before handing over  | 92  | 78                                 |
|         | b) Total as on today  | 140   | 102                                |
| 6       | Subsidy received during the irrigation year   | No  | No                                 |
| 7       | Year for which subsidy is not received  | Nil   | Nil                                |
| 8       | Dose the well water was used as an additional source for irrigation during the irrigation year      | Yes   | Yes                                |
| 9       | Area under perennial crops during the irrigation year   | 96.20 ha  | 32.00 ha                           |
| 10      | No. of staff employed for irrigation management by WUA  | 7   | 5                                  |
| 11      | Does water supply was on volumetric basis or not  | Volumetric basis                                      | Volumetric basis                   |
| 12      | Assessment of water charges were on volumetric basis or as per crop area measurement                | On volumetric basis                                   | On volumetric basis                |
| 13      | Percentage of actual live storage to the design storage in the reservoir during the irrigation year | 100%  | 100%                               |
| 14      | Reasons for less achievements compared to the set target during the irrigation year                 | Information not available                             |                                    |

**Circle wise Ancillary information of WUA in normal plan group (Proforma 3)**

| Sr. No. | CADA Nashik   |                                      |  |  |  |                              |
|---------|---|--------------------------------------|--|--|--|------------------------------|
|         | Project   | Mula                                 | Waghad   | Palkhed  |  |                              |
|         | Name of WUA   | Datt                                 | Jai Yogeshwar                                      | Sant Muktabai                                  | Jai Ambika                                     | Jai Yogeshwar                |
| 1       | Jurisdiction of WUA   | Dy.No. 7 Mula Right Bank Canal       | Dy.No.18 A & 19 & Minor 8/ Waghad Right Bank Canal | Dy.14 Palkhed Left Bank Canal                  | Dy.10 & 11 Palkhed Left Bank Canal             | Dy.9 Palkhed Left Bank Canal |
| 2       | ICA of WUA  | 361 ha                               | 390 ha   | 462 ha   | 534 ha   | 463 ha                       |
| 3       | Is WUA included in MWSIP?   | Yes                                  | Yes  | No   | No   | No                           |
| 4       | Date of handing over of IWM (command area) to the WUA   | 30/06/1989                           | 19/03/1992   | 10/2006  | 01/ 11/2002                                    | 31/01/1996                   |
| 5       | No of wells in command area of WUA  |                                      |  |  |  |                              |
|         | a) Before handing over  | 162                                  | 152  | 379  | 390  | 200                          |
|         | b) Total as on today  | 182                                  | 229  | 391  | 415  | 248                          |
| 6       | Subsidy received during the irrigation year   | Nil                                  | Nil  | Yes<br>Rs. 23100/-                             | Nil  | Nil                          |
| 7       | Year for which subsidy is not received  | Since 2001-2002 Subsidy not received | 2007-08  | 2007-08  | 2006-07and 2007-08                             | 2006-07and 2007-08           |
| 8       | Dose the well water was used as an additional source for irrigation during the irrigation year      | Yes                                  | Yes  | Yes  | Yes  | Yes                          |
| 9       | Area under perennial crops during the irrigation year   | 177.60 Ha.                           | 171.40ha   | 887 ha   | 714 ha   | 26 ha                        |
| 10      | No. of staff employed for irrigation management by WUA  | 3                                    | 3  | 1  | 1  | 1                            |
| 11      | Does water supply was on volumetric basis or not  | Volumetric basis                     | Volumetric basis                                   | Volumetric basis                               | Volumetric basis                               | Volumetric basis             |
| 12      | Assessment of water charges were on volumetric basis or as per crop area measurement                | On volumetric basis                  | On volumetric basis                                | On volumetric basis                            | On volumetric basis                            | On volumetric basis          |
| 13      | Percentage of actual live storage to the design storage in the reservoir during the irrigation year | 100%                                 | 100%   | 100%   | 100%   | 100%                         |
| 14      | Reasons for less achievements compared to the set target during the irrigation year                 | Information not available            | More rainfall                                      | More rain fall in command area in Rabbi season | More rain fall in command area in Rabbi season | More rain fall               |

**Details of Project and WUA wise Indicator's values (Table 1)**

| <b>Indicator I: Percentage of WUA'S member to total beneficiaries in command of WUA</b> |              |              |                |       |
|---|--------------|--------------|----------------|-------|
| Plan group  | Circle       | Project      | W U A          | Value |
| Highly Deficit  | CADA Solapur | Bhima(Ujani) | Shri Pandurang | 61    |
| Deficit   | CADA Beed    | Majalgaon    | Shukleshwar    | 59    |
|   |              |              | Bhagwati       | 70    |
| Normal  | NIC Nanded   | Purna        | Krishna        | 74    |
|   |              |              | Godawari       | 69    |
|   | CADA Nashik  | Mula         | Datta          | 100   |
|   |              | Waghad       | Jai Yogeshwar  | 100   |
|   |              | Palkhed      | St.Muktabai    | 54    |
|   |              |              | Jai Ambika     | 85    |
| Jai Yogeshwar   | 52           |              |                |       |
| Abundant  | SIC Sangli   | Warna        | Nanaksingh     | 52    |
| <b>Indicator II: Percentage of applicable water quota to sanctioned water quota</b>     |              |              |                |       |
| Plan group  | Circle       | Project      | W U A          | Value |
| Highly Deficit  | CADA Solapur | Bhima(Ujani) | Shri Pandurang | 100   |
| Deficit   | CADA Beed    | Majalgaon    | Shukleshwar    | 47    |
|   |              |              | Bhagwati       | 100   |
|   | NIC Nanded   | Purna        | Krishna        | 24    |
| Normal  | CADA Nashik  | Mula         | Godavari       | 55    |
|   |              |              | Datta          | 80    |
|   |              | Waghad       | Jai Yogeshwar  | 53    |
|   |              | Palkhed      | St.Muktabai    | 18    |
|   |              |              | Jai Ambika     | 17    |
| Jai Yogeshwar   | 34           |              |                |       |
| Abundant  | SIC Sangali  | Warna        | Nanaksingh     | 100   |
| <b>Indicator IV: Annual Irrigation water use per unit area Irrigated (Cum/ha)</b>       |              |              |                |       |
| Plan group  | Circle       | Project      | W U A          | Value |
| Highly Deficit  | CADA Solapur | Bhima(Ujani) | Shri Pandurang | 3873  |
| Deficit   | CADA Beed    | Majalgaon    | Shukleshwar    | 1008  |
|   |              |              | Bhagwati       | 2070  |
|   | NIC Nanded   | Purna        | Krishna        | 4343  |
| Normal  | CADA Nashik  | Mula         | Godavari       | 6979  |
|   |              |              | Datta          | 3187  |
|   |              | Waghad       | Jai Yogeshwar  | 3317  |
|   |              | Palkhed      | St.Muktabai    | 2175  |
|   |              |              | Jai Ambika     | 2693  |
| Jai Yogeshwar   | 1055         |              |                |       |

|   |               |                |                |              |
|---|---------------|----------------|----------------|--------------|
| Abundant  | SIC Sangali   | Warna          | Nanaksingh     | 5382         |
| <b>Indicator V: Annual O&amp;M expenditure (Rs/ha)</b>  |               |                |                |              |
| <b>Plan group</b>   | <b>Circle</b> | <b>Project</b> | <b>W U A</b>   | <b>Value</b> |
| Highly Deficit  | CADA Solapur  | Bhima(Ujani)   | Shri Pandurang | 354          |
| Deficit   | CADA Beed     | Majalgaon      | Shukleshwar    | 271          |
|   |               |                | Bhagwati       | 881          |
|   | NIC Nanded    | Purna          | Krishna        | 994          |
|   |               |                | Godavari       | 603          |
| Normal  | CADA Nashik   | Mula           | Datta          | 267          |
|   |               | Waghad         | Jai Yogeshwar  | 817          |
|   |               | Palkhed        | St.Muktabai    | 836          |
|   |               |                | Jai Ambika     | 597          |
|   |               |                | Jai Yogeshwar  | 118          |
| Abundant  | SIC Sangali   | Warna          | Nanaksingh     | 495          |
| <b>Indicator VII: Ratio of water revenue remitted to Govt to actual water revenue recovered</b> |               |                |                |              |
| <b>Plan group</b>   | <b>Circle</b> | <b>Project</b> | <b>W U A</b>   | <b>Value</b> |
| Highly Deficit  | CADA Solapur  | Bhima(Ujani)   | Shri Pandurang | 0.60         |
| Deficit   | CADA Beed     | Majalgaon      | Shukleshwar    | 1.00         |
|   |               |                | Bhagwati       | 1.00         |
|   | NIC Nanded    | Purna          | Krishna        | 0.32         |
|   |               |                | Godavari       | 0.35         |
| Normal  | CADA Nashik   | Mula           | Datta          | 0.1          |
|   |               | Waghad         | Jai Yogeshwar  | 0.39         |
|   |               | Palkhed        | St.Muktabai    | 0.24         |
|   |               |                | Jai Ambika     | 0.49         |
|   |               |                | Jai Yogeshwar  | 0.72         |
| Abundant  | SIC Sangali   | Warna          | Nanaksingh     | 0.83         |



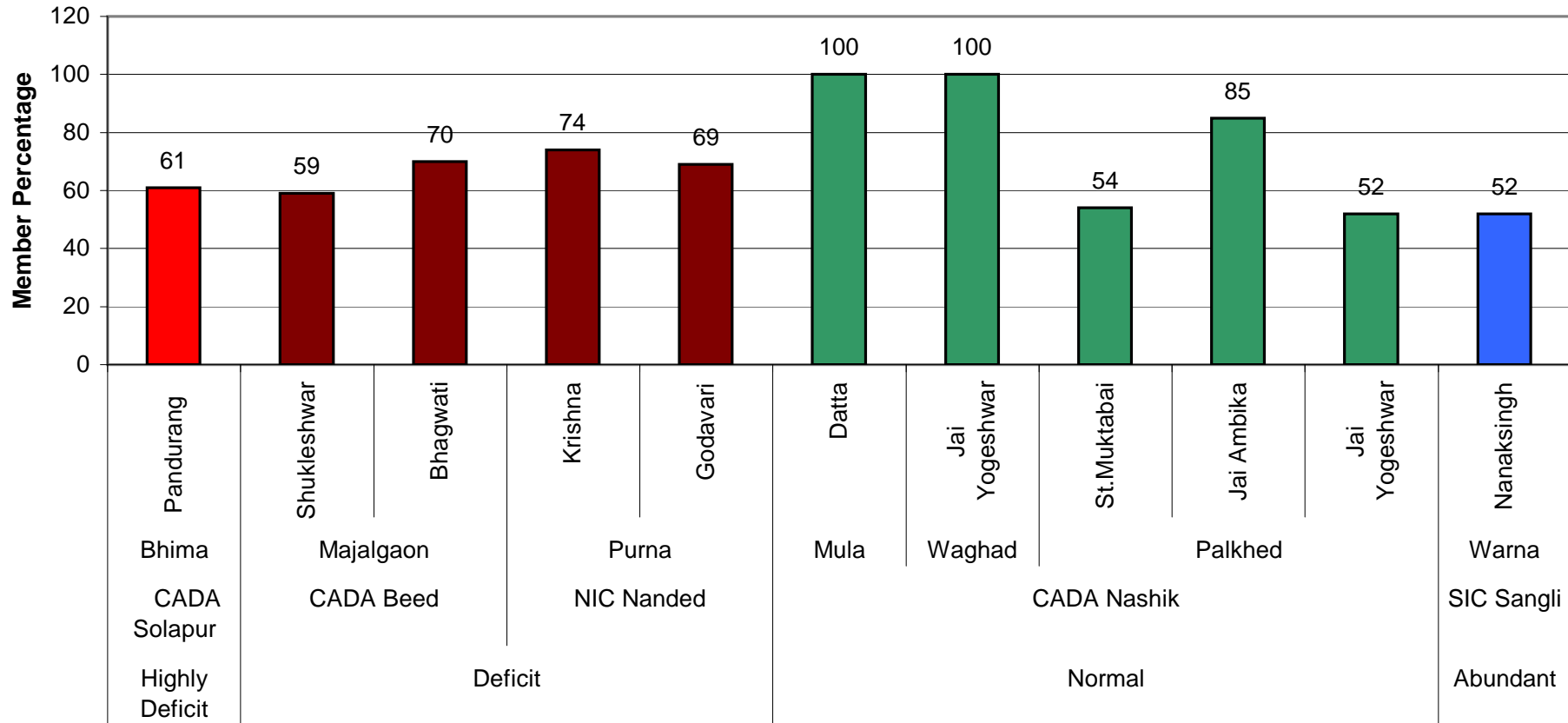
| <b>Indicator VIII: Annual Output per ha of area irrigated (Rs/ha) (Table 1 continued)</b> |               |                |                |              |
|---|---------------|----------------|----------------|--------------|
| <b>Plan group</b>   | <b>Circle</b> | <b>Project</b> | <b>W U A</b>   | <b>Value</b> |
| Highly Deficit  | CADA Solapur  | Bhima(Ujani)   | Shri Pandurang | 39440        |
| Deficit   | CADA Beed     | Majalgaon      | Shukleshwar    | 33687        |
|   |               |                | Bhagwati       | 72698        |
| Normal  | NIC Nanded    | Purna          | Krishna        | 26687        |
|   |               |                | Godawari       | 12390        |
|   | CADA Nashik   | Mula           | Datta          | 58959        |
|   |               | Waghad         | Jai Yogeshwar  | 189174       |
|   |               | Palkhed        | St.Muktabai    | 1109619      |
|   |               |                | Jai Ambika     | 1121936      |
| Abundant  | SIC Sangali   | Warna          | Jai Yogeshwar  | 217075       |
|   |               |                | Nanaksingh     | 42284        |

**Indicator IX: Equity performance**

| <b>Plan Group</b> | <b>Circle</b> | <b>Project</b> | <b>WUA</b>    | <b>Reach</b> | <b>Value</b> |
|-------------------|---------------|----------------|---------------|--------------|--------------|
| Highly Deficit    | CADA Solapur  | Bhima (Ujjani) | Pandurang     | H            | 0.88         |
|                   |               |                |               | M            | 0.91         |
|                   |               |                |               | T            | 0.84         |
| Deficit           | CADA Beed     | Majalgaon      | Shukleshwar   | H            | 0.46         |
|                   |               |                |               | M            | 0.37         |
|                   |               |                |               | T            | 0.17         |
|                   |               |                | Bhagawati     | H            | 0.63         |
|                   |               |                |               | M            | 0.70         |
|                   |               |                |               | T            | 0.83         |
|                   | NIC Nanded    | Purna          | Krishna       | H            | 1.00         |
|                   |               |                |               | M            | 1.00         |
|                   |               |                |               | T            | 1.00         |
| Godavari          |               |                | H             | 1.00         |              |
|                   |               |                | M             | 1.00         |              |
|                   |               |                | T             | 1.00         |              |
| Normal            | CADA Nashik   | Mula           | Datta         | H            | 0.34         |
|                   |               |                |               | M            | 0.49         |
|                   |               |                |               | T            | 0.50         |
|                   |               | Waghad         | Jai Yogeshwar | H            | 1.00         |
|                   |               |                |               | M            | 0.38         |
|                   |               |                |               | T            | 0.24         |
|                   |               | Palkhed        | St. Muktabai  | H            | 0.21         |
|                   |               |                |               | M            | 0.30         |
|                   |               |                |               | T            | 0.56         |
|                   |               |                | Jai Ambika    | H            | 0.86         |
|                   |               |                |               | M            | 0.34         |
|                   |               |                |               | T            | 0.37         |
|                   |               | Jai Yogeshwar  | H             | 1.00         |              |
|                   |               |                | M             | 1.00         |              |
|                   |               |                | T             | 1.00         |              |
| Abundant          | SIC Sangli    | Warna          | Nanaksingh    | H            | 0.77         |
|                   |               |                |               | M            | 0.37         |
|                   |               |                |               | T            | 0.23         |

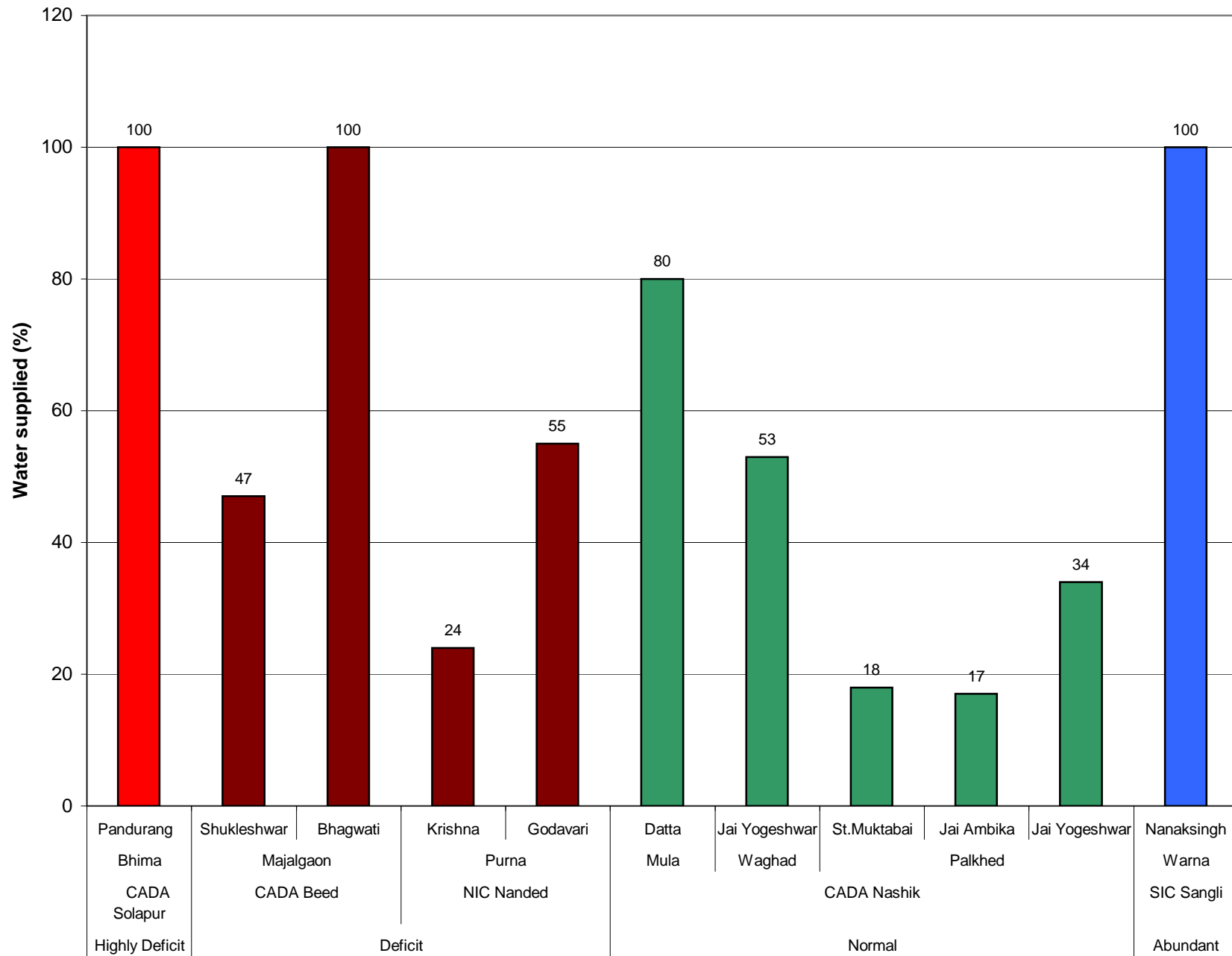
# IND I

## Percentage of WUA members to total beneficiaries

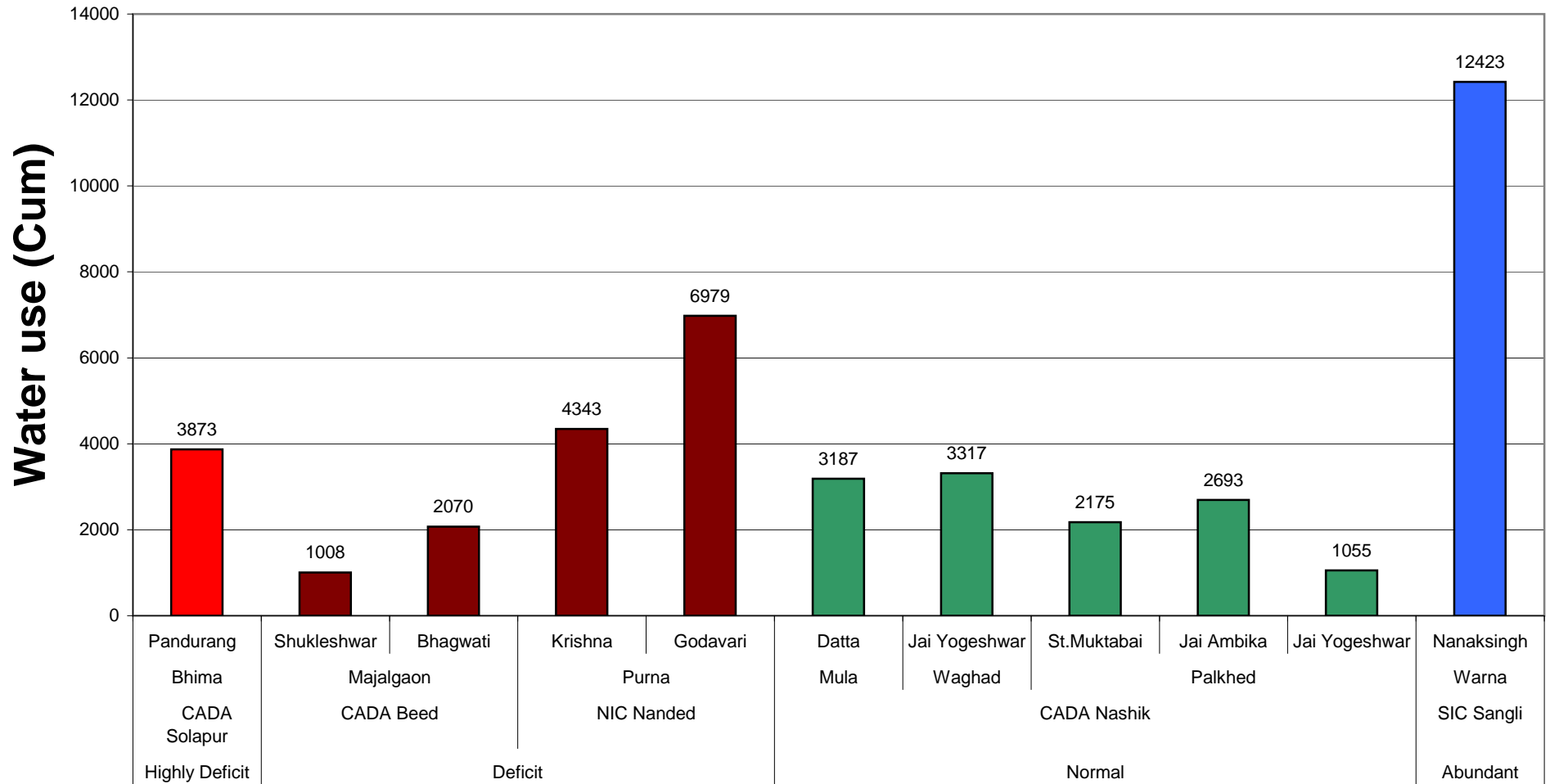




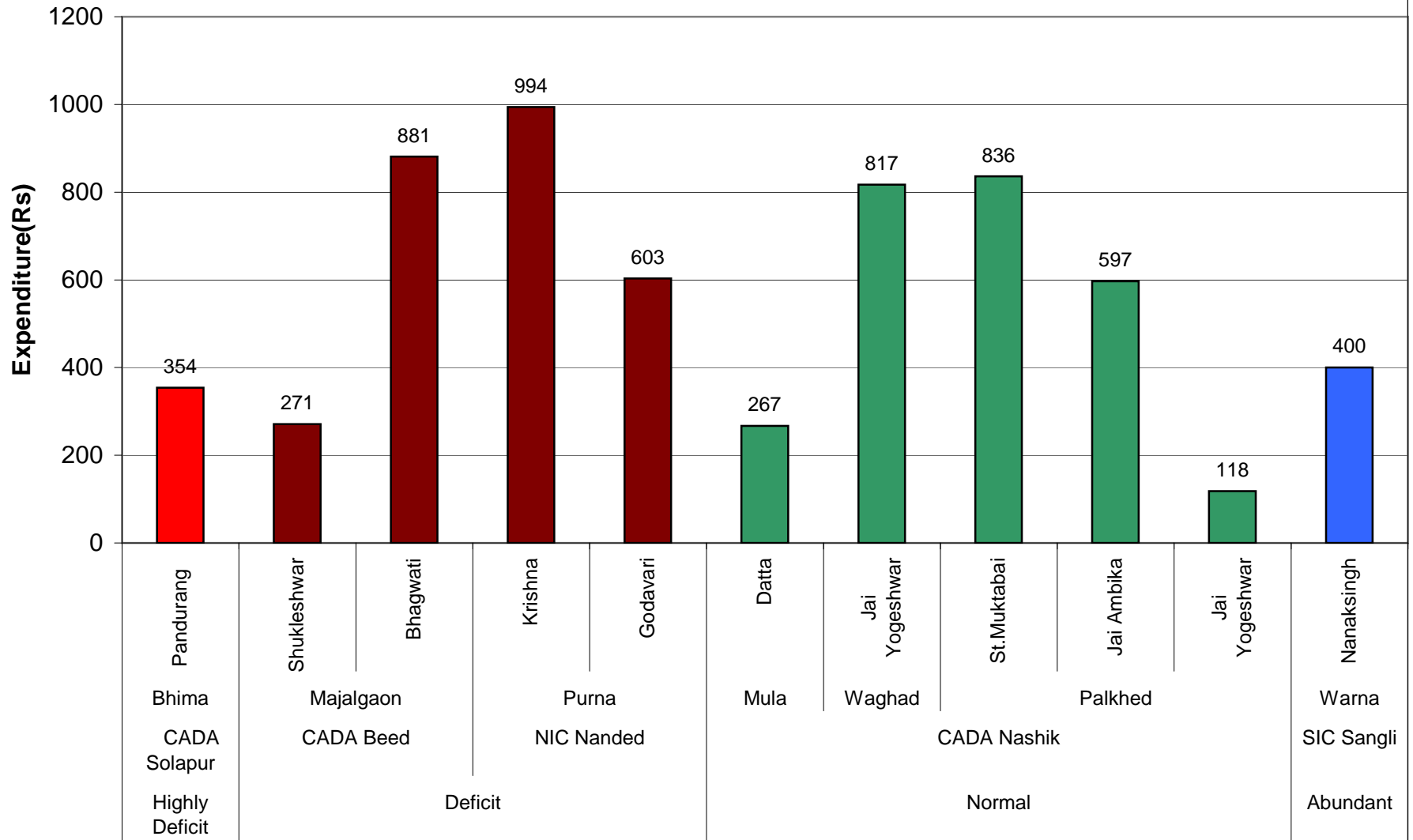
## IND II-Percentage of Water supplied to sanctioned water quota



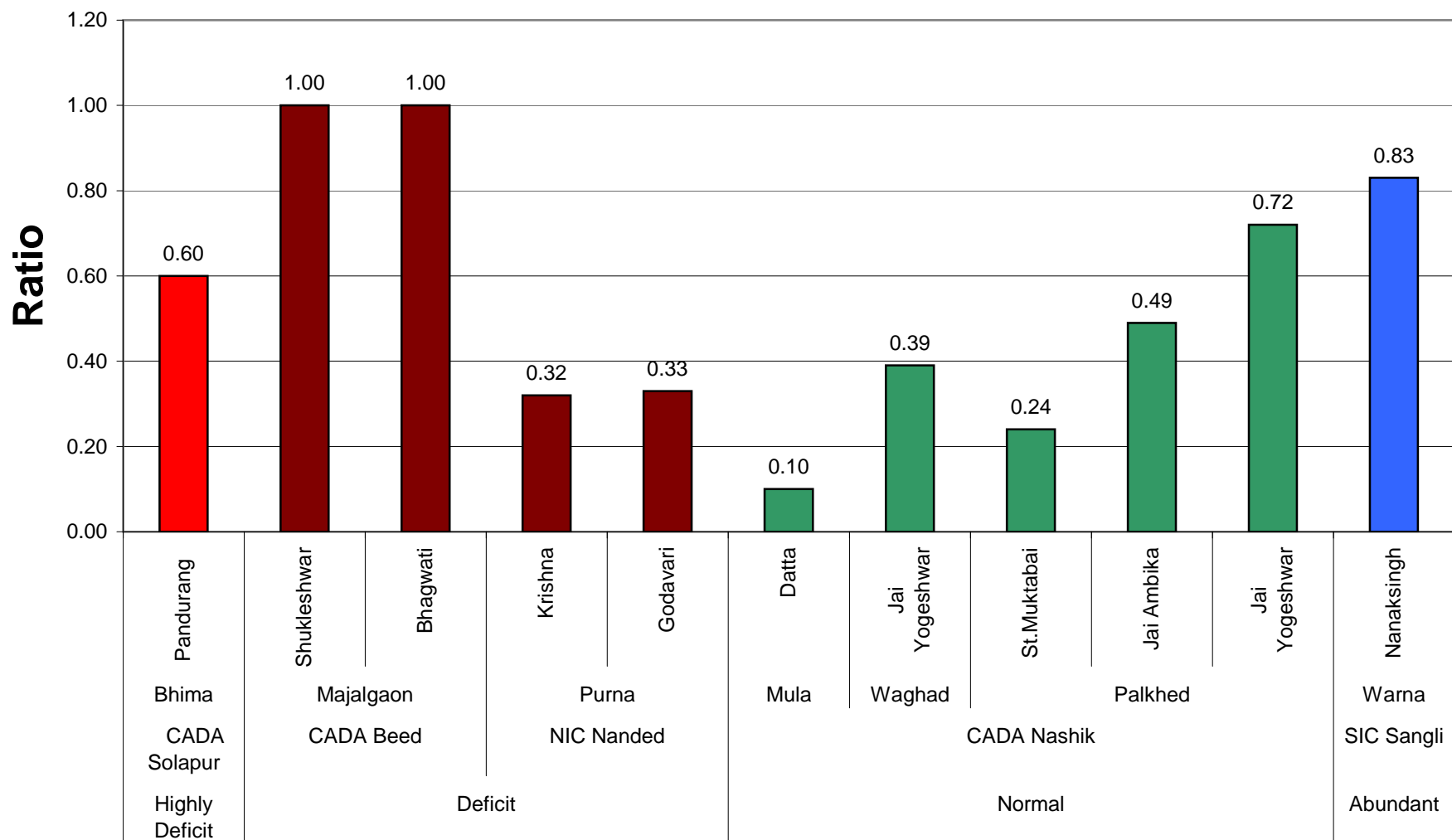
## IND IV-Annual Irrigation water use per unit area irrigated(cum/ha)



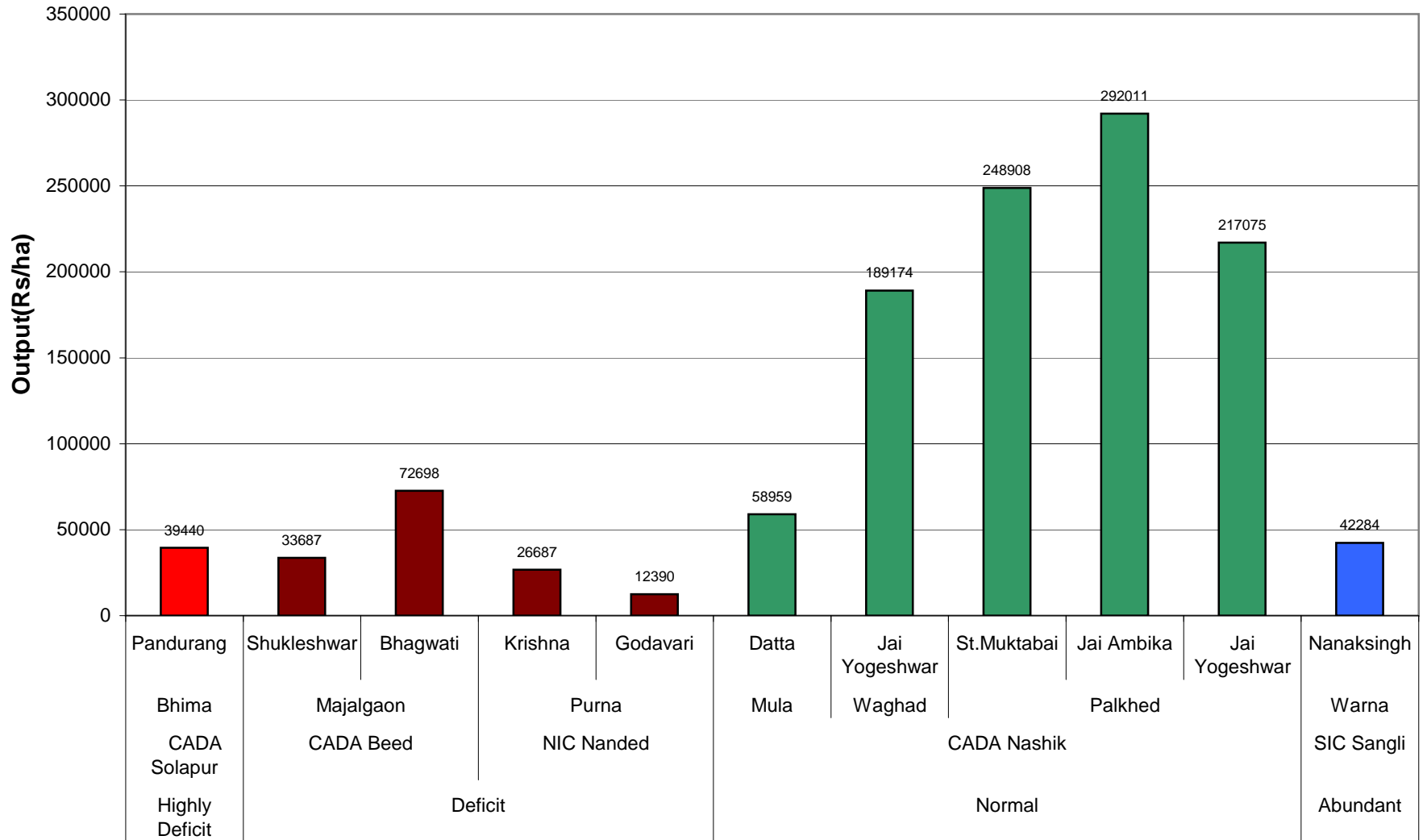
## IND V-Annual Expenditure per ha by WUA for irrigation management (Rs./ha)



## IND VII-Ratio of water revenue remitted to Govt. to actual water revenue



## IND VIII-Annual output per ha of area irrigated(Rs/ha)





## Chapter 7

### BENCHMARKING OF

#### WATER AND LAND MANAGEMENT INSTITUTE (WALMI), AURANGABAD ( 2007 – 08)

#### 7.0 INTRODUCTION

WALMI, Aurangabad (Maharashtra) is a premier training institute of its kind in India established on 1<sup>st</sup> October 1980 as an autonomous registered society under Water Resources Department, Government of Maharashtra for imparting the training in IWM.

#### 7.1 Objectives

The main objectives of the institute are:

- ◆ To provide in-service training of interdisciplinary nature to staff engaged in Irrigation Water Management and Land Development in Water Resources and Agriculture Departments
- ◆ Action and adaptive research pertaining to Irrigation Project Commands.
- ◆ Providing consultancy services, production of training materials (in print and electronic media), conducting seminars / workshops and organizing farmers' training programmes

Training is imparted by highly qualified, experienced and well-trained faculty members. WALMI has five faculties:

- ◆ Faculty of Engineering
- ◆ Faculty of Agriculture
- ◆ Faculty of Science (Computer Applications & Hydraulics)
- ◆ Faculty of Social Sciences
- ◆ Faculty of Integrated Watershed Development & Management

An optimal mix of core faculty and senior field officers on deputation to WALMI constituting the faculty, is one of the vital factors of this institute's strength and performance.

#### 7.2 BENCHMARKING OF WALMI

##### 7.2.1 Performance Indicators

The benchmarking technique is introduced for the performance evaluation of the irrigation systems in the State of Maharashtra. Benchmarking is a continuous process of measuring one's own performance and practices against the best competitors and is a sequential exercise of learning from other's experience. The guidelines are available on the categories of performance indicators for Irrigation Systems. The benchmarking of WALMI, Aurangabad, which is a premier training institute in IWM is carried out by developing the performance indicators based on the activities of the institute. The performance is also compared with the requirement wherever possible.

WALMI, being a training institute, has developed its own performance indicators as below:

- 1) Institutional performance
- 2) Qualitative performance
- 3) Financial indicators
- 4) Environmental aspects

### **7.2.2 Institutional Performance**

The institutional performance of the WALMI is assessed based on the following four indicators:

**a) Strength of teaching staff**

The strength of teaching staff is compared with the potential sanctioned positions and available positions over the period of last five years.

**b) Annual training workload (trainee days)**

The annual training workload is compared with the planned training workload and achievement for last five years.

**c) Annual training workload of long term courses (Participants)**

The number of participants actually participated in long term courses (25/21 week's duration) are compared with the potential strength of the long term courses for last five years.

**d) Annual Farmers' training workload (Participants)**

The number of participants actually participated in different farmer's training programmes are compared with the expected participants.

### **7.2.3 Qualitative Performance**

The overall quality of institute's activities is assessed based on the following indicators:

- a) End of Course evaluation (i) L.T.C. (ii) S.T.C.
- b) Research activities
- c) Revisions & Development of publications
- d) Papers presented & published (state, national & international level)

### **7.2.4 Financial Indicators**

This is assessed based on the actual expenses of the institute:

- a) Cost of training per trainee day
- b) Central Assistance for training programme

## **7.2.5 Environmental Aspects**

Environmental indicators will give information about involvement of participants in the training activities to acquire the knowledge, skills and attitudes for their jobs. It will also indicate the conduciveness of environment in the institute.

- a) Referencing WALMI Library
- b) Visitors in WALMI

## **7.3 ASSESSMENT OF PERFORMANCE OF WALMI (YEAR 2003 – 2008)**

### **(i) Strength of teaching staff**

The strength of teaching staff shows a declining trend in last five years is almost constant ranging in between 25 to 27 as against the sanctioned strength of 47. The existence of sizeable core faculty is one of the vital factors of this institute's strength and performance. (Fig.1)

### **(ii) Annual training workload (trainee days)**

Achievement in last five years is more than the planned training workload. The average planning of the last eight years is about 30000. The actual achieved training workload is ranging in between 30000 – 34366. In almost all the years the achieved is more than the planned. (Fig.2)

### **(iii) Annual training workload of long term courses (participants)**

The number of participants actually attended in LTC for all the years were more than the potential strength (Fig.3) This is because of efforts taken by the Institute and making it mandatory for all the nominated participants.

### **(iv) Annual Farmers' training workload (participants)**

This indicator shows that the number of farmers participated in the courses are much higher than the expected participants (Fig.4). In all the years, the participation of farmers in the training programmes is increasing due to more thrust is given to farmers training programmes by the Institute.

### **(v) End of course evaluation**

In the method of end of course evaluation, the trainee officers are asked to give rating for various questions related to training. The average rating of end course evaluation for long term courses and short term courses (having period more than 4 days) during the year is around four, which indicates that overall quality of training as excellent (Fig.5)

### **(vi) Research activities**

There is a continuous improvement from the year 2003 – 04. This activity is now taken up as supplemental activities along with the training activities of the Institute. (Fig.6).

### **(vii) Revisions & Development of publications**

This can not be assessed exactly on yearly basis. The fig.7 shows the actual status of this activity.

**(viii) Papers / Articles presented & published (state, national & international level)**

The numbers are in increasing order and are highest during the year 2003 – 04. The publications of papers/articles published by the faculty are around 28 per year (Fig.8). The faculties are being motivated in this regard.

**(ix) Cost of training per trainee day**

The cost of training per trainee day is different in the different years and depends upon the number of trainee days (annual training workload) and the budget allotment. (Fig.9).This includes the expenditure on administration and maintenance of institute's estate. The average cost of training is around Rs. 3,500 per trainee day.

**(x) Central assistance for training programme  
Deleted**

**(xi) Referencing WALMI Library**

This indicates that use of library is increasing among the faculties, training participants and visitors (Fig.11).

**(xii) Visitors in WALMI**

The visitors in WALMI are increasing year after year which is a good indicator for the capabilities of the WALMI (Fig.12).

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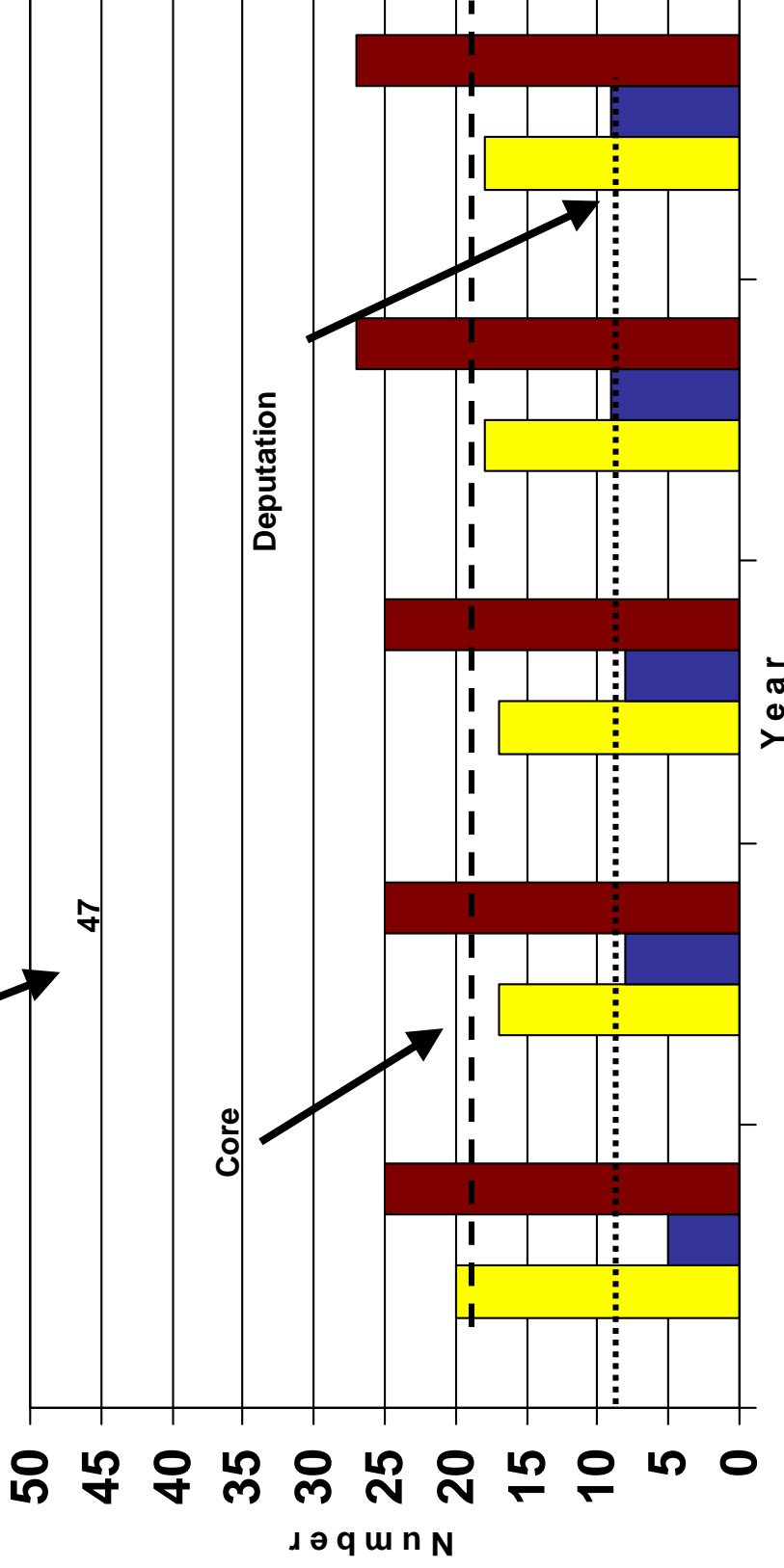
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The visitors in WALMI are increasing year after year which is a good indicator for the capabilities of the WALMI (Fig.12).



# Strength of Teaching Staff

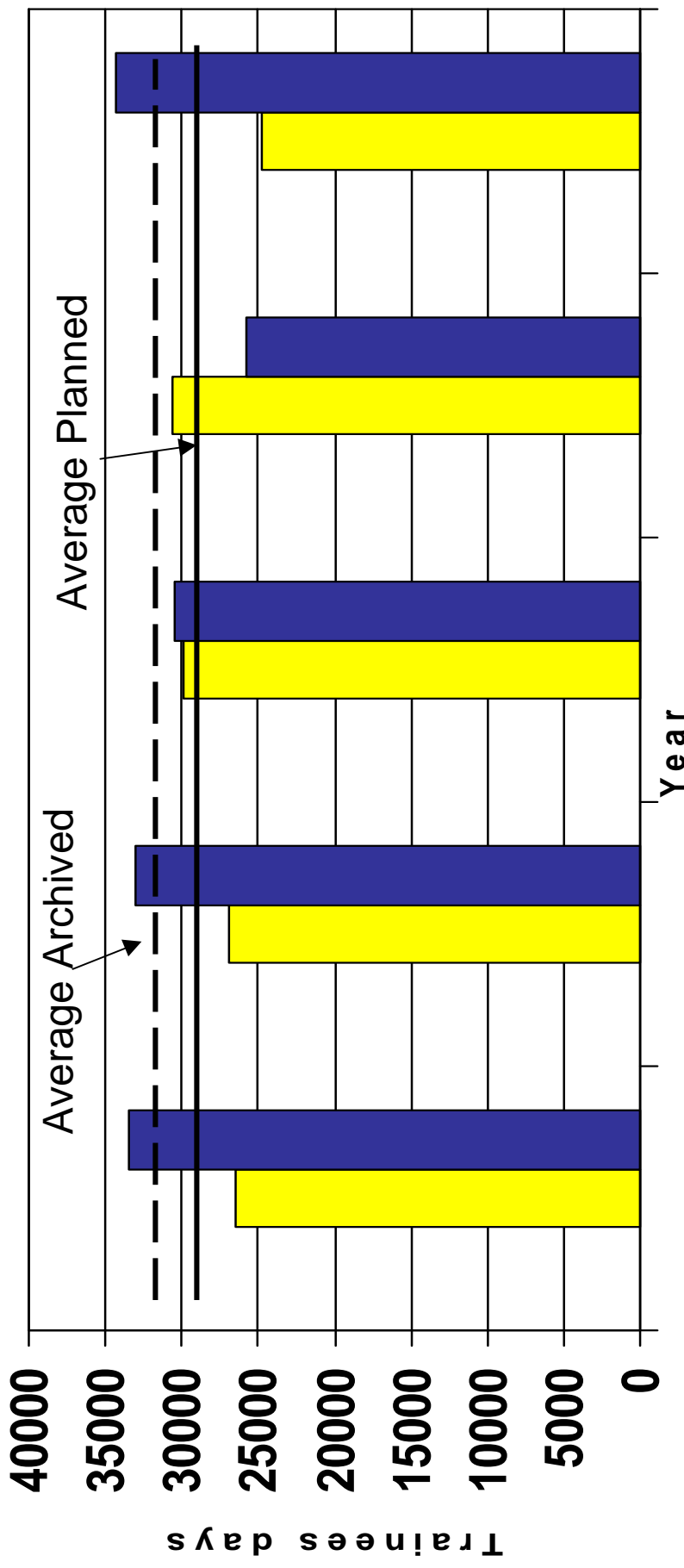
Sanctioned Strength



| Year          | 03-04 | 04-05 | 05-06 | 06-07 | 07-08 |
|---------------|-------|-------|-------|-------|-------|
| Core Faculty  | 20    | 17    | 17    | 18    | 18    |
| Deputationist | 5     | 8     | 8     | 9     | 9     |
| Total Faculty | 25    | 25    | 25    | 27    | 27    |

Fig. No. 1

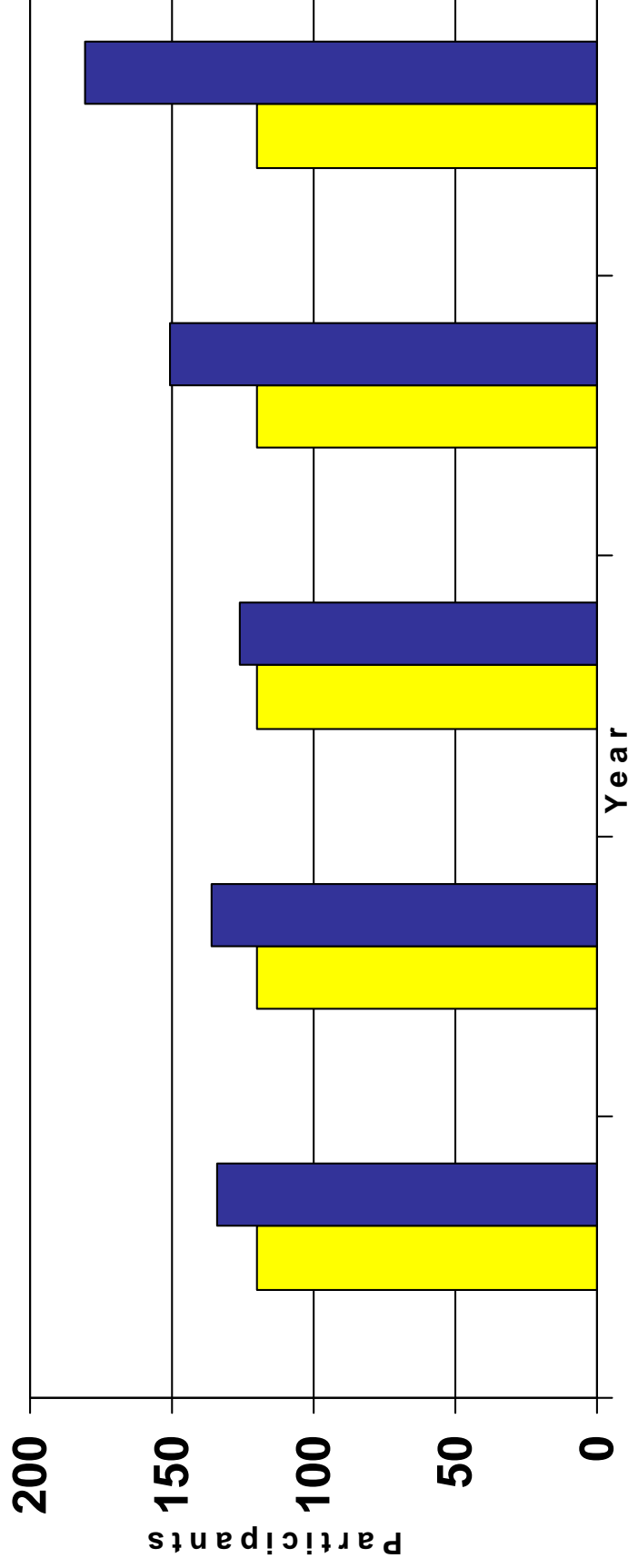
# Annual Training Workload (Trainee days)



| Year     | 03-04 | 04-05 | 05-06 | 06-07 | 07-08 |
|----------|-------|-------|-------|-------|-------|
| Planned  | 26540 | 26834 | 29926 | 30630 | 24792 |
| Achieved | 33464 | 33039 | 30410 | 25786 | 34366 |

Fig. No. 2

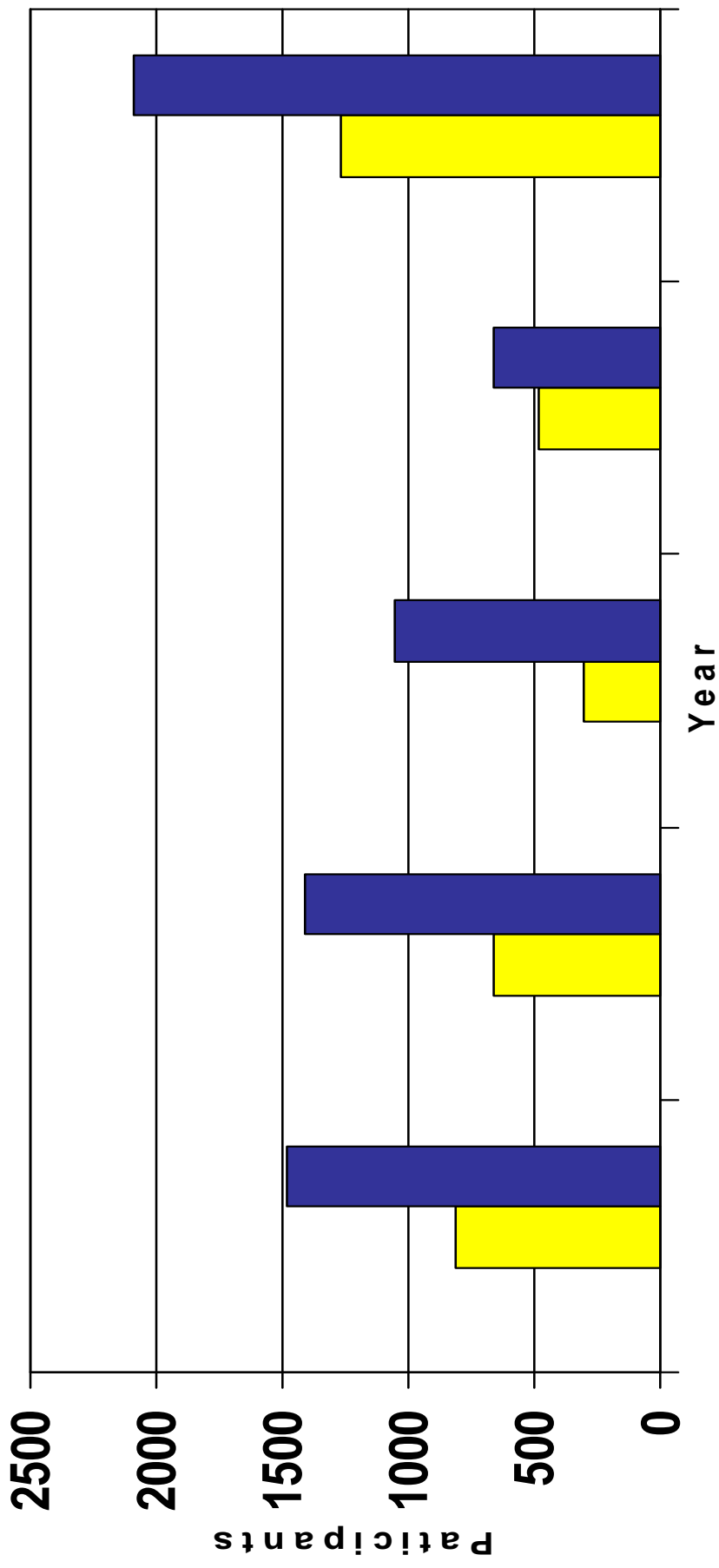
# Annual Training Workload of Long-term Courses (Participants)



| Year     | 03-04 | 04-05 | 05-06 | 06-07 | 07-08 |
|----------|-------|-------|-------|-------|-------|
| Planned  | 120   | 120   | 120   | 120   | 120   |
| Achieved | 134   | 136   | 126   | 151   | 181   |

Fig. No. 3

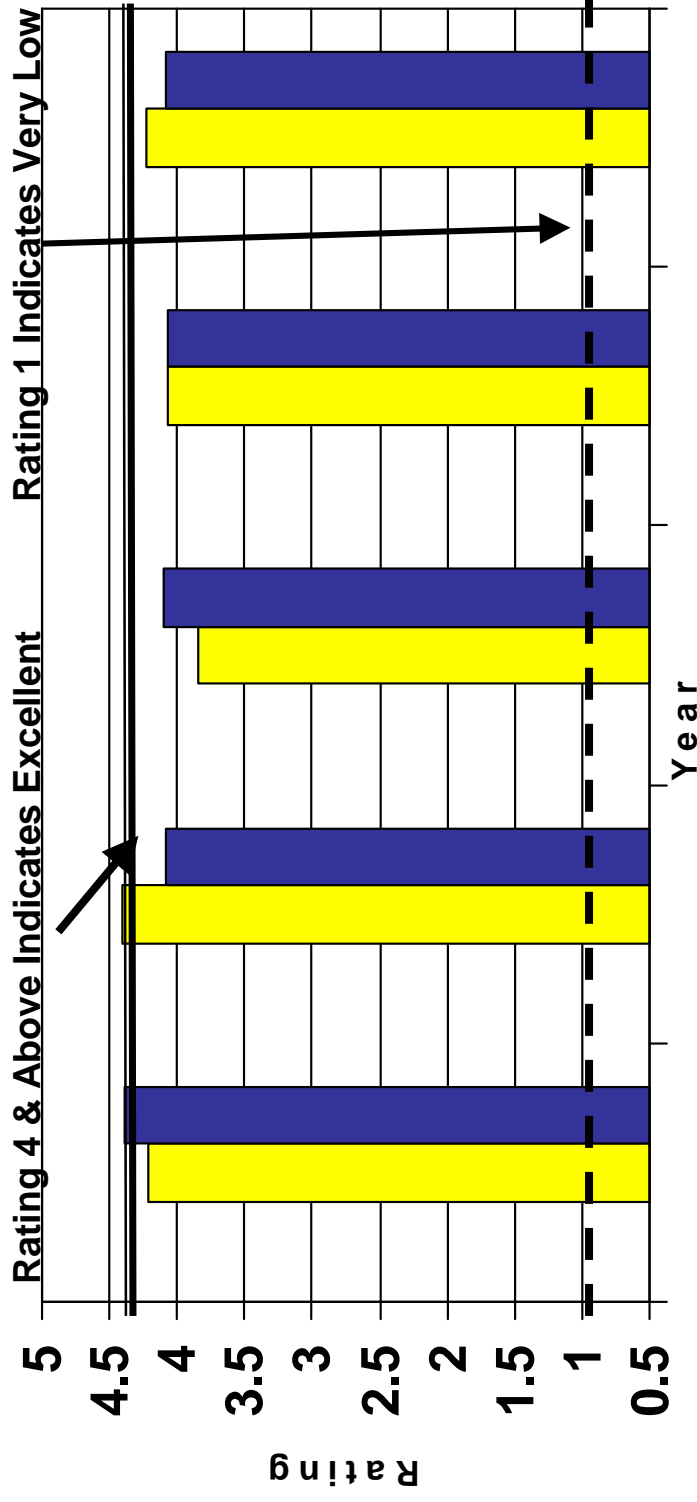
# Annual Farmers training Workload (Participants)



| Year     | 03-04 | 04-05 | 05-06 | 06-07 | 07-08 |
|----------|-------|-------|-------|-------|-------|
| Planned  | 810   | 660   | 300   | 480   | 1270  |
| Achieved | 1482  | 1411  | 1055  | 658   | 2093  |

Fig. No. 4

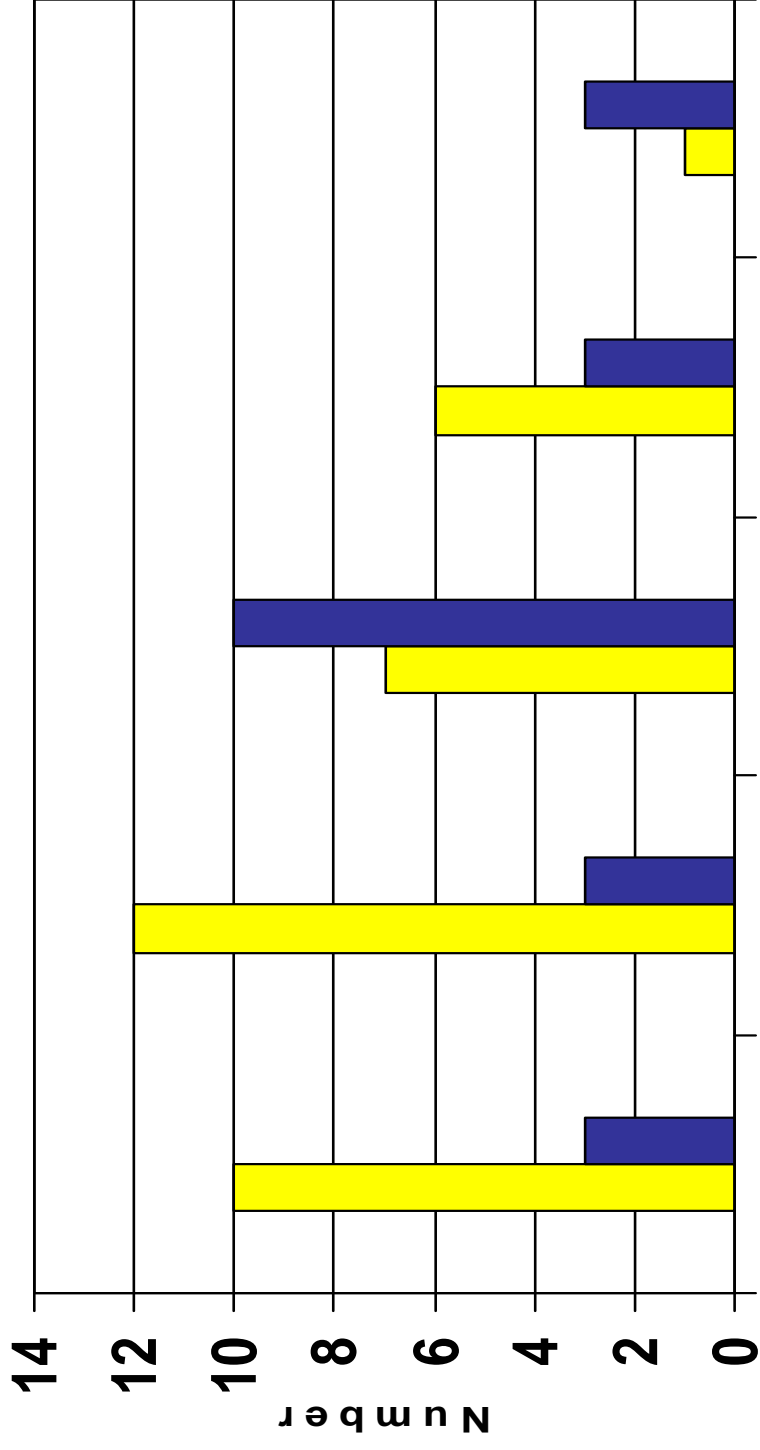
# End of Course Evaluation



| Year               | 03-04 | 04-05 | 05-06 | 06 - 07 | 07 - 08 |
|--------------------|-------|-------|-------|---------|---------|
| Av. Rating for LTC | 4.22  | 4.41  | 3.85  | 4.06    | 4.23    |
| Av. Rating for STC | 4.39  | 4.08  | 4.1   | 4.07    | 4.08    |

Fig. No. 5

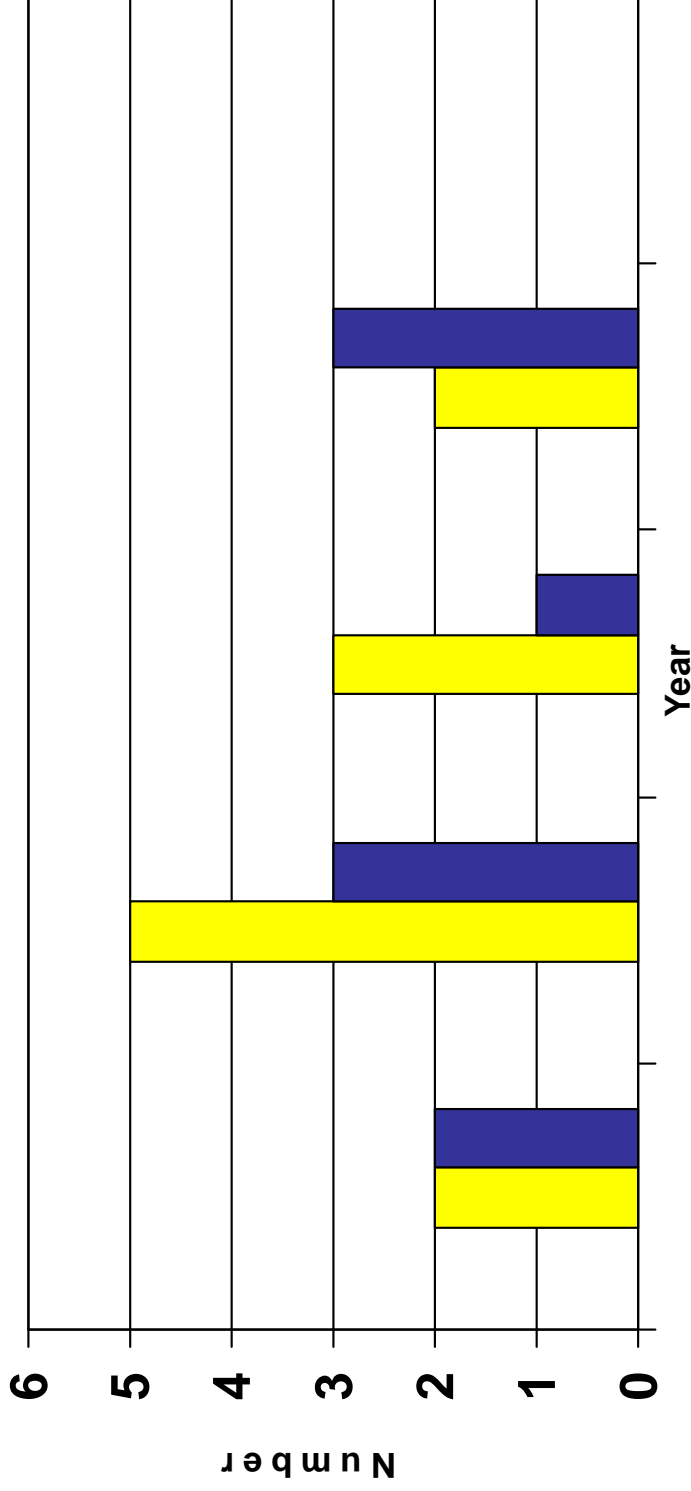
# Research Activities



| Year                       | 03-04 | 04-05 | 05-06 | 06-07 | 07-08 |
|----------------------------|-------|-------|-------|-------|-------|
| Research Studies in Hand   | 10    | 12    | 7     | 6     | 1     |
| Research Studies Completed | 3     | 3     | 10    | 3     | 3     |
|                            |       |       |       |       |       |

Fig. No. 6

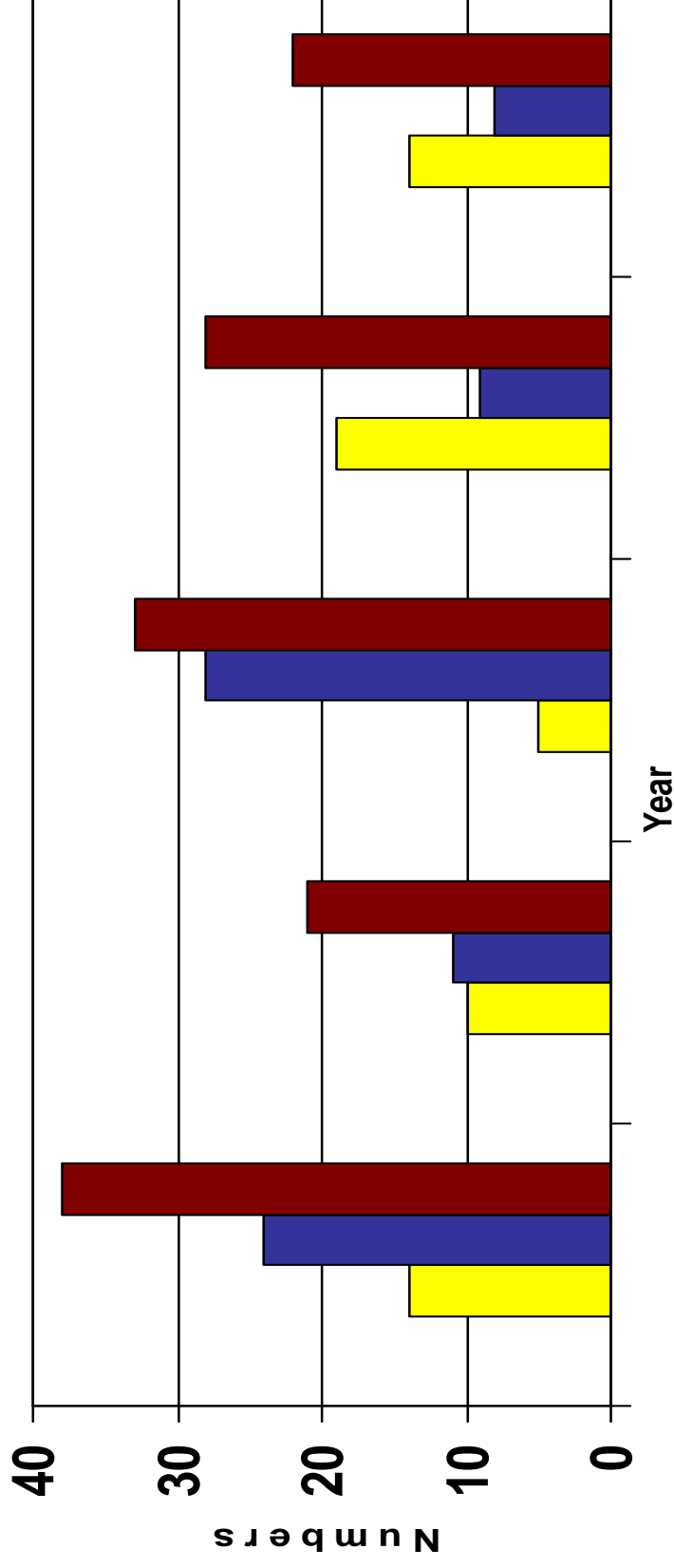
# Revisions & Development of Publications



| Year             | 03-04 | 04-05 | 05-06 | 06-07 | 07-08 |
|------------------|-------|-------|-------|-------|-------|
| Revisions        | 2     | 5     | 3     | 2     | --    |
| New Publications | 2     | 3     | 1     | 3     | --    |

Fig. No. 7

## Papers / Articles Presented & Published (State/National & International Level)

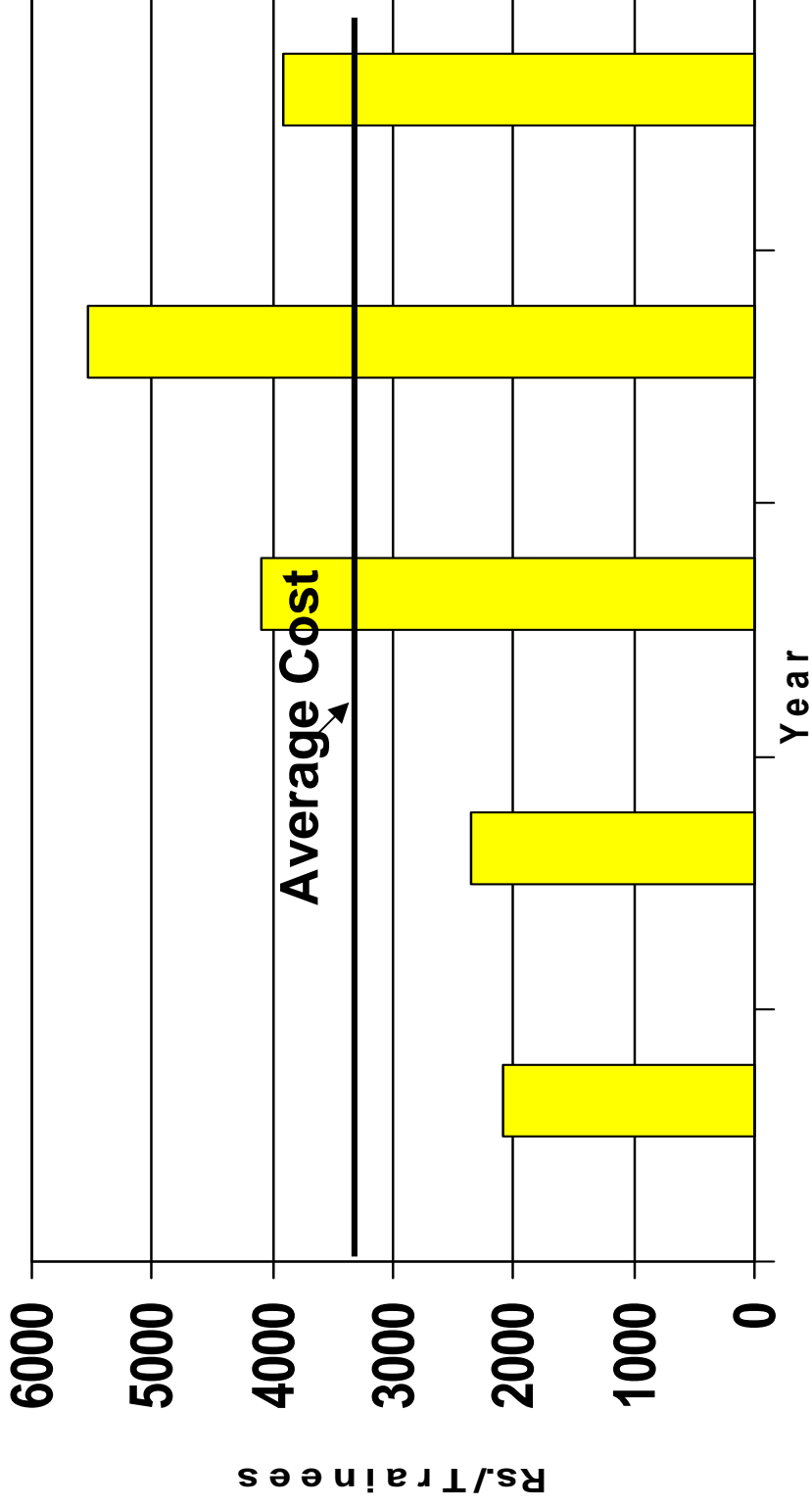


| Year     | 03-04 | 04-05 | 05-06 | 06-07 | 07-08 |
|----------|-------|-------|-------|-------|-------|
| Papers   | 14    | 10    | 5     | 19    | 14    |
| Articles | 24    | 11    | 28    | 9     | 8     |
| Total    | 38    | 21    | 33    | 28    | 22    |

Fig. No. 8



# Cost of Training per Trainee day

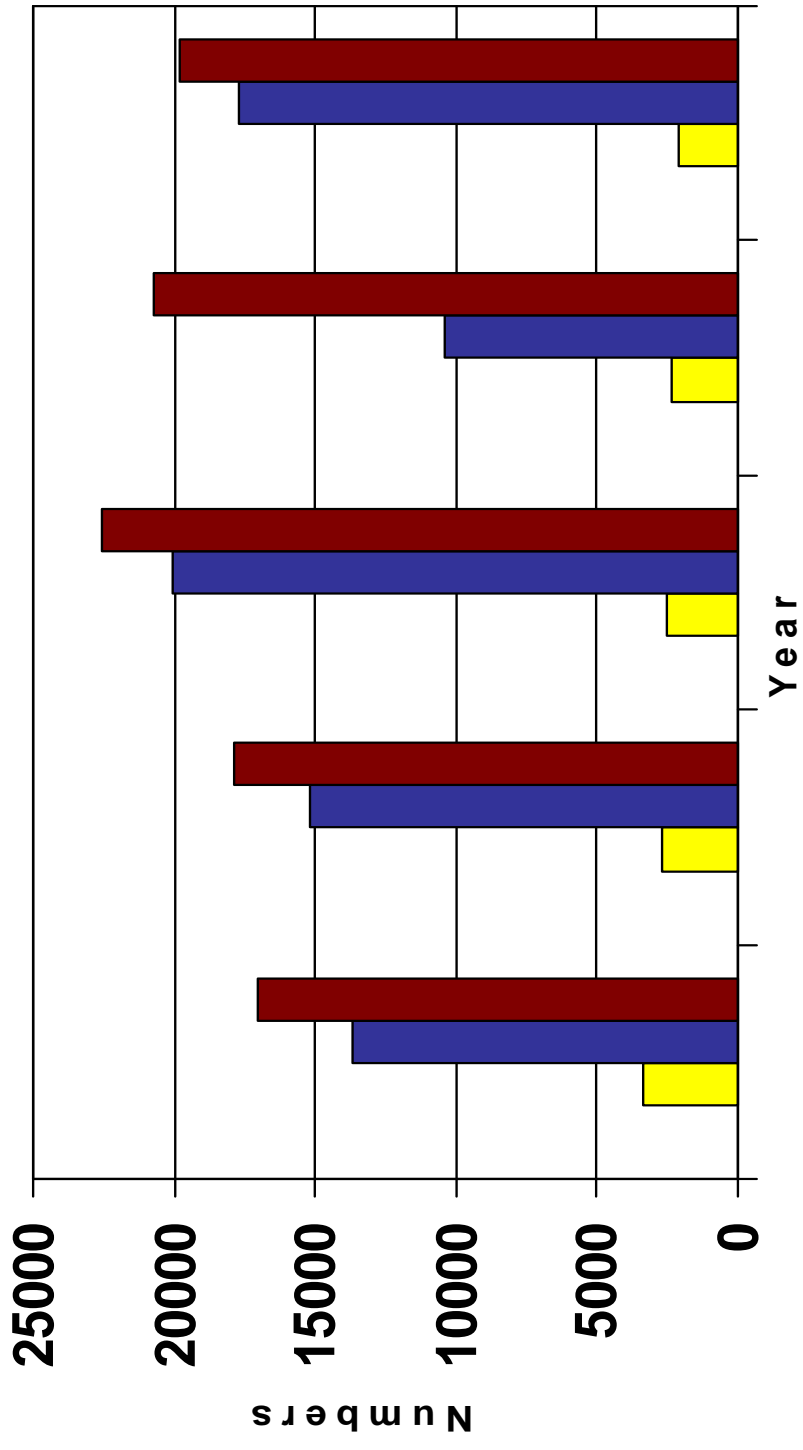


| Year               | 03-04 | 04-05 | 05-06 | 06-07 | 07-08 |
|--------------------|-------|-------|-------|-------|-------|
| Rs per Trainee day | 2079  | 2348  | 4102  | 5530  | 3920  |

(Note :-Trainee days of MWSIP training not included for calculating of training cost)

Fig. No. 9

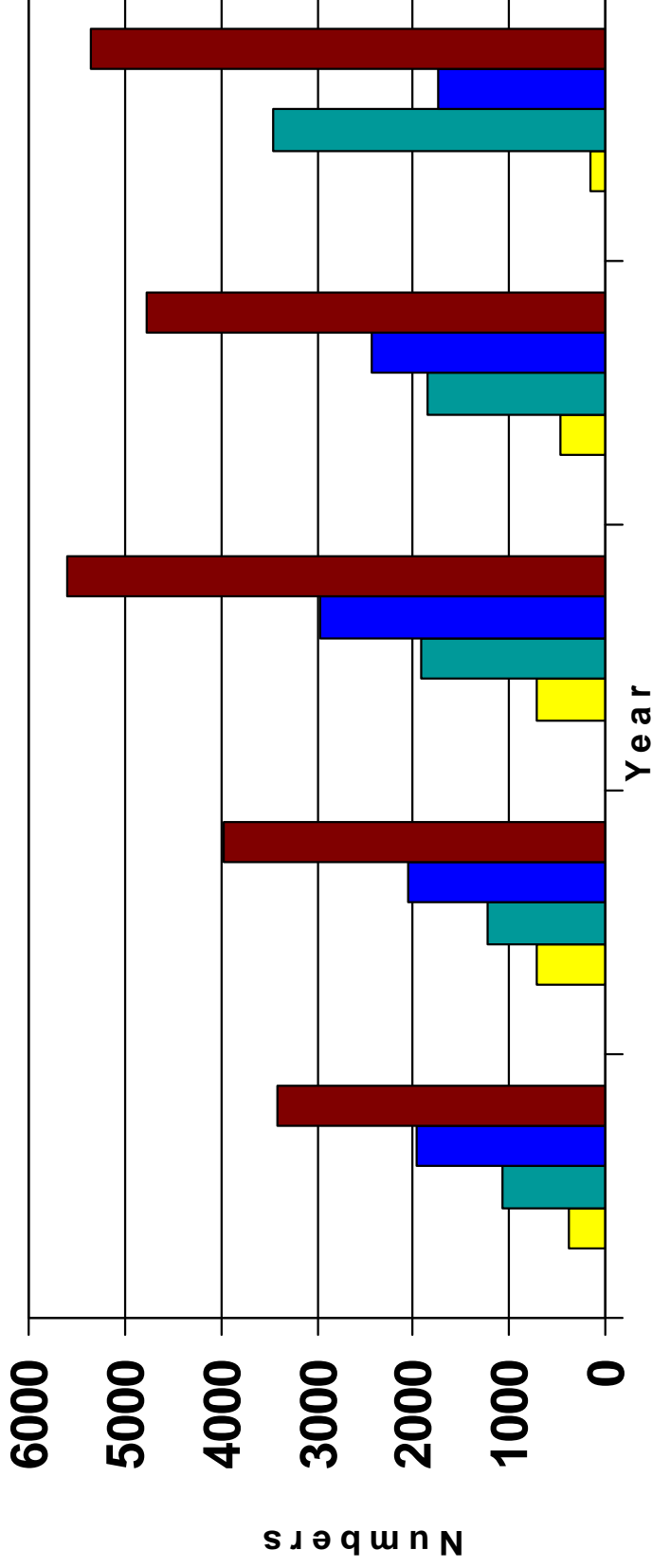
# Referencing WALMI Library



| Year                       | 03-04        | 04-05        | 05-06        | 06-07        | 07-08        |
|----------------------------|--------------|--------------|--------------|--------------|--------------|
| Reading Materials Issued   | 3327         | 2716         | 2479         | 2332         | 2113         |
| Reading Material Consulted | 13690        | 15148        | 20084        | 10374        | 17666        |
| <b>Total</b>               | <b>17017</b> | <b>17864</b> | <b>22563</b> | <b>20706</b> | <b>19779</b> |

Fig. No. 11

# Visitors in WALMI



| Year            | 03-04 | 04-05 | 05-06 | 06-07 | 07-08 |
|-----------------|-------|-------|-------|-------|-------|
| Officers & VIPs | 379   | 710   | 711   | 465   | 160   |
| Students        | 1075  | 1220  | 1920  | 1845  | 3450  |
| Farmers         | 1955  | 2050  | 2974  | 2430  | 1750  |
| Total           | 3409  | 3980  | 5605  | 4770  | 5360  |

Fig. No. 12

# **APPENDICES**

**Appendix-I**  
**Abstract of guidelines issued by GOM for**  
**Benchmarking of Irrigation Projects**

Government of Maharashtra, Water Resources Department vide Letter No. CDA 1004/(369/2004) CAD (works) dated 08.11.2004 issued guidelines while preparing Benchmarking report for the year 2003-04. Subsequently, additional instructions for the year 2004-05 were issued vide letter No. CDA 1004/ (369/2004) CAD – works dated 2.9.2005. Following procedure is adopted for preparation of Benchmarking report (2007-08) based on guidelines.

- 1) Benchmarking is taken in hand after validation of data and linking it with water audit data and data submitted to Government for Irrigation Status Report 2007-08.
- 2) All Projects included in report for 2006-07 are considered for 2007-08.
- 3) Indicators No.IX Mandays for O & M per unit area is deleted as per suggestion of core group.
- 4) In equity performance the head, middle and tail reaches are decided dividing the command area in to three equal parts.
- 5) Potential Utilised and Created is linked with availability of water. Effective potential of each project is decided based on availability of water for irrigation during the year.
- 6) Agricultural output is calculated at 1998-99 prices.

The five year average values from 2002-2003 to 2005-06 and values for 2006-07 are considered for comparison, for all the indicators. Absurd (nil or very high values) are not considered while calculating the average.

Revenue means the actual recovery from Irrigation, non-irrigation water cess, fishery, galper, tourism etc.

## Appendix-II

### State target values for indicators 2007-08

#### Fixing Target Values:

The State targets set for indicators mentioned in Chapter IV were introduced from the year 2002-03 and are decided based on studies and past performance. It is obvious that project size, available water storage in reservoir and agro-climatic, geographical, social conditions are different for different regions. Therefore, there will be difference in performance of irrigation projects but to improve overall State performance and for simplicity, single target for each indicator for the State is defined. Performance of projects in a circle against each indicator is collective performance.

In 2003-04, the values of some of the indicators are revised and for financial indicator of output per unit irrigated area and output per unit irrigation water supply, fixed prices of 1998-99 are considered to obviate effect of price rise. Also, for better monitoring and looking to the number of projects, the analysis is carried out considering irrigation circle as a unit and projects therein within similar plangroups of sub-basins.

The State target values set for Indicator I, III & IV are different; for different categories of the projects viz. (a) major & medium, (b) minor. For other Indicators, the targets are uniform for all types of projects.

#### I) Annual Irrigation Water Supply per Unit- Irrigated Area:

Irrigation system performance in Rabi and Hot weather season is 150 ha/Mm<sup>3</sup> and 110 ha/Mm<sup>3</sup> respectively. As there are Rabi and Hot weather crops in most of the major and medium project, average Irrigation system performance is  $(\underline{150} + \underline{110})/2 = 130$  ha/Mm<sup>3</sup>

Thus the water requirement per unit area =  $1000000/130 = 7692$  m<sup>3</sup>/ ha.

In case of minor project as there are no crops irrigated in Hot weather the water requirement per unit area =  $1000000/150 = 6666.67$  m<sup>3</sup>/ ha. Say 6667 m<sup>3</sup>/ ha.

Hence in broad sense the water requirement per unit area works out to 7692 m<sup>3</sup> per ha. in case of major and medium projects and 6667 m<sup>3</sup> per ha. in case of minor projects.

## II) Potential Created and utilized:

Utilization of created potential depends upon availability of water for irrigation. This availability further depends upon available yield & extent of Non Irrigation uses. Therefore, percentage of water available in the reservoir that can be used for irrigation should be the target for the project. The availability of water in different reservoirs is taken from water audit data for the year 2007-08.

## III) Output per unit area:

The target is decided based on five years experience in 2004-05. The same targets are used for 2007-08.

The category wise values for different plan groups are as follows.

| Plan group     | Major | Medium | Minor |
|----------------|-------|--------|-------|
| Highly deficit | 21000 | 23000  | 16000 |
| Deficit        | 23000 | 25000  | 21000 |
| Normal         | 26000 | 25000  | 21000 |
| Surplus        | 25000 | 31000  | 27000 |
| Abundant       | 32000 | 40000  | 36000 |

## IV) Output per unit Water Supply:

| Plan group     | Major | Medium | Minor |
|----------------|-------|--------|-------|
| Highly deficit | 2.69  | 2.80   | 2.40  |
| Deficit        | 2.99  | 3.15   | 3.15  |
| Normal         | 3.38  | 3.15   | 3.15  |
| Surplus        | 3.25  | 4.05   | 4.05  |
| Abundant       | 4.16  | 5.40   | 5.40  |

## V) Cost Recovery Ratio:

Target is same for all categories and it is 1.

## VI) Total O & M Cost Per Unit Area:

Total O & M cost includes maintenance cost as well as operation cost of the irrigation system. M & R charges are considered as per Govt. norms and establishment charges are taken for staff working in a section office for irrigation water management.

|                       | Major | Medium | Minor |
|-----------------------|-------|--------|-------|
| M & R                 | 200   | 150    | 100   |
| Establishment charges | 1050  | 1050   | 1050  |
| Total                 | 1250  | 1200   | 1150  |

**VII) Total O & M Cost Per Unit Water Supplied:** Total O & M cost per unit water supplied for irrigation and non-irrigation use is considered as follows.

| <b>Major</b>     | <b>Medium</b>    | <b>Minor</b>     |
|------------------|------------------|------------------|
| (1250/7692) 0.16 | (1200/7692) 0.16 | (1150/6667) 0.17 |

**VIII) Revenue Per Unit of Water Supplied:**

The targets are fixed 10 percent more than O & M cost per unit of water supplied.

| <b>Major</b> | <b>Medium</b> | <b>Minor</b> |
|--------------|---------------|--------------|
| 0.18         | 0.18          | 0.19         |

The State targets for Revenue per unit of water supplied for irrigation is kept as Rs. 0.18/m<sup>3</sup>, however, for NI use the target is Rs. 0.9/ m<sup>3</sup> as charges of NI use are higher than irrigation use.

**IX) Mandays For O & M Per Unit Area:**

The Indicator is deleted.

**X) Land Damage Index:**

There is no target for this indicator. However, the percentage of land damaged to total ICA of the project should be minimum for all the projects.

**XI) Equity Performance (head, middle and tail)**

The head, middle and tail reaches is decided based on dividing the command in to 3 equal parts.

**XII-I) Assessment Recovery Ratio (Irrigation)**

State target is 1

**XII-NI) Assessment Recovery Ratio (Non-Irrigation)**

State target is 1



**Appendix-III**

**Overview of Projects selected for Benchmarking (Major Projects)**

| Plan Group /SB No      | Circle/ Project  | Avg. Annual Rainfall mm | Designed                     |  |  | Year of Commencement of Irrigation | Culturable Command Area Ha | Irrigable command area Ha | Max.Live Storage observed on 15th October 2007 | No. of villages in benefit zone | Avg. farm size Ha | Main crops   | Area covered under WUA Ha |             |
|------------------------|------------------|-------------------------|------------------------------|--|--|------------------------------------|----------------------------|---------------------------|--|---------------------------------|-------------------|--|---------------------------|-------------|
|                        |                  |                         | Live Storage Mm <sup>3</sup> | Water use for Irrigation Mm <sup>3</sup> | Water use for Non irrigation Mm <sup>3</sup> |                                    |                            |                           |  |                                 |                   |  | Proposed                  | Handed over |
| 1                      | 2                | 3                       | 4                            | 5  | 6  | 7                                  | 8                          | 9                         | 10   | 11                              | 12                | 13   | 14                        | 15          |
| <b>Highly deficit</b>  |                  |                         |                              |  |  |                                    |                            |                           |  |                                 |                   |  |                           |             |
| <b>CADA Solapur</b>    |                  |                         |                              |  |  |                                    |                            |                           |  |                                 |                   |  |                           |             |
| 18AA                   | Bhima            | 500                     | 1517.20                      | 1444.70                                  | 116.43                                       | 1977                               | 198035                     | 182683                    | 1675.14  | 384                             | 1 to 2.5          | Sorghum, Wheat, Groundnut, Sugarcane                         | 119609                    | 27309       |
| <b>Deficit</b>         |                  |                         |                              |  |  |                                    |                            |                           |  |                                 |                   |  |                           |             |
| <b>AIC Akola</b>       |                  |                         |                              |  |  |                                    |                            |                           |  |                                 |                   |  |                           |             |
| 10                     | Katepurna        | 950                     | 86.35                        | 49.45                                    | 32.65  | 1972                               | 11187                      | 8325                      | 80.50  | 30                              | 1.5 to 2          | Wheat, Peas, Cotton, Sunflower.                              | 11187                     | 7166        |
| 10                     | Nalganga         | 737                     | 69.32                        | 53.21                                    | 6.51   | 1963                               | 9165                       | 8604                      | 32.59  | 31                              | 1 to 2            | Gram, Wheat, Cotton  | 9165                      | 7493        |
| <b>CADA Aurangabad</b> |                  |                         |                              |  |  |                                    |                            |                           |  |                                 |                   |  |                           |             |
| 2                      | Jayakwadi (PLBC) | 755                     | 2171.00                      | 1064.96                                  | 329.04                                       | 1975-76                            | 183560                     | 141640                    | 2170.94  | 355                             | 1.5 to 2          | Cotton, Wheat, Sorghum, Sunflower                            | 118070                    | 47482       |
| <b>CADA Beed</b>       |                  |                         |                              |  |  |                                    |                            |                           |  |                                 |                   |  |                           |             |
| 2                      | Jayakwadi (PRBC) | 700                     | 2171.00                      | 331.39                                   | 29.68  | 1976-77                            | 53910                      | 41682                     | 0.00   | 99                              | 1.57              | Cotton, Wheat, Sorghum, Sugarcane                            |                           |             |
| 2                      | Majalgaon        | 840                     | 312.00                       | 680.28                                   | 46.88  | 1989-90                            | 64295                      | 54737                     | 260.40   | 132                             | 1 to 2            | Wheat, Sorghum, Cotton, Sugarcane                            | 21929                     | 10597       |
| 4                      | Manjira          | 685                     | 173.32                       | 185.64                                   | 85.67  | 1980-81                            | 23690                      | 18223                     | 174.16   | 80                              | 2.03              | -do-   | 5147                      | 3259        |
| 4                      | Lower Tema       | 710                     | 113.95                       | 62.50                                    | 21.05  | 1997-98                            | 14513                      | 11610                     | 76.15  | 63                              | 1 to 1.5          | Sorghum, Wheat, Sunflower, Groundnut, Gram                   | ND                        |             |
| <b>CADA Jalgaon</b>    |                  |                         |                              |  |  |                                    |                            |                           |  |                                 |                   |  |                           |             |
| 11                     | Girna            | 743                     | 525.06                       | 549.66                                   | 0  | 1962-63                            | 79293                      | 69350                     | 519.65   | 195                             | 3                 | Sugarcane, Banana, Cotton, Wheat, Sorghum                    | 15936                     | 116         |
| <b>CADA Nashik</b>     |                  |                         |                              |  |  |                                    |                            |                           |  |                                 |                   |  |                           |             |
| 11                     | Chankapur        | 1067                    | 76.85                        | 146.59                                   | 0  | 1973                               | 19173                      | 14042                     | 76.85  | 48                              | 0.5               | Bajri, Two seasonals, Paddy, Sorghum, Groundnut, Wheat, Gram | 1861                      | 0           |
| <b>NIC Nanded</b>      |                  |                         |                              |  |  |                                    |                            |                           |  |                                 |                   |  |                           |             |
| 2                      | Vishnupuri       | 910                     | 80.79                        | 275.18                                   | 54.37  | 1990                               | 37785                      | 28340                     | 28.67  | 46                              | 2.06              | -do-   | 1069                      | 0           |

| 1                    | 2                | 3    | 4      | 5      | 6      | 7       | 8      | 9      | 10     | 11  | 12       | 13   | 14    | 15    |
|----------------------|------------------|------|--------|--------|--------|---------|--------|--------|--------|-----|----------|--|-------|-------|
| 3                    | Purna            | 685  | 890.22 | 732.33 | 68.67  | 1968-69 | 78485  | 57988  | 437.70 | 232 | 1 to 2   | Cotton, Wheat, Sorghum   | 24459 | 4486  |
| 4                    | Manar            | 850  | 138.21 | 198.06 | 5.94   | 1968    | 27745  | 23310  | 134.29 | 96  | 1.55     | Wheat, Gram, Sugarcane, Cotton, Groundnut, Sorghum               | 4523  | 4523  |
| <b>BIPC Buldhana</b> |                  |      |        |        |        |         |        |        |        |     |          |  |       |       |
| 10                   | Wan              | 891  | 81.96  | 78.57  | 20.08  | 1998-99 | 22525  | 15100  | 81.96  | 54  | 1.5      | -do-   | 22525 | 11675 |
| <b>Normal</b>        |                  |      |        |        |        |         |        |        |        |     |          |  |       |       |
| <b>YIC Yavatmal</b>  |                  |      |        |        |        |         |        |        |        |     |          |  |       |       |
| 6                    | Arunawati        | 913  | 169.92 | 121.65 | 15.62  | 1995    | 24135  | 20515  | 108.69 | 73  | 2 to 3   | Cotton, Wheat, Sugarcane   | 24135 | 366   |
| <b>AIC Akola</b>     |                  |      |        |        |        |         |        |        |        |     |          |  |       |       |
| 6                    | Pus              | 945  | 91.26  | 100.35 | 19.06  | 1972    | 13678  | 8215   | 91.27  | 40  | 1.5 to 3 | Sugarcane, Sorghum, Wheat, Gram, Cotton, Groundnut.              | 11814 | 0     |
| <b>CADA Jalgaon</b>  |                  |      |        |        |        |         |        |        |        |     |          |  |       |       |
| 13                   | Hatnur           | 743  | 255.00 | 500.12 | 90.53  | 1983    | 47360  | 37838  | 255.00 | 82  | 1.2      | Sugarcane, Banana, Groundnut                                     | 7282  | 0     |
| <b>CADA Nashik</b>   |                  |      |        |        |        |         |        |        |        |     |          |  |       |       |
| 1                    | Bhandardara      | 3175 | 304.10 | 419.00 | 0      | 1926    | 63740  | 23077  | 304.09 | 110 | 4 to 5   | Sorghum, Wheat, Grass, Maize, Sunflower, Sugarcane               | 9300  | 705   |
| 1                    | Mula             | 500  | 608.92 | 540.27 | 87.90  | 1972    | 138792 | 82920  | 608.92 | 160 | 4 to 5   |  | 91719 | 28668 |
| 1                    | Ozerkhed         | 746  | 60.32  | 31.59  | 2.19   | 1985    | 14856  | 10400  | 60.11  | 35  | 0.8      | Wheat, Sorghum, Gram   | 7849  | 2143  |
| 1                    | Palkhed          | 661  | 21.40  | 82.90  | 46.85  | 1976    | 60704  | 43154  | 21.40  | 144 | 0.8      | Gram, Sorghum  | 50345 | 14144 |
| 1                    | Waghad           | 964  | 72.20  | 36.53  | 3.50   | 1981    | 9642   | 6750   | 70.86  | 23  | 0.6      | Paddy, Onion, Vegetables, Groundnut, Bajri, Wheat, Gram, Sorghum | 9557  | 9429  |
| 1                    | Darna            | 550  | 202.43 | 135.73 | 66.67  | 1918    | 88822  | 33170  | 197.36 | 146 | 2        | Sugarcane, Sorghum, Bajri, Wheat, Gram, Fruits                   | 7906  | 6691  |
| 1                    | Gangapur         | 500  | 159.42 | 86.78  | 117.07 | 1954    | 21900  | 15960  | 157.12 | 92  | 1.3      | -do-   | 3239  | 1834  |
| 1                    | Kadwa            | 533  | 52.91  | 61.96  | 8.46   | 1997    | 15523  | 10117  | 52.91  | 42  | 0.47     | -do-   | 465   | 345   |
| <b>CADA Pune</b>     |                  |      |        |        |        |         |        |        |        |     |          |  |       |       |
| 17                   | Kukadi (Complex) | 790  | 864.39 | 951.29 | 0      | 1978    | 224699 | 156278 | 702.50 | 269 | 0.8 to 1 | Wheat, Sorghum, Bajri, Vegetables, Sugarcane, Groundnut, Gram    | 57358 | 29369 |
| 17                   | Ghod             | 515  | 154.80 | 202.86 | 2.54   | 1965    | 41460  | 20500  | 154.80 | 54  | 1        | Sugarcane, Sorghum, Bajri, Wheat, Grain                          | 12155 | 301   |

| 1  | 2                      | 3    | 4       | 5      | 6      | 7       | 8      | 9      | 10      | 11  | 12         | 13   | 14     | 15    |
|----|------------------------|------|---------|--------|--------|---------|--------|--------|---------|-----|------------|--|--------|-------|
|    | <b>CIPC Chandrapur</b> |      |         |        |        |         |        |        |         |     |            |  |        |       |
| 7  | Bor                    | 1327 | 127.42  | 109.29 | 6.35   | 1967    | 24055  | 13360  | 127.35  | 77  | 1.5 to 2   | Cotton, Wheat  | 18169  | 10761 |
|    | <b>NIC Nagpur</b>      |      |         |        |        |         |        |        |         |     |            |  |        |       |
| 7  | Lower Wunna            | 1330 | 189.18  | 148.00 | 29     | 1991    | 21591  | 19500  | 187.82  | 109 | 2.5        | Cotton, Wheat, Gram, Soybean, Sugarcane                | 17325  | 413   |
|    | <b>NIC Nanded</b>      |      |         |        |        |         |        |        |         |     |            |  |        |       |
| 6  | Upper Penganga         | 825  | 964.09  | 782.69 | 15.16  | 1984-85 | 139438 | 125495 | 871.48  | 356 | 1 to 2     | Cotton, Wheat, Sorghum,                                | 23589  | 7355  |
|    | <b>PIC Pune</b>        |      |         |        |        |         |        |        |         |     |            |  |        |       |
| 17 | Khadakwasla (Complex)  | 911  | 793.47  | 602.55 | 204    | 1970    | 83302  | 62146  | 775.62  | 96  | 0.5 to 5   | Sorghum, Bajri, Maize, Wheat, Sugarcane                | 83302  | 3180  |
| 17 | Pawana                 | 2210 | 241.11  | 96.50  | 168.32 | 1975    | 7468   | 6365   | 230.49  | 30  | 0.5 to 2.5 | Paddy, Sorghum, Bajri, Maize, Wheat, Sugarcane         | ND     |       |
| 18 | Bhatghar Dam N.L.B.C.  | 1953 | 666.00  | 386.58 | 33.92  | 1893    | 68767  | 60656  | 650.50  | 87  | 1 to 2     | Sorghum, Wheat, Bajri, Sugarcane                       | 68767  | 1252  |
| 18 | N.R.B.C. (Veer Dam)    | 1067 | 266.44  | 860.99 | 0      | 1938    | 181266 | 65506  | 266.44  | 214 | 1.7        | Sugarcane, Sorghum, Bajri, Wheat, Other Perenials      | 181266 | 390   |
|    | <b>UWPC Amravati</b>   |      |         |        |        |         |        |        |         |     |            |  |        |       |
| 7  | Upper Wardha           | 840  | 548.14  | 302.78 | 99.72  | 1994-95 | 83300  | 75000  | 548.14  | 279 | 1.5        | Cotton, Wheat, Hy. Jowar, Chilli, Groundnut            | 83300  | 340   |
|    | <b>Surplus</b>         |      |         |        |        |         |        |        |         |     |            |  |        |       |
|    | <b>CADA Nagpur</b>     |      |         |        |        |         |        |        |         |     |            |  |        |       |
| 8  | Bagh (Complex)         | 1325 | 268.96  | 214.44 | 0      | 1971    | 0      | 0      | 221.53  | 0   | 1 to 2     | -do-   | 29703  | 3511  |
| 8  | Pench                  | 1138 | 1374.00 | 689.00 | 243    | 1976    | 126913 | 101200 | 1069.31 | 407 | 1 to 2     | Paddy, Cotton, Chilly, Wheat, Gram, Sunflower, Soybean | 126913 | 11180 |
| 8  | Itiadh                 | 1336 | 318.86  | 412.04 | 0      | 1971    | 22752  | 17500  | 302.98  | 100 | 1 to 2     | Paddy  | 22752  | 2123  |
|    | <b>Abundant</b>        |      |         |        |        |         |        |        |         |     |            |  |        |       |
|    | <b>CADA Pune</b>       |      |         |        |        |         |        |        |         |     |            |  |        |       |
| 15 | Krishna                | 872  | 602.73  | 602.73 | 0      | 1978-85 | 81400  | 74000  | 602.73  | 146 | 1 to 2     | Sugarcane, Sorghum, Wheat, Gram                        | 30058  | 8243  |
|    | <b>CIPC Chandrapur</b> |      |         |        |        |         |        |        |         |     |            |  |        |       |
| 9  | Asolamendha            | 1147 | 56.38   | 52.00  | 0      | 1918    | 37945  | 9919   | 56.38   | 67  | 1.5 to 2   | Paddy  | 10317  | 0     |
| 9  | Dina                   | 1315 | 67.54   | 55.94  | 0      | 1974    | 12494  | 7826   | 46.10   | 66  | 1.5 to 2   | -do-   | 12494  | 0     |
|    | <b>SIC Sangli</b>      |      |         |        |        |         |        |        |         |     |            |  |        |       |
| 15 | Radhanagari            | 3638 | 219.97  | 203.87 | 24.35  | 1955    | 35422  | 26560  | 214.67  | 91  | 0.5 to 1.5 | Sugarcane, Paddy, Wheat, Vegetables                    | 47288  | 366   |



## Appendix-IV

### River Basins & Agro- Climatic zones of Maharashtra

#### River Basins

The State is mainly covered by the basins of Krishna, Godavari and Tapi except the west-flowing rivers of Konkan strip. A small portion on north comes under Narmada basin. There are in all 380 rivers in the State and their total length is 19269 km. Most of the land is undulating and hilly. Comparatively, continuously hilly plateau lands are very few. Because of this, flow canal systems in Maharashtra are very expensive, though there are large number of suitable sites for building water storage reservoirs.

Number of rivers originate from Sahyadri at about 500 to 700 m elevation and flow westward to Arabian Sea through the Konkan strip. Damanganga, Surya, Vaitarna, Ulhas, Karla, Kundalika, Kal, Savitri, Vashishthi, Shastri, Gad, Karli, Tillari and Terekhol are the prominent rivers. These rivers are of shorter length holding fair amount of water during monsoon but run totally dry during summer. The natural calamities such as land erosion, salt water intrusion, land subsistence etc. are often inflicted upon Konkan.

Tapi and Narmada are the two west-flowing rivers coming from Madhya Pradesh and flowing down to Gujarat State through Maharashtra. Narmada forms 54 km long common boundary of the State along northern border. Total length of Tapi in Maharashtra is 208 km. These rivers and tributaries have rendered the land of Khandesh<sup>1</sup> fertile.

Wainganga flows in north-south direction. The length of Waiganga in Maharashtra is 476 km. Godavari is the principal east-flowing and longest river in Maharashtra (968 km).

South-east flowing Bhima and mainly north-south flowing Krishna are the major rivers of South Maharashtra. The length of Bhima in Maharashtra is 451 km. It joins Krishna on the Karnataka-Andhra Pradesh boundary near Raichur.

Krishna rises near Mahabaleshwar. Krishna is 282 km long in the State.

#### Basin-wise water availability – (Maharashtra – India)

| Sr. No | Basin               | Geographical Area (Mha) | Culturable Area (Mha) | Average Annual Availability (BCM) | 75% Dependable Yield (BCM) | Permissible Use As Per Tribunal Award (BCM) |
|--------|---------------------|-------------------------|-----------------------|-----------------------------------|----------------------------|---|
| 1      | Godavari            | 15.430                  | 11.256                | 50.880                            | 37.300                     | 34.185                                      |
| 2      | Tapi                | 5.120                   | 3.731                 | 9.118                             | 6.977                      | 5.415                                       |
| 3      | Narmada             | 0.160                   | 0.064                 | 0.580                             | 0.315                      | 0.308                                       |
| 4      | Krishna             | 7.010                   | 5.627                 | 34.032                            | 28.371                     | 16.818                                      |
| 5      | West flowing Rivers | 3.160                   | 1.864                 | 69.210                            | 58.599                     | 69.210                                      |
|        | Total:              | 30.88                   | 22.542                | 163.820                           | 131.562                    | 125.936                                     |

### Sub-basinwise planning

As per the recommendations laid down in the National Water Policy – 2002 and Maharashtra Water and Irrigation Commission's Report, the State Water Policy has been adopted by GOM in 2003.

The objectives of the Maharashtra State Water Policy are to ensure the sustainable development and optimal use and management of the State's water resources, to provide the greatest economic and social benefit for the people of the State of Maharashtra and to maintain important ecological values within rivers and adjoining lands.

The Maharashtra State Water Policy mentions that -

'To adopt an integrated and multi-sectoral approach to the water resources planning, development and management on a sustainable basis taking river basin/sub basin as a unit.'

The water resources of the State shall be planned, developed, managed with a river basin/ sub basin as a unit, adopting multisectoral approach and treating surface and sub-surface water with unitary approach.'

The geographical area of the State is 308 lakh ha and cultivable area is 225 lakh ha. This geographical area is divided mainly into five major river basins of Godavari, Krishna, Tapi, Narmada and basin groups in Konkan. There are 22 narrow basins of west flowing rivers in Konkan.

The Maharashtra Water and Irrigation Commission has proposed delineation of five river basins basically into 25 distinct sub basins for planning of water resources development in the State. The categorisation of sub basins proposed is solely on the basis of natural availability of water. The basic characteristics of sub basins are dictated by the hydrological regime, which in turn, is a function of climate, rainfall distribution and the draining area.

The sub basins are as follows:

| Sr. No. | River Basin | Names of Sub basins                    | Abbreviated name   | Categorisation for planning on the basis of availability of natural water |
|---------|-------------|--|--------------------|---|
| I       | Godavari    | 1) Upper Godavari (Upto Paithan Dam)   | Upper Godavari     | Normal  |
|         |             | 2) Lower Godavari (D/S of Paithan Dam) | Lower Godavari     | Deficit   |
|         |             | 3) Purna (including Dudhana)           | Purna Dudhana      | Deficit   |
|         |             | 4) Manjra                              | Manjra             | Deficit   |
|         |             | 5) Godavari-Sudha-Swarna               | Remaining Godavari | Normal  |
|         |             | 6) Painganga                           | Painganga          | Normal  |
|         |             | 7) Wardha                              | Wardha             | Normal  |
|         |             | 8) Middle Wainganga                    | Middle Wainganga   | Surplus   |
|         |             | 9) Lower Wainganga                     | Lower Wainganga    | Abundant  |
| II      | Tapi        | 10) Purna (Tapi)                       | Purna Tapi         | Deficit   |

| Sr. No. | River Basin  | Names of Sub basins           | Abbreviated name   | Categorisation for planning on the basis of availability of natural water |
|---------|--------------|-------------------------------|--------------------|---|
|         |              | 11) Girna                     | Girna              | Deficit   |
|         |              | 12) Panzara                   | Panzara            | Normal  |
|         |              | 13) Middle Tapi               | Middle Tapi        | Deficit   |
| III     | Narmada      | 14) Narmada                   | Narmada            | Surplus   |
| IV      | Krishna      | 15) Upper Krishna (West)      | Upper Krishna (W)  | Abundant  |
|         |              | 16) Upper Krishna (East)      | Upper Krishna (E)  | Highly Deficit  |
|         |              | 17) Upper Bhima (Upto Ujjani) | Upper Bhima        | Normal  |
|         |              | 18) Remaining Bhima           | Remaining Bhima    | Normal  |
|         |              | 19) Sina-Bori-Benetura        | Sina-Bori-Benetura | Highly Deficit  |
| V       | West Flowing | 20) Damanganga-Par            | Damanganga-Par     | Abundant  |
|         | Rivers in    | 21) North Konkan              | North Konkan       | Abundant  |
|         | Konkan       | 22) Middle Konkan             | Middle Konkan      | Abundant  |
|         |              | 23) Vashisthi                 | Vashisthi          | Abundant  |
|         |              | 24) South Konkan              | South Konkan       | Abundant  |
|         |              | 25) Terekhol – Tillari        | Terekhol – Tillari | Abundant  |

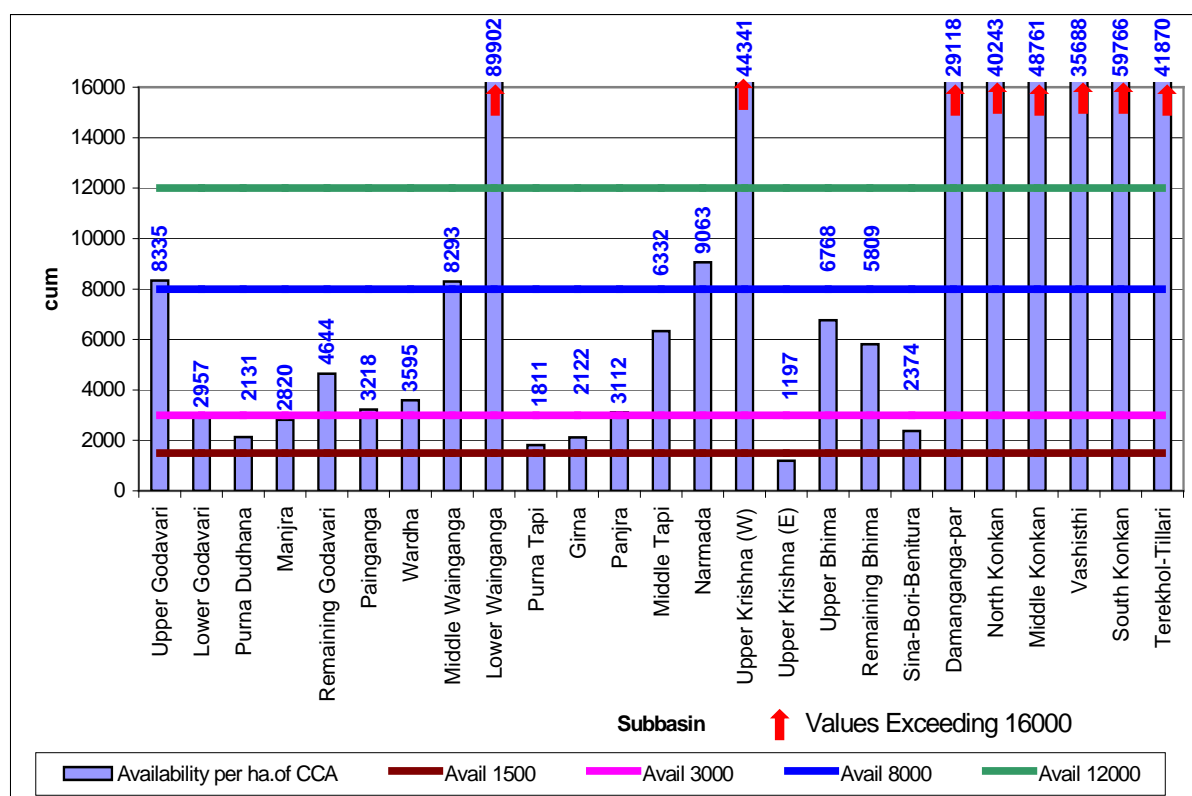
Categorisation of sub basins for planning, on basis of naturally available quantum of water, is given below :

| Sr. No. | Plan Group          | Per ha availability (m <sup>3</sup> ) | Percent of cultivable area of State |
|---------|---------------------|---------------------------------------|-------------------------------------|
| i)      | Highly Deficit Area | Below 1500                            | 13                                  |
| ii)     | Deficit area        | 1501-3000                             | 32                                  |
| iii)    | Normal area         | 3001-8000                             | 34                                  |
| iv)     | Surplus area        | 8001-12000                            | 06                                  |
| v)      | Abundant area       | Above 12000                           | 15                                  |

A graph showing basinwise availability of water is appended herewith.

The performance of a circle (herein called service provider) very much depends upon the availability of water, which in turn is governed by the type of sub-basin in which the project is located. Some circles are having projects located in more than one category of plan group of sub-basins. Therefore, these circles will appear more than once, in graphical representation of indicators.

## Water Availability per ha of Culturable Area



### Climate

Maharashtra is having mostly a seasonal climate. Four distinct seasons are noticeable in a year viz. (1) Monsoon: The rains start with the south - west winds. Mainly it rains during the four months from June to September, but it often extends up to October. (2) Post-monsoon season: October to mid December is a fair weather season with meagre rains. These are the initial months of the post-monsoon, *Rabi* crops and the condition of later depends upon the weather during these months. (3) Winter: It is generally a period of two or two-and-a-half months, from mid-December until end of February. Most of the *Rabi* crops are harvested during these months. (4) Summer: It lasts for at least three months - March to May.

There is considerable variation in weather and rainfall among the five different geographical regions of Maharashtra.

1 The coastal districts of Konkan experience heavy rains but mild winter. The weather, however, is mostly humid throughout the year.

The maximum and minimum temperatures here range between 27°C and 40°C and 14°C to 27°C respectively. The relative humidity is 81% to 95% during June to August while 30% to 65% during January - February.

2 The western parts of Nashik, Pune, Satara and Kolhapur districts show a steep reduction in rainfall from the mountainous regions towards the East. The maximum temperature ranges between 26°C to 39°C and the minimum temperature between 8°C to 23°C. The relative humidity is 81% to 99 % in August and only 20% to 39% in March.

3 The eastern part of the above four districts together with Ahmednagar, Sangli, Solapur, Aurangabad, Jalna, Beed and Osmanabad districts fall under the rain



shadow of Sahyadri Mountains and therefore the beginning and end of the rainy season is quite uncertain in these parts. The rainfall is also meagre. The climate is extreme. The summer temperature is high (maximum temperature 36<sup>0</sup>C to 41<sup>0</sup>C) but winter temperature is low (minimum temperature. 10<sup>0</sup>C to 16<sup>0</sup>C). The relative humidity in August is between 82% to 84% but only 19% to 26% in April. The rainfall increases as we go towards east viz. Parbhani, Nanded and Yavatmal. Many a times the eastern winds during the end of monsoon cause precipitation here.

4 Likewise the Tapi basin, the southern parts of Satpuda ranges and Dhule-Jalgaon districts towards west is low rainfall part like that of rain shadow region. But towards east Buldhana, Akola and Amravati districts experience a heavy rainfall. Summer temperature in this region is quite high (39<sup>0</sup>C to 43<sup>0</sup>C) and minimum winter temperature is found to be 12<sup>0</sup>C to 15<sup>0</sup>C. Relative humidity between May to August is 82% to 87% whereas in March-April it is 12% to 31%.

5 The Wainganga basin on east of Maharashtra and the hilly region still farther east is, on the whole, a zone having good rainfall, but as it is some what low lying area, the climate is even more extreme. The summer temperature is very high (39<sup>0</sup>C to 45<sup>0</sup>C) while it is cooler in winter as compared to other regions (12<sup>0</sup>C to 14<sup>0</sup>C).

### **Rainfall**

Maharashtra gets rain both from the south-west and the north-east monsoon winds. The proportion of the rainfall derived from the north-east monsoon increases towards east.

The average rainfall of the State is approximately 1360 mm. Nearly 88% of the total average rainfall occurs between June to September, while nearly 8% occurs between October to December and 4% after December. There is a considerable variation in the reliability of the rains in different parts of the State.

The steep decline in the rainfall to east of Sahyadri is strikingly noticeable. In the 30 to 50 km wide belt the average rainfall is observed to be less than 650 mm (as low as only 500 mm at some places). Thereafter, the rainfall increases steadily towards east and the average rainfall in the easternmost districts is observed to be 1400 mm.

The pre-monsoon rain during March to May is maximum in Western Maharashtra (5%) while in Marathwada it is 4%, in Vidarbha it is 3% and the minimum is in Konkan (1%).

The number of average annual rainy days is maximum 95 in Konkan, 55 in Vidarbha, 51 in Western Maharashtra and the minimum 46 in Marathwada.

Out of the total cultivable land in Maharashtra about 53% is under *Kharif* and about 30% is under *Rabi* crops. These mostly comprise of food grains and oilseeds. The rainfall during June to September affects both the *Kharif* and the *Rabi* crops. That is why the regularity of rainfall during this period is of importance. But it is seen that there is considerable fluctuation in the number of rainy days as well as the amount of rainfall from year to year. The fluctuation in rainfall is observed to be 25%, 40% and between 20% to 30% in Konkan, Central Maharashtra and Vidarbha respectively. Crop management on fields during this period thereby becomes quite difficult.

**Appendix-V**

**Abstract of Water Rates for Irrigation Domestic and Industrial Use for the year 2007-08**

|          | <b>Irrigation</b>   | <b>Rate Rs./ha<br/>(From 1/7/2004)</b> |
|----------|---|--|
| <b>1</b> | <b>Flow Irrigation Crops</b>  |  |
| A        | <b>Kharif</b><br>Seasonals & paddy (Agreement)<br>Groundnut,Hy.Seeds etc.   | 238<br>476                             |
| B        | <b>Rabi</b><br>Seasonals (except Wheat and Groundnut)<br>Wheat<br>Cotton,Groundnut,Paddy etc.                           | 358<br>476<br>724                      |
| C        | <b>Hot Weather</b><br>Ground Nut<br>Seasonals   | 1438<br>724                            |
| D        | <b>Two Seasonals</b><br>Kharif and Rabi<br>Rabbi & Hot Weather  | 357<br>605                             |
| E        | <b>Perenial</b><br>Sugarcane,Banana   | 6298                                   |
| <b>2</b> | <b>Lift Irrigation (water lifted from)</b>  |  |
| A        | <b>Canal</b><br>Kharif Crops<br>Rabi Crops<br>Hot Weather Crops<br>Perenial (Sugarcane, Banana)<br>Other Perenial Crops | 85<br>120<br>240<br>1810<br>1200       |
| B        | <b>Reservoir</b><br>Kharif Crops<br>Rabi Crops<br>Hot Weather Crops<br>Perenial<br>Other Perenial                       | 40<br>60<br>120<br>910<br>605          |
| C        | <b>River</b><br>Kharif Crops<br>Rabi Crops<br>Hot Weather Crops<br>Perenial<br>Other Perenial                           | 35<br>35<br>60<br>450<br>310           |
| <b>3</b> | <b>Lift Irrigation (Volumetric basis )</b><br>From canal at minor head  | Rs/Thousand m <sup>3</sup>             |
| A        | Kharif  | 47.60                                  |
| B        | Rabi  | 71.40                                  |
| C        | Hot Weather   | 144.80                                 |
| D        | If water users contributed for construction (Royalty) for all seasons   | 23.80                                  |
| <b>1</b> | <b>Non Irrigation water rates</b>   |  |
|          | <b>Domestic Supply</b>  |  |
| A        | From reservoirs,  | 1.50                                   |
| B        | canals and rivers downstream of dams  | 5.80                                   |
| C        | In case Capital Investment is done by user or contributed in proportion of water use                                    | 1.30                                   |

|          |   |                 |
|----------|---|-----------------|
| <b>2</b> | <b>Industrial Supply</b>  |                 |
| A        | For Colddrinks,breverages,mineral water etc. From reservoirs,                         | 170.00          |
| B        | For Colddrinks,breverages,mineral water etc from canals and rivers downstream of dams | 410.00          |
| C        | In case Capital Investment is done by user or contributed in proportion of water use  | 60.00           |
| <b>3</b> | <b>Other use</b>  | Rs/10000 Litre. |
| A        | From reservoirs   | 33.00           |
| B        | Canals and rivers downstream of dams  | 82.00           |
| C        | In case Capital Investment is done by user or contributed in proportion of water use  | 12.00           |

\*\*\*