



**Report on  
BENCHMARKING OF IRRIGATION PROJECTS  
IN MAHARASHTRA  
2005-06**



**WATER RESOURCES DEPARTMENT**  
GOVERNMENT OF MAHARASHTRA, INDIA  
MARCH 2007



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## **FOREWORD**

Benchmarking of Irrigation Projects in the State is being carried out for last five years. Though this period is not long enough for evaluation, it may be considered sufficient to take review of activities at various levels of management.

A State Level Core Group has been constituted to have dialogue & interaction with other States & GOI. The usefulness of existing indicators & possibility of inclusion of new indicators will also be judged by the group.

An independent office of Chief Engineer, Maharashtra Water Resources Development Centre has been established w.e.f 1.4.2006 to carry out the Benchmarking & Water Auditing. The benchmarking is done on the basis of important data from Water Audit.

Many other States in the country have realised the importance of Benchmarking & they have initiated this process in their States. Government of Maharashtra is ready to exchange view & share the experience gained in this field with them.

Looking at the vast data & intricacy in it, a need for computer software has arisen. Therefore, preparation of comprehensive software programme is being initiated in this year.

To clear the ambiguity amongst the field officers regarding the data collection & interpretation of indicators prescribed in the benchmarking process, self explanatory guide lines have been issued this year. These are appended in this report.

This is the fifth consecutive annual report of the State.

I appreciate sincere efforts taken by Shri C. I. Sambutwad, Chief Engineer and his team for preparation of this report.

Comments & suggestions on this report will be appreciated.

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

**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                             |
| MKVWRC                 | Maharashtra Krishna Valley Water Resources Corporation                         |
| mm                     | Millimetre                                                                     |
| MWIC                   | Maharashtra Water & Irrigation Commission                                      |
| 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                                                                   |
| SGRY                   | <i>Sampurna Gramin Rojgar Yojna</i>                                            |
| 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   |
| 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               |

# C O N T E N T S

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## 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.

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.

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 alongwith their Domain are enlisted below:-

| Year    | Domain                       | Performance Indicators                                                                                                                                                                                                                            |
|---------|------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2001-02 | 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                                                                                                                                                                                                                              |
| 2002-03 | 1. Deleted Indicator         | Maintenance Cost to Revenue Ratio                                                                                                                                                                                                                 |
|         | 2. Additional Indicators     | 1. Potential Created and Utilised<br>Equity Performance                                                                                                                                                                                           |
| 2003-04 | Additional Indicator         | Assessment Recovery Ratio<br>a. Irrigation<br>b. Non-irrigation                                                                                                                                                                                   |
| 2004-05 | No Change                    |                                                                                                                                                                                                                                                   |
| 2005-06 | No Change                    |                                                                                                                                                                                                                                                   |

Note: For financial indicators, "Cost Recovery Ratio" and "Revenue per unit of Water Supplied" the analysis is carried out separately for irrigation use and non irrigation use. Similarly, combined analysis is also carried out to enable comparing the performance with the past.



Initially, the exercise was conducted for 84 projects in 2001-02 with 10 indicators. The number of projects was 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.

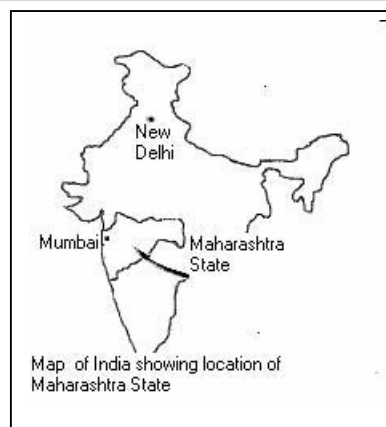
|    |                                                 |                                                                                                                                 |
|----|-------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|
| 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. 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                                                                                   |

Details of year wise benchmarking of irrigation projects is mentioned 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       |

### 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 has Gujarat on north-west, Madhya Pradesh in north, Chhattisgarh on east and Andhra Pradesh, Karnataka and Goa in 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.

---

<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.

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

**1.3.0 Rainfall during 2005-06**

The State received rains from South West monsoon from 19<sup>th</sup> June 2005 which remained active upto 24<sup>th</sup> June 2005. A gap in rainfall was observed till 8th July 2005 and thereafter it has increased steadily till 25th July 2005. Heavy rains in the last week of July occurred in various parts of the State, especially in Konkan region the intensity was very high. Heavy rains occurred in the beginning of August 2005. In Western Maharashtra, Marathwada and Vidarbha. The intensity of rainfall declined from 8th August 2005 and again increased from 21<sup>st</sup> September 2005. In this period, heavy rains occurred in Marathwada and Vidarbha. The monsoon in the State culminated on 10th October 2005. The proportion of rainfall received from 19<sup>th</sup> June 2005 to 31<sup>st</sup> October 2005 was 119%, in excess of long term average rainfall of the State.

As per IMD Standards, in two districts (Jalgaon and Aurangabad) it was deficient (41% to 80%) out of 33 districts in the State (excluding Mumbai City and Mumbai suburb). In 3 districts (Buldana, Dhule and Sindhudurg) it was 81% to 100% whereas in 28 districts it was above 100% of the average. As per the standards specified by IMD, out of 353 talukas in the State, in 1 taluka (Atpadi, Dist. Sangli), the rainfall received was scanty (upto 40% of the normal), in 44 talukas it was deficient (between 41% to 80%), in 73 talukas it was 81% to 100% whereas in 235 talukas it was excess. (i.e. 20% or more above the normal).

Thus, the overall picture of the rainfall received during this monsoon (2005-06) in the State was satisfactory.

The regionwise breakup of 45 talukas which received scanty rainfall (below 80%) of the normal are as follows:-

| Sr.No.       | Region                                   | No. of talukas |
|--------------|------------------------------------------|----------------|
| 1            | Central Maharashtra<br>(Nashik and Pune) | 21             |
| 2            | Vidarbha                                 | 15             |
| 3            | Marathwada                               | 8              |
| 4            | Konkan                                   | 1              |
| <b>Total</b> |                                          | <b>45</b>      |

From the above information, it is clear that rainfall status in Vidarbha and Marathwada region was considerably better as compared to last year.

#### **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 4.03 Mha irrigation potential using surface water resources by June 2006 through 53 major, 219 medium and 2470 state sector minor irrigation projects. Besides 55 major, 121 medium, 852 State Sector minor projects and 48 lift irrigation projects are under construction in the State. The total investment in the irrigation sector up to 1<sup>st</sup> April 2006 is around Rs. 698.50 billion. (Expenditure incurred up to 3/2006 Rs. 330.00 billions & the balance cost as on 1/4/2006 Rs. 360.850 billions) 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, distributary, 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 reservoir with 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 between 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 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 Executive Engineer, 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.

### **1.4.3 Crops Irrigated**

The crops grown vary significantly within the regions & projects laying therein. Details of principle crops grown in different regions are categorised plangroup 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 Government. 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 is 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 285 projects to the WUAs within stipulated time frame,

Maharashtra Water Sector Improvement Project has been taken up with the help of World Bank

#### 1.4.5 Area under modern irrigation methods

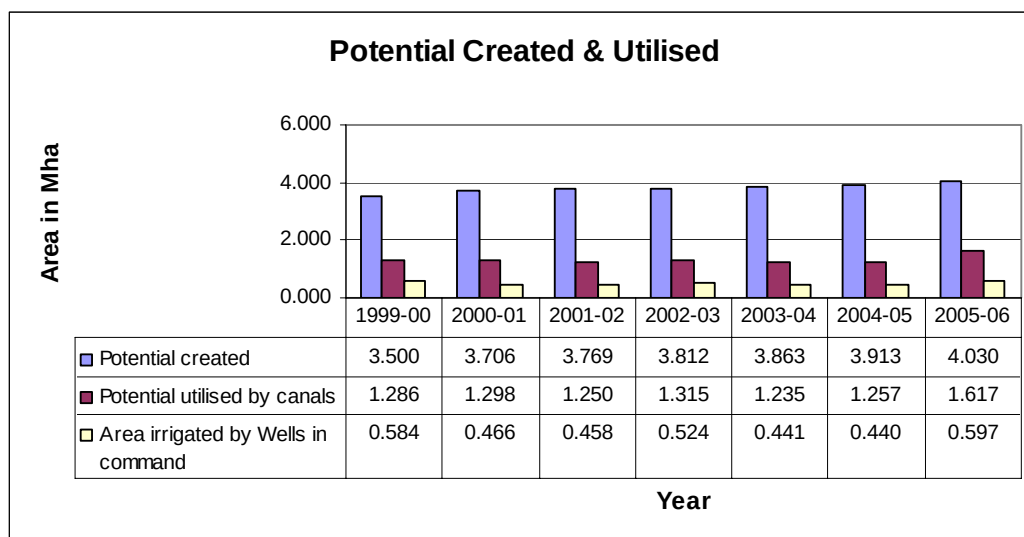
Area under drip & sprinkler irrigation in the State by March 2005 was 3.18 Lakh ha. and 1.35 lakh ha. respectively. The region wise area under drip irrigation is as follows:

| Sr.No.            | Region     | Area under Drip irrigation in ha.<br>(up to March 2005) | Percentage |
|-------------------|------------|---------------------------------------------------------|------------|
| 1                 | Konkan     | 9366                                                    | 2.94       |
| 2                 | Nashik     | 138274                                                  | 43.40      |
| 3                 | Pune       | 79727                                                   | 25.03      |
| 4                 | Aurangabad | 51430                                                   | 16.14      |
| 5                 | Amravati   | 30988                                                   | 9.73       |
| 6                 | Nagpur     | 8783                                                    | 2.76       |
| Maharashtra State |            | 318568                                                  | 100        |

Out of 318568 ha under drip irrigation, maximum area is in Nashik (43.4%). Drip irrigation is applied to Banana, Grapes, Sugarcane, Oranges, Pomogrenade, Cotton, Mango & Vegetable crops. Out of 318568 ha, the area under Banana (70369 ha) & Grapes (62649 ha) 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.



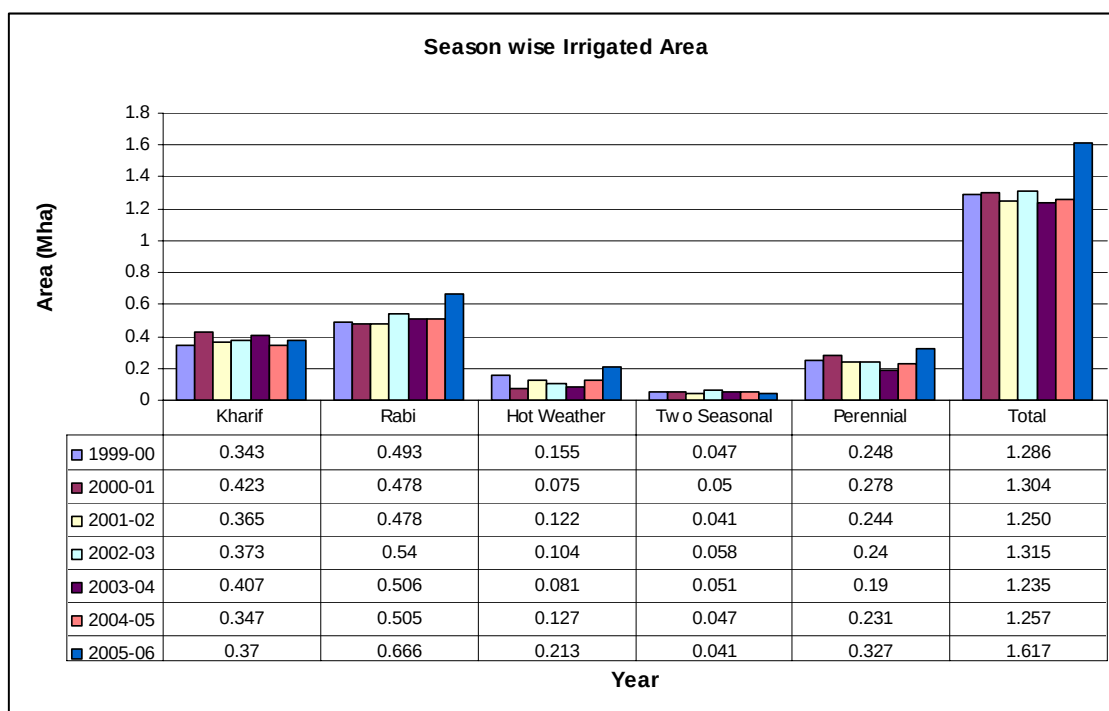
The overall reasons for less utilisation are as follows:

- 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.

Yearwise data @ potential created and actual utilisation is exhibited 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 2005-06, in which circlewise targets for potential utilisation were fixed. Field officers tried their level best to achieve the set goals. As a result, total actual potential utilisation has raised to 2.214 Mha (55% of potential created) against maximum utilisation of 1.839 Mha (48% of potential created) in the year 2003-04.

Details about yearwise, Seasonwise area irrigated is given below.



From the above table, it is seen that, due to satisfactory rainfall in most of the parts in the State, area irrigated in Kharif season is low compared to last year (2004-05) but there is striking increase in area under Rabi & HW, Perennial in particular.



Overall increased in area under HW & perennial crops at State level has helped in enhancing the output per unit irrigated area.

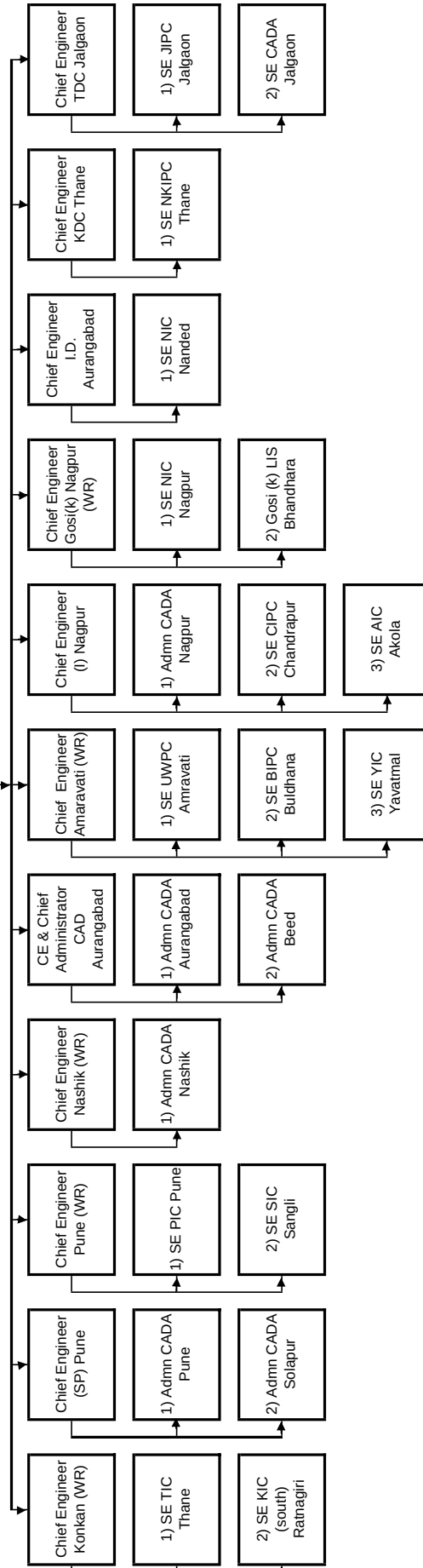
#### **1.6.0 Participation of Beneficiaries in Water Resources Management**

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 2005-06 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 2005-06 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.

# **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 plangroup wise number of projects selected for benchmarking during 2005-06 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                   | 8         | 2         | Nil                       | 15        | 4         |
| 2      | Deficit        | 3                       | 10        | 14        | --                  | --        | --        | 10                        | 45        | 18        |
| 3      | Normal         | 5                       | 14        | 4         | 6                   | 4         | 4         | 10                        | 16        | 7         |
| 4      | Surplus        | 3                       | 21        | 3         | --                  | --        | --        | --                        | --        | --        |
| 5      | Abundant       | 2                       | 2         | 2         | 9                   | 9         | 11        | --                        | --        | --        |
|        | <b>Total</b>   | <b>13</b>               | <b>47</b> | <b>23</b> | <b>16</b>           | <b>21</b> | <b>17</b> | <b>20</b>                 | <b>76</b> | <b>29</b> |

**Grand Total : 262 .**

#### 2.2.0 About this report

Following 12 indicators are selected for benchmarking in 2004-05. They are grouped in different key activity areas.

##### **System Performance**

- 1 Annual Irrigation Water Supply Per Unit Irrigated Area
- 2 Potential Created And Utilised

##### **Agricultural Productivity**

- 3 Output (Agricultural Production) Per Unit Irrigated Area
- 4 Output (Agricultural Production) Per Unit Irrigation Water Supply

##### **Financial Aspects**

- 5 Cost Recovery Ratio
- 6 Total O&M Cost Per Unit Area
- 7 Total O&M Cost Per Unit Volume Of Water Supplied
- 8 Revenue Per Unit Volume Of Water Supplied
- 9 Mandays For O&M Per Unit Area
- 10 Assessment Recovery Ratio
  - A. Irrigation
  - B. Non Irrigation

## **Environmental Aspects**

11 Land Damage Index

## **Social Aspects**

12 Equity Performance

**Most of the major projects are multipurpose projects. Supply of water for non irrigation use as compared to irrigation use is considerable. Naturally share of realisation of revenue recovery for non irrigation use is significant. Therefore, to differentiate the recovery of water charges for non irrigation use, Cost recovery ratio and Revenue per unit volume of Water Supplied are compared for irrigation use & non-irrigation use separately as well as combinely.**

The report is available on [www.mwrddc.org](http://www.mwrddc.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 consistency in monitoring & evaluation, projects considered (same projects) for benchmarking during 2004-05 are continued this year also.
- Projects under two circles JIPC Jalgaon & Gosikhurd Lift Irrigation circle, Bhandara are under construction and the distribution network is not completed, therefore, not considered for benchmarking.
- Data is collected in spreadsheet containing 30 columns from the concern field officers and analysed in MWRDC office. (Appendix No.IX) An explanatory note containing detailed instructions about working out the figures of different indicators was issued to field officer during the meeting held on 28<sup>th</sup> September 2006 to clear the doubts in calculations. This is also appended.
- **The data about water use and area irrigated is correlated with water accounts (2005-06) of relevant projects.**

- **The presentation for every indicator is done with past-past (5 year average), recent past (2004-05) and present year (2005-06) in order to compare the performance with predecessors as well as own performance of last year.**
- The draft report is scrutinised in MWIC & Mantralaya, Mumbai.
- Reasons for deviation from last year's performance and State norm are called from each circle.

**Looking to the large number of projects for better monitoring the analysis is carried out considering irrigation circle as a unit and projects therein with similar plangroups of sub basins.** Performance of projects in a circle against each indicator is collective performance as given in the Appendices.

- Ranking of circles in different plangroups is done by arranging the performance for 2005-06 in ascending order.
- Based on performance for 2005-06, indicator wise average performance is found out for the plangroup of circles under consideration, setting aside the exceptionally high/low values.
- **State targets for indicator No III & IV are decided plangroup wise.** However for other Indicators target value is common for all plangroups. 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.**
- Good as well as fair achievements and performance below average is separately shown.

- Some circles are not having either 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 circles with respect to each indicator is also given.
- There are 2470 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. V**

## **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**

Delivery of water, to meet user requirement for irrigation and other purposes, is the primary focus of the project authorities. The water delivery process is strongly influenced by physical, climatic, economic and other factors and the project authority has limited control over some of these 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 agreed user needs 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 total quantity of water supplied for irrigation in all the seasons of a year divided by the sum of area irrigated in Kharif, Rabi, HW on canal, reservoir & river (if water released from dam or canal escape) in that 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 divided by total irrigated area. Here the area irrigated means potential utilised.

As the population grows, the land holding per capita is going to be reduced. Secondly there is limitation on land to be brought 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 plangroup 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 divided by total quantity of water supplied for irrigation.

The output per unit irrigation water supply is a crucial measure of optimal use of water. The indicator shows how efficiently water is used to get maximum output (agricultural produce).

### **3.3 Financial Performance**

It is vital for any system to be economically self-sustainable at least 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 users, including irrigation & non-irrigation use on volumetric basis so as to encourage the users for 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.
- 2) Total O & M Cost per unit area
- 3) Total O & M Cost per unit Volume of Water Supplied.
- 4) Revenue per unit water supplied.
- 5) Mandays for O & M per unit area.
- 6) 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 (2005) to 30<sup>th</sup> June (2006) 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.

Government of Maharashtra 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 design plan 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 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.

The comparative analysis given in **Appendix-VIII** shows that where non-irrigation supply is prominent as well as hot weather or perennial irrigation is more, the revenue per unit volume of water supplied is more owing to higher rates.

### **3.3.5 Mandays For O & M Per Unit Area**

Mandays for O & M per unit area means number & staff engaged including RT, CRT, Work-charged and daily rated staff engaged in management of the system divided by area irrigated (potential utilised). It is always advisable to have optimum number of mandays for O & M. But with fixed establishment, there is less scope for improvement. The reduction in irrigation area due to less availability of water for irrigation and more reservation for non-irrigation uses results in abnormal increase in the ratio. Considering the sanctioned staffing pattern for management section, the target of three mandays/ha is considered to be ideal one.

### **3.3.6 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 2005-06 and assessment of charges for Kharif & Rabi of 2005-06 for irrigation and for Hot weather of 2004-05. For non-irrigation purpose assessment for water used during the year 2005-06 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.

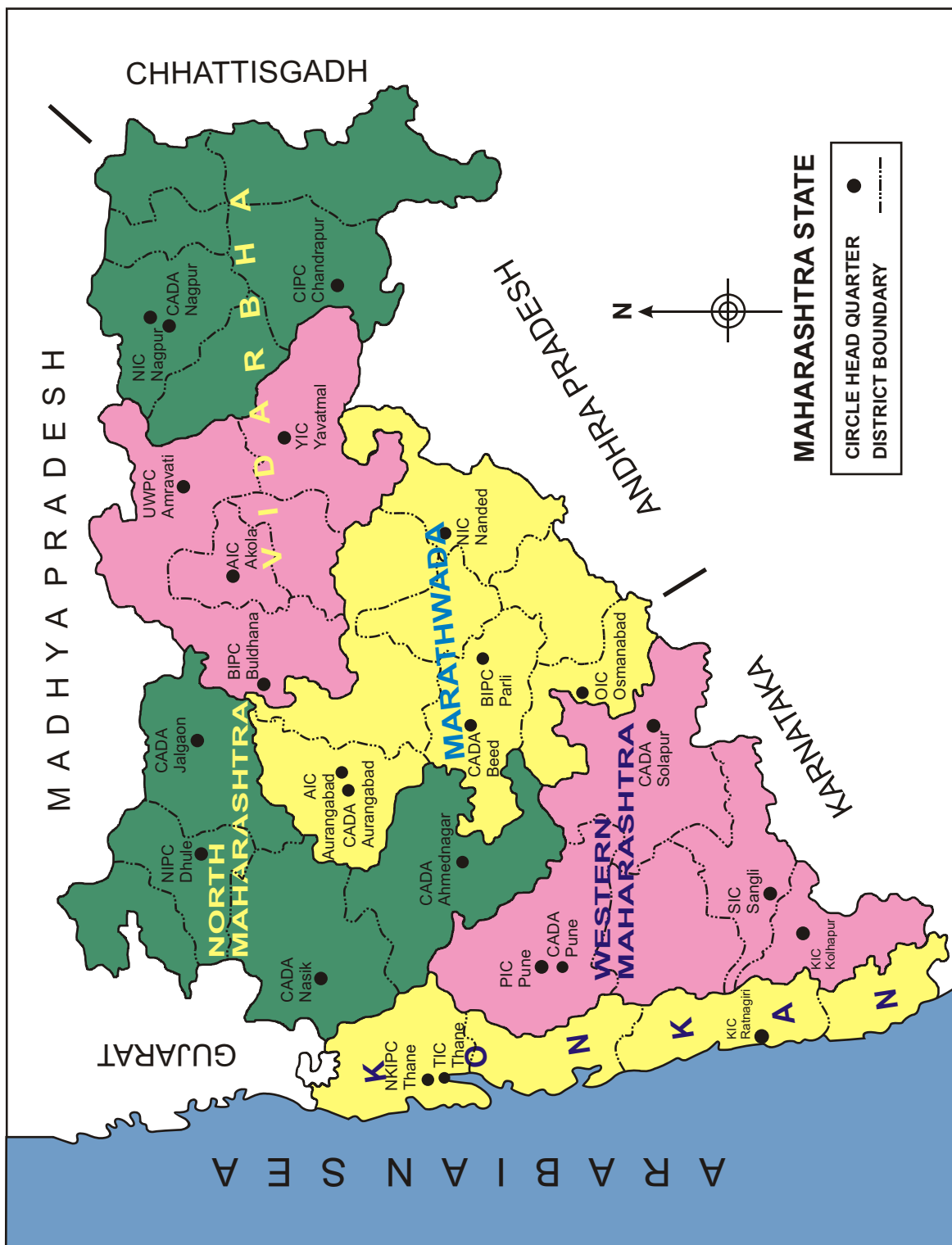
### **3.5 Social Aspects**

#### **3.5.1 Equity Performance**

Most of the schemes are gravity systems with canals and distribution system. The command area is divided equally in to 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.

MAP SHOWING LOCATION OF IRRIGATION CIRCLES





## **Chapter 4**

### **Observations and Conclusions**

#### **Major Projects**

##### **Indicator I: Annual Irrigation Water Supply per unit Irrigated Area (cum/ha)**

##### **Highly Deficit Plan group**

CADA Solapur: In Bhima project, water is utilised for irrigation at the rate of 7094 cum/ha. It appears that field officers have succeeded in reducing the water utilisation per irrigated unit of area by 26 percent compared to last year. The performance is also better than five years' average performance. However, it is slightly below the State norm of 7692 cum/ha.

##### **Deficit Plan group**

AIC Akola: Annual irrigation water use in Katepurna & Nalganga is 7815 cum/ha, which is close to the State norm. If Katepurna project individually is considered, water use per unit area irrigated is 8918 cum which is more than the State norm but less than its past value. In Nalganga project, 3605 cum of water is used for irrigating unit ha of area. Water use on this project is low compared to the State norm & other projects under the plan group. It is so due to protective irrigation only in initial reach of canal & water supply on volumetric basis.

BIPC Buldhana: Only Wan project is under this circle in this plan group. Water use per unit area irrigated is 9198 cum which is about 20 percent & 244 percent more than the State norm & its use in 2004-05. Excess water use is due to less response to night irrigation & apathy of field officers to follow strictly the guidelines about irrigation management. During 2004-05, water use was quite low as only one rotation was executed in Rabi & HW seasons on account of scarcity condition during that year.

CADA Aurangabad: In Jayakwadi project, the water use per unit irrigated area is substantially reduced from 16899 cum/ha in 2004-05 to 10278 cum/ha in 2005-06. This is mainly due to increase in area under irrigation. However, efforts are still required at field level to achieve the State target.

NIC Nanded: In Manar and Purna projects, which received 100 percent yield during 2005-06, the area under water intensive crops (HW Groundnut, Sugarcane, Banana, vegetables, etc.) is 3466 ha and 11163 ha out of 9045 and 36975 ha total irrigated area causing more water use per ha in 2005-06.

CADA Jalgaon: In Girna project, the water use per unit irrigated area is very high, which is more than its past values. The field officers are required to take efforts for improvement in performance.

CADA Beed: In Majalgaon project, only protective irrigation was possible in 2004-05 due to lesser availability of water. During 2005-06, the reservoir was full. However, nearly 43 percent of the irrigated area (62 percent crop intensity) was under Sugarcane, leading to more water use per hectare. Similarly in command of PRBC, nearly 41 percent of the irrigated area (72 percent crop intensity) was under Sugarcane, leading to more

water use per hectare. The field officers are required to pay more attention for improvement in performance by reducing conveyance losses. Water use on Lower Terna project (6225 cum/ha) is well within State norm.

### **Normal Plan group**

CADA Pune: In Kukadi project the annual irrigation water supplied per unit area is 7987 cum. The water utilisation is increased by 56 percent since last year. In Ghod project the water utilisation for irrigation is 8171 cum/ha which increased by 54 percent since last year. Utilisation with comparison to five year average is at higher side. The water utilisation per ha is more than the State target.

CIPC Chandrapur: Old canal system of Bor project requiring major repairs is responsible for more transit losses. According to field officers, this has increased water use to 16405 cum/ha which is 213 percent more than the State norm.

CADA Nashik: In Kadwa project, the water use is consistently more than the State target. However, there is improvement over last year's performance and five years' average. As per field officers, more water use per ha is due to more conveyance losses in the canal system. Remedial measures are proposed for improvement in performance. Water at the rate of 10675 cum/ha is used in Waghad project, which is higher than State norm. As water is supplied on volumetric basis, more efforts are required at field level to use the water economically. In Gangapur project, the water use per unit area is less than the State target. Following are some of the reasons for the same. A) Area under Sugarcane is merely 5 percent, B) Area under Wheat, Jowar and Gram is predominant and only three rotations are provided to Wheat in Rabi season.

Water use on Mula project is appreciably high (11554 cum/ha) compared to the State norm. In Bhandardara project, the area under Sugarcane is 23 percent of total irrigated area, causing more water use. The field officers are required to bring down the water use per hectare at least up to five years' average.

PIC Pune: In Khadakwasla project, the water utilisation for irrigation is 21588 cum/ha, which alarmingly increased compared to last year's performance. It is three times of State target. Field officers have to take actions to improve the system performance. In NLBC, water supplied for irrigation is 11488 cum/ha which is on higher side in comparison with last years' performance, five years average and even State target. In NRBC, the water supplied for irrigation is 8442 cum/ha which is lowered by 5 percent since last year. But it is above the State target level. The field officers have to take efforts to optimise the water supply for irrigation. In Pawana project the water supplied for irrigation is 4986 cum/ha.

CADA Jalgaon: In Hatnur project, the water use is increased from 8315 cum/ha in 2004-05 to 11615 cum/ha, (2005-06) mainly due to scattered area under irrigation in Rabi season. In Girna project rate of water use is 14336 cum/ha which is high compared to State norm as well as its performance during last year.

NIC Nanded: In Upper Penganga project, only 4 percent water was available during 2004-05 and therefore, only protective irrigation was given during that year. In 2005-06, the project received 100 percent yield. The area under Sugarcane, Banana, HW



Groundnut, Vegetables and other perennials was 7033 ha out of 22052 ha total irrigated area, which has caused more water use per unit irrigated area.

In Vishnupuri project low water use (6304 cum/ha) compared to the State norm is due to maximum area being irrigated on reservoir lifts. Water use in Purna & Manar projects is 147 percent & 170 percent of State norm. Project authorities are expected to explore the reasons for excess water use.

AIC Akola: In Pus project, water use per unit irrigated area is exceptionally high (21105 cum/ha). Field officers are required to explore the reasons for the same.

UWPC Amrawati: In Upper Wardha project, the water use per unit area irrigated (20044 cum/ha) is appreciably high compared to the State norm & its last years performance. According to field officers, apathy of farmers towards night irrigation & scattered area irrigated are the reasons for low performance. But it is equally true that, for economic water use project authorities are required to pay more attention towards planning & monitoring of irrigation management at circle level.

YIC Yeotmal: Water use in Arunawati project is exceptionally high (24600 cum/ha). Excessive leakages through head regulator & outlets are responsible for more water use.

### **Surplus Plan group**

CADA Nagpur: Performance of Pench project (9372 cum/ha) has been improved compared to its performance during last year (10428 cum/ha). Though Pench, Bagh & Itiadoh are Kharif dominating projects, Paddy is the principle crop in HW which requires more water (9 rotations) compared to other crops. Water use during 2005-06 in Rabi & HW in these projects (except Bagh) is predominant, compared to its use in Kharif. Therefore, water use in these projects (Pench 9372 cum/ha, Bagh 8283 cum/ha & Itiadoh 10357 cum/ha), is slightly more than the State norm.

### **Abundant Plan group**

CIPC Chandrapur: Ninety percent of total water use on Asolamendha & Dina projects is for Kharif Paddy. These projects lie in assured rainfall zone; obviously irrigation water is supplied in the form of protective irrigation. Therefore, water use per unit irrigated area during the year 2005-06 was 5323 cum/ha and 4896 cum/ha in Asolamendha & Dina projects respectively. Water use is low compared to the State target of 7692 cum/ha. However, performance is high compared to its performance during last year.

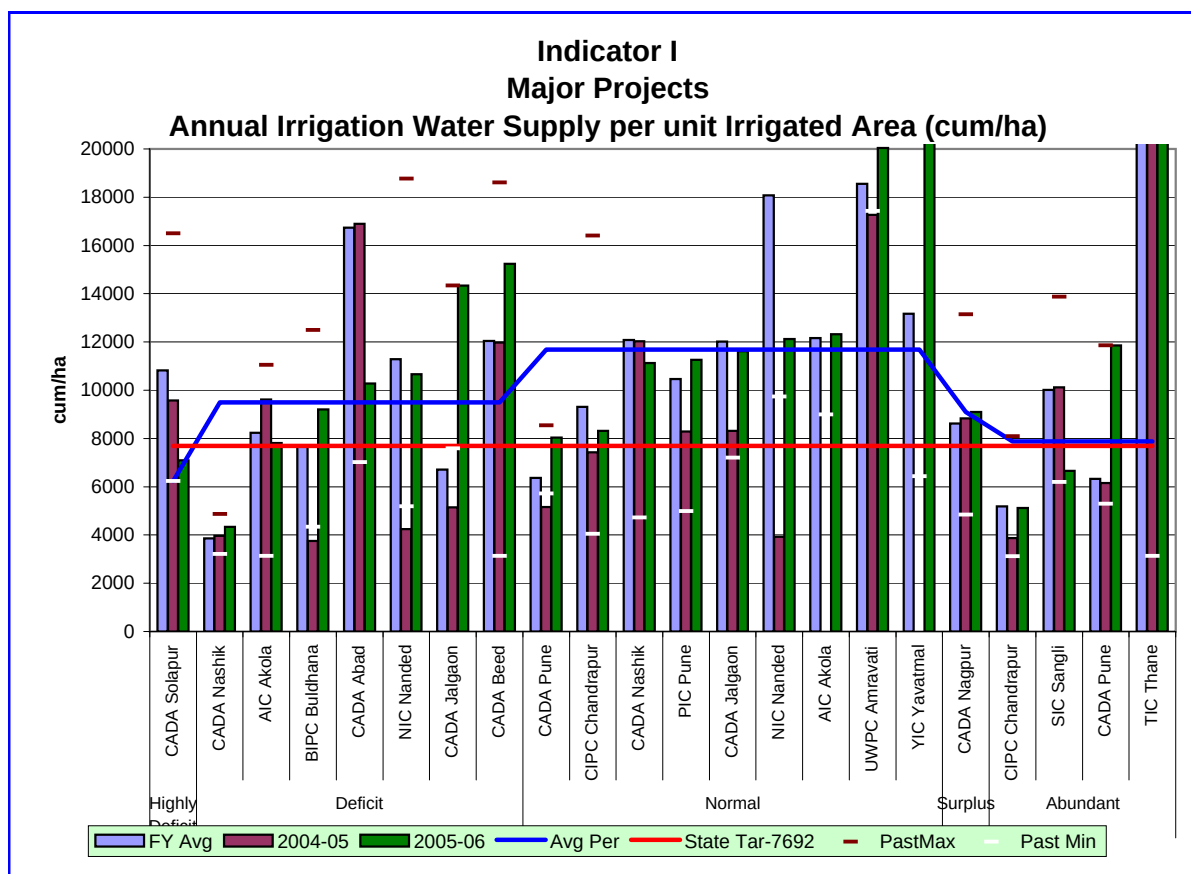
SIC Sangli: In Dudhganga project, water use is 7503 cum/ha. Field officers succeeded in reducing the water use per unit of area by 20 percent over last year. The performance is also better than five years' average. In Radhanagri project, water utilisation for irrigation is 6190 cum/ha. As water for irrigation is utilised by lifting from river. Field officers are required to measure the water accurately by water meters. The water utilisation is reduced per unit of area by 40 percent since last year.

In Tulsi project, water use for irrigation is 8772 cum/ha. Field officers succeeded in reducing the water utilisation per unit of area by 34 percent since last year. The performance is also better than five years' average. In Warna project, water utilisation for

irrigation is 6453 cum/ha. The water utilisation is reduced per unit of area by 36 percent since last year. The performance is also better than five years' average.

CADA Pune: In Krishna project, the water utilisation for irrigation is nearly double than five years average and last year's performance. It is 1.5 times more than the State target. Hence it is essential to reduce the water supply per unit area.

TIC Thane: In Bhatsa project, water utilisation for irrigation is 21552 cum/ha. Field officers succeeded in reduction of 3 percent since last year. The utilisation is also better than five years' average but it is far higher the State norm. It is due to major Paddy crop. In Surya project, water utilisation is 43329 cum/ha. Abrupt increase in the water utilisation (16 times) is observed in comparison with last years' performance. In Kal-Amba project, water utilisation per unit area is 27564 cum. It is decreased by 11 percent from last year. It is lower than five years' average value but much higher than State norm. In Rajanalla project, water utilisation per unit area is 17882 cum. It is increased by 16 percent from last year. It is higher than five years' average value and much higher than State norm.



| Plangroup      | Circle          | FY Avg | 2004-05  | 2005-06 | PastMax | Past Min | Avg Per | Rank |
|----------------|-----------------|--------|----------|---------|---------|----------|---------|------|
| Highly Deficit | CADA Solapur    | 10822  | 9572     | 7094    | 16504   | 6228     | 6228    | G    |
| Deficit        | CADA Nashik     | 3860   | 3960     | 4338    | 4863    | 3205     |         | F    |
|                | AIC Akola       | 8231   | 9622     | 7816    | 11048   | 3125     |         | G    |
|                | BIPC Buldhana   | 7683   | 3759     | 9199    | 12491   | 4339     |         | M    |
|                | CADA Abad       | 16743  | 16899    | 10278   | 21379   | 7013     | 9490    | F    |
|                | NIC Nanded      | 11282  | 4250     | 10666   | 18763   | 5191     |         | F    |
|                | CADA Jalgaon    | 6708   | 5146     | 14336   | 14336   | 7588     |         | BA   |
|                | CADA Beed       | 12041  | 11975    | 15240   | 18612   | 3125     |         | BA   |
| Normal         | CADA Pune       | 6360   | 5158     | 8034    | 8543    | 5722     |         | G    |
|                | CIPC Chandrapur | 9316   | 7422     | 8315    | 16406   | 4051     |         | G    |
|                | CADA Nashik     | 12085  | 12033    | 11123   | 36327   | 4726     |         | F    |
|                | PIC Pune        | 10463  | 8286     | 11261   | 21588   | 4986     |         | F    |
|                | CADA Jalgaon    | 12016  | 8315     | 11615   | 22983   | 7201     | 11688   | BA   |
|                | NIC Nanded      | 18075  | 3927     | 12121   | 28105   | 9731     |         | BA   |
|                | AIC Akola       | 12158  | No Water | 12318   | 21110   | 8996     |         | BA   |
|                | UWPC Amravati   | 18548  | 17268    | 20045   | 21005   | 17432    |         | BA   |
| Surplus        | YIC Yavatmal    | 13173  | No Water | 24600   | 24600   | 6438     |         | BA   |
|                | CADA Nagpur     | 8615   | 8833     | 9097    | 13142   | 4842     | 9097    | M    |
| Abundant       | CIPC Chandrapur | 5182   | 3870     | 5118    | 8092    | 3118     |         | F    |
|                | SIC Sangli      | 10009  | 10120    | 6662    | 13871   | 6190     | 7879    | G    |
|                | CADA Pune       | 6328   | 6155     | 11858   | 11858   | 5298     |         | BA   |
|                | TIC Thane       | 36408  | 24784    | 27830   | 87671   | 3125     |         | BA   |

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.

## **Indicator II: Potential Created and Utilised**

### **Highly Deficit Plan group**

CADA Solapur: In Bhima project, utilised irrigation potential is 64 percent. There is increase in utilisation by 2 percent since last year. The performance is also better than five years' average.

### **Deficit plan group**

BIPC Buldhana: In case of Wan project, potential utilisation is 29 percent of effective potential created. Reasons for low potential utilisation compared to State norm & its past year performance (0.42) are to be explored by the field officers.

CADA Beed: In all four major projects viz; Manjra, Lower Terna, Majalgaon and Jayakwadi (PRBC), the overall ratio is very low. The performance of PRBC is poor as compared to PLBC though both the canals (originating from the same reservoir) have command areas of similar characteristics. The field officers are required to be more vigilant for improving the performance.

AIC Akola: According to field officers, potential utilisation in Katepurna & Nalganga is less than 50 percent of potential created, due to less water demand for HW crops. In case of Nalganga project, due to less water availability, water was supplied to area in initial reach of the canal only.

### **Normal Plan group**

UWPC Amrawati: Potential utilisation during 2004-05 was 25 percent of created potential, but during 2005-06, potential utilisation is reduced to 22 percent. According to field officers less water demand to two seasonal crops in Rabi (particularly cotton) and to some extent to seasonal crops like Gram due to satisfactory rainfall in Rabi, had an impact over the potential utilisation.

YIC Yeotmal: Actual potential utilisation in Arunawati project (25 percent) during the year 2005-06 is more than (17 percent) past five years average performance. Due to drought condition, there was no irrigation potential utilisation during last year. Proper actions to utilise full created irrigation potential are necessary at project level.

CIPC Chandrapur: In Bor project, potential utilisation during 2005-06 (42 percent) is more than its past five years' average performance (37 percent). It is low compared to last year (45 percent) and State norm. Potential utilisation in Rabi & HW is low compared to project planning. Reasons for under utilisation of potential must be sorted out at project level.

AIC Akola: Potential utilisation in Pus project is slightly on lower side (54 percent) than past five years average performance (56 percent). There was no irrigation during the year 2004-05 due to non availability of water for irrigation. According to project authorities, low demand for water in Rabi & HW is main cause for under utilisation. Necessary actions for promoting more irrigation use preferably in Rabi are required at project level.

CADA Pune: In Kukadi project, the water availability for irrigation in reservoir is substantial. The ratio of utilised irrigation potential with effective created potential is enhanced by 27 percent over last year. In Ghod project, the ratio comes to one.

CADA Nashik: All major projects except Ozarkhed have achieved the State norm of one. Though the performance of Ozarkhed has improved over the past, there is still scope for improvement.

PIC Pune: In Khadakwasla project the ratio comes to 0.64, which is lower by 19 percent since last year in spite of availability of water in reservoir. The field officers are required to take care for achieving the State norm. In NLBC & NRBC, the Ratio comes to one. In Pawana project the ratio comes to one which is more than last year's performance and five years average performance & it is as per State norm.

### **Surplus Plan group**

CADA Nagpur: Actual potential utilisation in all the three projects [Bagh (81 percent), Itiadh (99 percent) & Pench (72 percent)] is better than their past five years' average performance [Bagh (74 percent), Itiadh (83 percent) & Pench (62 percent)]. But it is low for Bagh & Pench projects compared to the State norm. On Pench project, old canal system, having constraints over discharge carrying capacity may be the reason for low potential utilisation.

### **Abundant Plan group**

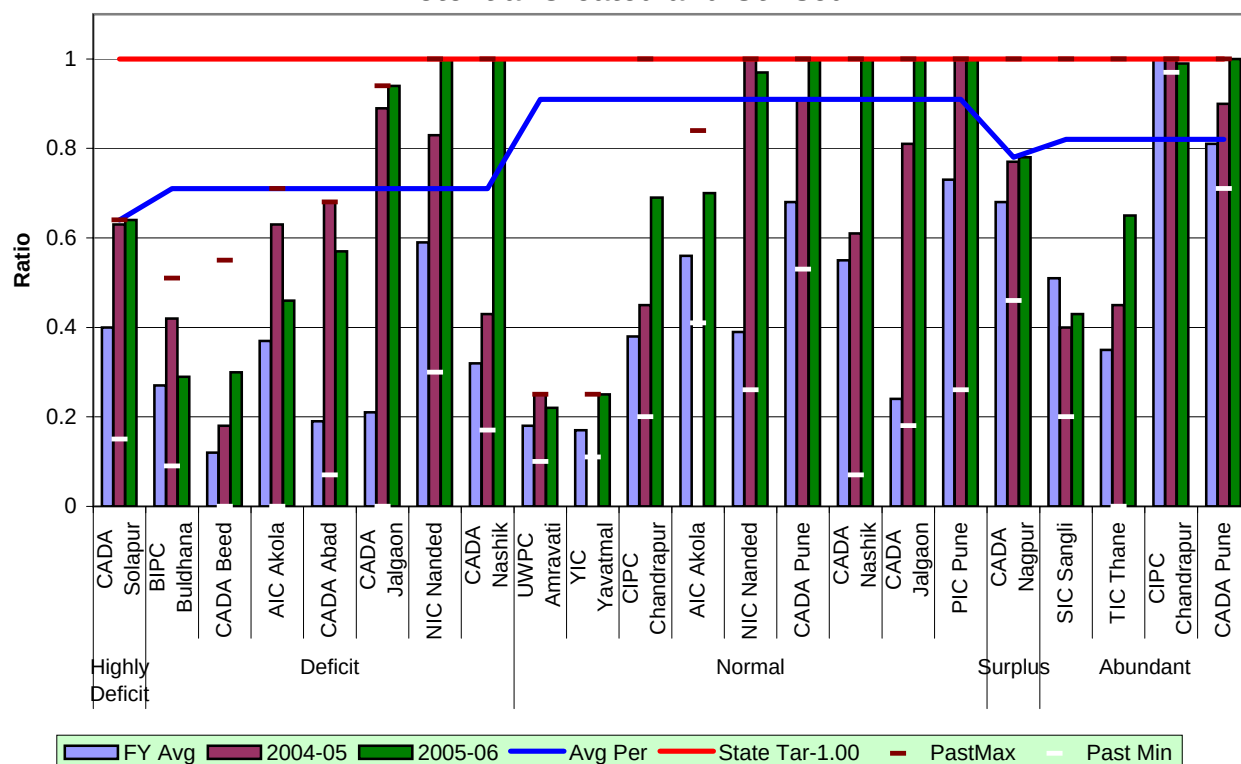
SIC Sangli: In Dudhganga project, the ratio of utilised irrigation potential to effective created potential is 1. Field officers succeeded in increasing potential ratio from 0.37 to 1.00 since last year. In Radhanagri project utilised irrigation potential is 0.91. Field officers succeeded in increasing potential ratio from 0.77 to 0.91 since last year. The performance is also better than five years' average & it is slightly below the State norm. In Tulshi project the ratio is 1. Field officers succeeded in increasing potential ratio from 0.56 to 1.00 over past year. The performance is also better than five years' average. In Warna project, utilised irrigation potential is only 0.20 from canals. There is decrease in potential ratio from 0.26 to 0.20 since last year. The performance is also lower than five years' average. Necessary efforts have to be taken by field officers for improvement.

TIC Thane: In Bhatsa project, ratio is 1. Field officers succeeded in increasing utilisation from 0.20 to 1.00 since last year. The performance is also better than five years' average. In Surya project, utilised irrigation potential is 68 percent. Field officers succeeded in increasing potential ratio from 0.20 to 0.68 since last year. The performance is also better than five years' average. In Kal-Amba project, full effective potential was utilised. Field officers succeeded in increasing the ratio from 0.52 to 1 since last year. The performance is also better than five years' average. In Rajanalla project, full effective potential was utilised. The performance is also better than five years' average.

CIPC Chandrapur: In Dina project, Kharif Paddy is the principle crop which requires water in the form of protective irrigation. Actual potential utilisation in the project is 97 percent of created potential which is very close to the State norm. In case of Asolamendha project, 100 percent of created irrigation potential is utilised, which is same since last five years.

CADA Pune: In Krishna project the ratio comes to one.

## Indicator II Major Projects Potential Created and Utilised



| Plangroup       | Circle          | FY Avg        | 2004-05 | 2005-06 | PastMax | Past Min | Avg Per | Rank |
|-----------------|-----------------|---------------|---------|---------|---------|----------|---------|------|
| Highly Deficit  | CADA Solapur    | 0.40          | 0.63    | 0.64    | 0.64    | 0.15     | 0.64    | F    |
| Deficit         | BIPC Buldhana   | 0.27          | 0.42    | 0.29    | 0.51    | 0.12     | 0.71    | BA   |
|                 | CADA Beed       | 0.12          | 0.18    | 0.30    | 0.55    | No Irr   |         | BA   |
|                 | AIC Akola       | 0.37          | 0.63    | 0.46    | 0.71    | No Irr   |         | BA   |
|                 | CADA Abad       | 0.19          | 0.68    | 0.57    | 0.68    | 0.13     |         | F    |
|                 | CADA Jalgaon    | 0.21          | 0.89    | 0.94    | 0.94    | No Irr   |         | G    |
|                 | NIC Nanded      | 0.59          | 0.83    | 1.00    | 1.00    | 0.30     |         | VG   |
|                 | CADA Nashik     | 0.32          | 0.43    | 1.00    | 1.00    | 0.14     |         | VG   |
|                 | Normal          | UWPC Amravati | 0.18    | 0.25    | 0.22    | 0.25     |         | 0.10 |
| YIC Yavatmal    |                 | 0.17          | No Irr  | 0.25    | 0.25    | 0.11     | BA      |      |
| CIPC Chandrapur |                 | 0.38          | 0.45    | 0.69    | 1.00    | 0.20     | F       |      |
| AIC Akola       |                 | 0.56          | No Irr  | 0.70    | 0.84    | 0.41     | M       |      |
| NIC Nanded      |                 | 0.39          | 1.00    | 0.97    | 1.00    | 0.26     | G       |      |
| CADA Pune       |                 | 0.68          | 0.91    | 1.00    | 1.00    | 0.53     | VG      |      |
| CADA Nashik     |                 | 0.55          | 0.61    | 1.00    | 1.00    | 0.07     | VG      |      |
| CADA Jalgaon    |                 | 0.24          | 0.81    | 1.00    | 1.00    | 0.18     | VG      |      |
| PIC Pune        |                 | 0.73          | 1.00    | 1.00    | 1.00    | 0.26     | VG      |      |
| Surplus         |                 | CADA Nagpur   | 0.68    | 0.77    | 0.78    | 1.00     | 0.46    | 0.78 |
| Abundant        | SIC Sangli      | 0.51          | 0.40    | 0.43    | 1.00    | 0.20     | 0.82    | BA   |
|                 | TIC Thane       | 0.35          | 0.45    | 0.65    | 1.00    | 0.18     |         | G    |
|                 | CIPC Chandrapur | 1.00          | 1.00    | 0.99    | 1.00    | 0.97     |         | G    |
|                 | CADA Pune       | 0.81          | 0.90    | 1.00    | 1.00    | 0.71     |         | VG   |

Notes: 1) Figures in blue are excluded from Avg Per.

2) 'No Irr' indicates the utilised potential in that year is nil.

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

#### **Highly Deficit Plan group**

CADA Solapur: In Bhima project, agricultural output is Rs. 46175/ha which is 5.33 percent higher than last year's performance. Performance is enhanced in comparison with five years' performance.

#### **Deficit Plan group**

BIPC Buldhana: In spite of irrigating crops like Oil Seeds and Wheat in Wan project, output per unit irrigated area is very low (Rs. 8850). It is even lower than last year's output of Rs.14286. Project authorities are advised to recheck the crop wise output value and take suitable actions to increase the yield, so as to achieve the State norm.

AIC Akola: Output in Katepurna project is Rs.14607/ha which is low compared to the State norm of Rs.23000/ha. Yield of Rabi crops was badly affected by the hailstorm during maturity stage of crops. In Nalganga project, water was mainly supplied to cash crops. Therefore output per unit irrigated area is more than the State target and five years' average performance.

NIC Nanded: Output per unit irrigated area in Purna (Rs. 17608/ha) and Manar (Rs.19889/ha) is low compared to State norm in spite of cash crops grown on 25 percent of the irrigated area. Same is the case with UPP Nanded.

CADA Beed: On all four major projects, agricultural output is more than the State target. Moreover, the output per hectare on PRBC is more than that on PLBC. The reason for higher output can be attributed to higher percentage of area under Sugarcane on PRBC.

#### **Normal Plan group**

AIC Akola: Output observed on Pus project (Rs. 24877/ha) is very close to the State norm of Rs. 26000 per ha irrigated area.

YIC Yeotmal: On Arunawati project, output during 2005-06 is same as that of past five years' average (Rs.16524/ha). But it is low compared to the State norm of Rs. 26000/ha.

NIC Nanded: In Upper Penganga project, there was substantial reduction in area under Sugarcane due to non-availability of water successively during last two years, which has reduced the output. During 2005-06, the area under Sugarcane has again increased due to 100 percent availability of water in the reservoir.

CIPC Chandrapur: Output per unit area in Bor project (Rs. 19758) is slightly improved compared to its performance in 2004-05(Rs. 18421). Performance is low compared to the State norm probably due to Rabi seasonal crops. Mainly Gram was sown in the command.

CADA Pune: In Kukadi project, output is Rs.26784/ha which shows slight improvement over last year's performance. However, it is lower than five years' average. In Ghod project, the agricultural output is Rs.17003/ha. It is increased by 48 percent over last year.

PIC Pune: In Khadakwasla project, the output was Rs.53039/ha which shows 4 times increase in last year's performance. It is due to increased area under vegetable crops. In

NLBC, the output was Rs.35358/ha which increased by 42 percent since last year. In NRBC, the output was Rs.30249/ha. There is a rise of 30 percent since last year. In Pawana project, the output was Rs.55781/ha which is about four times more than the last year.

UWPC Amrawati: There is no significant change in actual crops grown in command area of Upper Wardha project during 2004-05 and 2005-06. But the output observed (Rs. 37535) during 2005-06 is exorbitantly high compared to State norm of Rs. 26000 & last years performance of Rs. 18719/ha. Reasons for such large variation in the performance may be explored at project level.

CADA Jalgaon: In Hatnur project, the area under Banana crop is reduced to less than 50 percent of last year, reducing the output per unit area from Rs. 72332 (in 2004-05) to Rs. 48351 (in 2005-06).

CADA Nagpur: In case of Lower Wunna project, output is just Rs. 9409/ha, which is very low compared to the State target (Rs. 26000/ha) and other projects under this plan group. It is necessary to explore the reasons for such low output at project level and take suitable actions for improving the performance.

### **Surplus Plan group**

CADA Nagpur: There is increase in output per unit irrigated area in Bagh (Rs. 24885), Itiadh, (Rs. 24633) & Pench (Rs. 32273) projects compared to their last year performance (Bagh Rs. 15314, Itiadh Rs. 16885 & Pench Rs. 26319). Output in Pench project compared to Bagh & Itiadh is better on account of perennial crops grown in Pench project.

### **Abundant Plan group**

CIPC Chandrapur: Asolamendha & Dina are Paddy growing projects. Obviously the output per unit irrigated area in these projects is likely to be low compared to State target (Rs. 34000) and projects under SIC Sangli of this plan group where Sugarcane is the predominant crop. Output observed in Asolamendha is Rs. 24500/ha, which is same as in 2004-05.

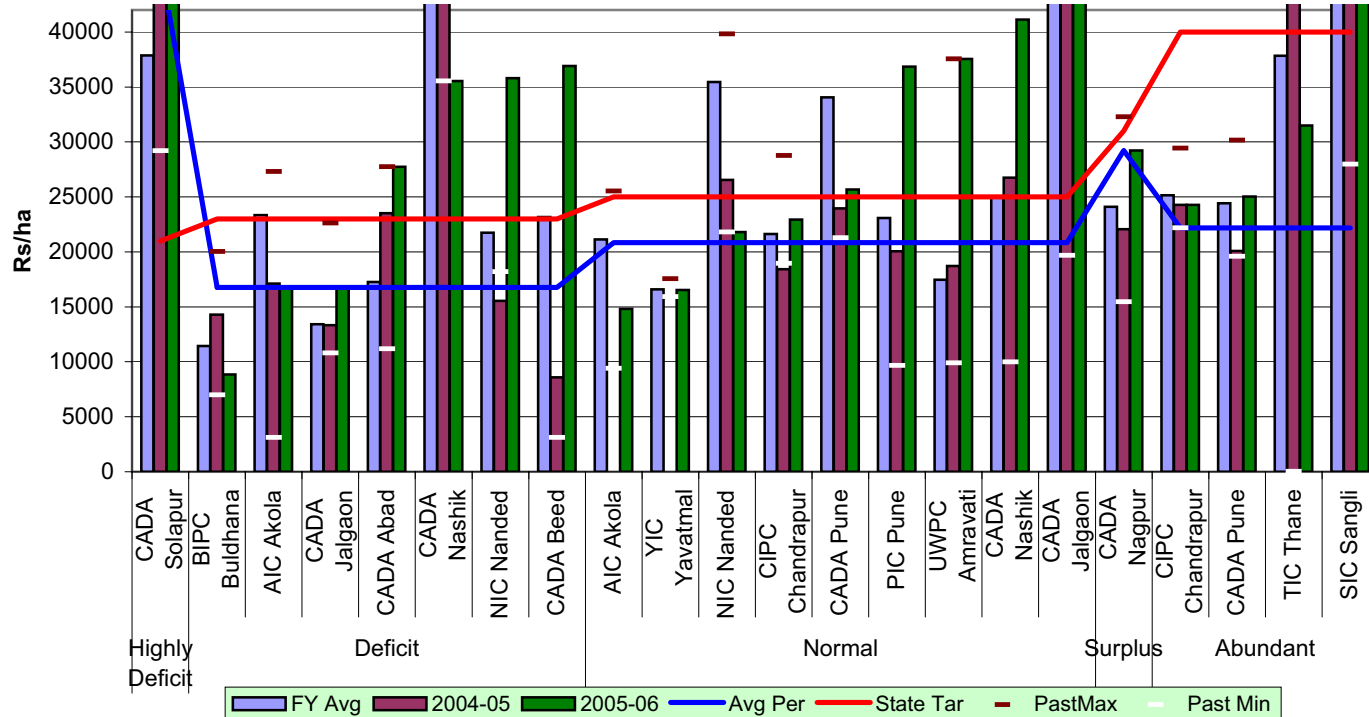
CADA Pune: In Krishna project, the output was Rs.25036/ha. It is enhanced by 25 percent over last year.

TIC Thane: In Bhatsa project, agricultural output is Rs. 40143/ha which is 8.15 percent lower than last year's value. Output is higher in comparison with five years' performance. In Surya project, output is Rs. 27767/ha. Performance is enhanced in comparison with five years. In Kal-Amba project, output is Rs. 48433/ha which is 24.62 percent lower than last year's value.

SIC Sangli: In Dudhganga project, the output is Rs. 152253/ha which is 2.3 times higher than last year's value. It is enhanced in comparison with five years. In Radhanagri project, the output is Rs. 44794/ha. In Tulshi project, the output is Rs.12182/ha which is 72 percent lower than last year's value. Output is low in comparison with Five years. In Warna project the output is Rs.56660/ha. Performance is lower in comparison with five years' performance.



### Indicator III Major Projects Output per unit Irrigated Area



| Plangroup      | Circle          | FY Avg | 2004-05 | 2005-06 | PastMax | Past Min | Avg Per | St.Tar | Rank |
|----------------|-----------------|--------|---------|---------|---------|----------|---------|--------|------|
| Highly Deficit | CADA Solapur    | 37857  | 43837   | 46175   | 46175   | 29203    | 46175   | 21000  | VG   |
| Deficit        | BIPC Buldhana   | 11435  | 14286   | 8850    | 20029   | 6979     |         |        | BA   |
|                | AIC Akola       | 23334  | 17113   | 16658   | 27290   | 3125     |         |        | M    |
|                | CADA Jalgaon    | 13426  | 13334   | 16724   | 22616   | 10806    |         |        | M    |
|                | CADA Abad       | 17253  | 23504   | 27729   | 27729   | 11186    | 16756   | 23000  | VG   |
|                | CADA Nashik     | 51288  | 43133   | 35543   | 58043   | 35543    |         |        | VG   |
|                | NIC Nanded      | 21750  | 15545   | 35801   | 42361   | 18199    |         |        | VG   |
|                | CADA Beed       | 23179  | 8580    | 36903   | 53030   | 3125     |         |        | VG   |
| Normal         | AIC Akola       | 21119  | No Irr  | 14819   | 25524   | 9409     |         |        | F    |
|                | YIC Yavatmal    | 16592  | No Irr  | 16524   | 17552   | 15916    |         |        | F    |
|                | NIC Nanded      | 35455  | 26542   | 21803   | 39808   | 21803    |         |        | M    |
|                | CIPC Chandrapur | 21635  | 18421   | 22935   | 28752   | 18957    |         |        | G    |
|                | CADA Pune       | 34042  | 23941   | 25674   | 50853   | 21284    | 20841   | 25000  | G    |
|                | PIC Pune        | 23076  | 20062   | 36834   | 58000   | 9660     |         |        | VG   |
|                | UWPC Amravati   | 17471  | 18719   | 37535   | 37535   | 9886     |         |        | VG   |
|                | CADA Nashik     | 24958  | 26755   | 41133   | 196920  | 9969     |         |        | VG   |
|                | CADA Jalgaon    | 89369  | 72332   | 48351   | 148519  | 19680    |         |        | VG   |
| Surplus        | CADA Nagpur     | 24095  | 22058   | 29214   | 32272   | 15463    | 29214   | 31000  | VG   |
| Abundant       | CIPC Chandrapur | 25145  | 24261   | 24263   | 29413   | 22187    |         |        | M    |
|                | CADA Pune       | 24434  | 20076   | 25036   | 30159   | 19599    |         |        | M    |
|                | TIC Thane       | 37831  | 44567   | 31493   | 48433   | 30       | 22169   | 40000  | G    |
|                | SIC Sangli      | 51291  | 51680   | 50324   | 63025   | 27969    |         |        | VG   |

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

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

##### **Highly Deficit Plan group**

CADA Solapur: In Bhima project, output was Rs. 5.35/cum which is 16.81 percent higher than last year's performance. Performance is enhanced in comparison with five years' performance. It is higher than State norm.

##### **Deficit Plan group**

BIPC Buldhana: Due to the very low output and more water use than the State norm, output realised per unit of irrigation water supply in Wan project is just Rs.0.74/cum.

CADA Beed: In Majalgaon project, the field officers are required to improve the value of output per unit water supply.

AIC Akola: In Katepurna project, on account of reduced yield due to hailstorm and more water use per unit area irrigated, low output is realised per unit irrigation water supply. Output realised is Rs.1.9/cum as against State norm of Rs. 2.99/cum. In case of Nalganga project, due to volumetric water supply and better output the ratio (Rs.7.30/cum) is very good compared to the State target.

NIC Nanded: In Purna and Manar projects, output per unit water supply is reduced over last year's values, indicating more water use for HW Groundnut.

##### **Normal Plan group**

YIC Yeotmal: Due to exceptionally high water use and low output in Arunawati project, the ratio has rolled down to Rs.0.89/cum which is very low compared to State target and its past five years average performance (Rs.1.26/cum).

AIC Akola: In spite of good realisation of output in Pus project, excessive water use per unit irrigated area has limited the ratio to Rs. 2.18/cum. However, there is improvement in performance compared to past five years' average performance.

UWPC Amrawati: Though there is exceptionally high water use per unit area irrigated, extraordinary high output has resulted in better performance in case of Wardha project (Rs. 2.4/cum). Performance appears to be better compared to its last year performance of Rs. 1.08 /cum.

CADA Nashik: In Waghad project, the output per unit water supply is quite high due to cash crops in the command.

CADA Jalgaon: In Hatnur project, the output has increased as the area under Banana, a highly water intensive crop, has reduced considerably.

CIPC Chandrapur: Though the output per unit irrigated area on Bor project is fair compared to the State target. Excessive water use has resulted in increase in output of Rs.1.62 per cum of irrigation water use.

PIC Pune: In Khadakwasla project, the output per unit of water works out to Rs.3.50/cum.

In NLBC, the output per unit water works out to Rs. 6.34/cum which increased by 1.34 times over last year. In NRBC, the output is Rs.4.74/cum. There is increase of 81 percent since last year. Similarly in Pawana project the output works out to Rs.12.24/cum which is 4.91 times that for last year.

CADA Pune: In Kukadi project, the output works out to Rs.5.62/cum. It is nearly same as five years' average value. However, in Ghod project, the output is only Rs. 2.57/cum.

### **Surplus Plan group**

CADA Nagpur: Ratio in case of Bagh & Pench projects is Rs.3.91/cum & 3.67/cum respectively, which is quite good compared to State norm of Rs. 3.25/cum. Performance in case of Bagh project is better due to protective irrigation in Kharif, whereas in Pench project, reason is attributed to good output realised on the project.

Due to comparatively excess water use in Itiadh project, the performance (Rs. 2.41/cum) is slightly low compared to the State target. However, it is better compared to its last year performance (Rs. 1.83/cum). In case of Pench & Bagh projects also there is improvement in 2005-06.

### **Abundant Plan group**

TIC Thane: In Bhatsa, Surya and Kal-Amba projects, the output is Rs. 1.86, 0.96 and 1.76 per cum respectively, which is lower than State norm. In Rajanalla project agricultural output very low.

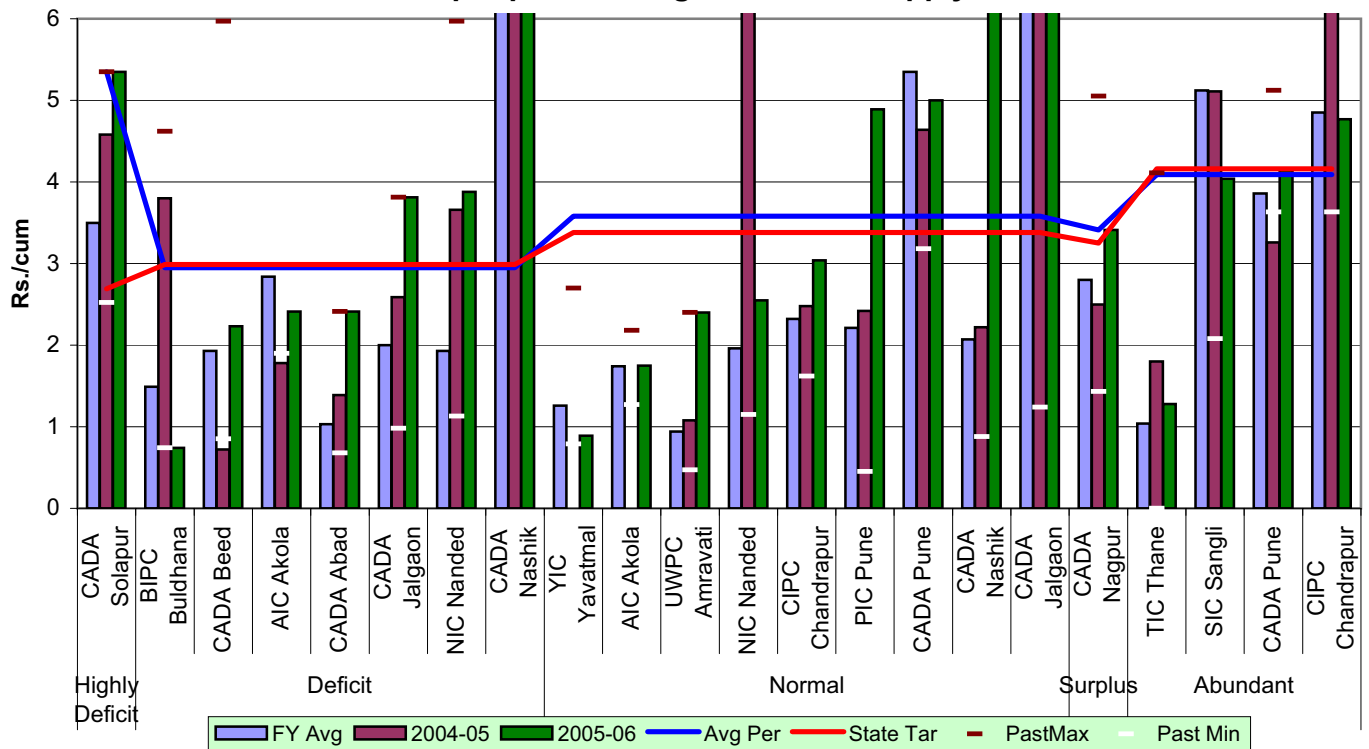
SIC Sangli: In Dudhganga project, agricultural output is Rs. 6.70/cum which is 37 percent higher than last year's performance. In Radhanagri project, the output is Rs. 4.49/cum. Performance is lower compared to five years' performance. In Tulshi project, the output is Rs. 0.81/cum. In Warna, output is Rs. 5.00/cum.

CADA Pune: In Krishna project, the output is Rs. 4.14/cum the performance is enhanced by 27 percent since last year. It is above the State target.

CIPC Chandrapur: In Asolamendha and Dina projects, where irrigation is mainly in the form protective irrigation, the performance is close to the State norm in Asolamendha (Rs. 4.08/cum), whereas it is more (Rs. 4.7/cum) on Dina project.

Due to increase in water use per unit area irrigated during the irrigation year, output per unit water supplied in both these projects has declined compared to their last year performance.

**Indicator IV  
Major Projects  
Output per unit Irrigation Water supply**



| Plangroup      | Circle          | FY Avg | 2004-05  | 2005-06 | PastMax | Past Min | Avg Per | St Tar | Rank |
|----------------|-----------------|--------|----------|---------|---------|----------|---------|--------|------|
| Highly Deficit | CADA Solapur    | 3.50   | 4.58     | 5.35    | 5.35    | 2.52     | 5.35    | 2.69   | VG   |
| Deficit        | BIPC Buldhana   | 1.49   | 3.80     | 0.74    | 4.62    | 0.74     |         |        | BA   |
|                | CADA Beed       | 1.93   | 0.72     | 2.23    | 5.97    | 0.85     |         |        | M    |
|                | AIC Akola       | 2.84   | 1.78     | 2.41    | 7.30    | 1.90     |         |        | M    |
|                | CADA Abad       | 1.03   | 1.39     | 2.41    | 2.41    | 0.68     | 2.95    | 2.99   | M    |
|                | CADA Jalgaon    | 2.00   | 2.59     | 3.81    | 3.81    | 0.98     |         |        | VG   |
|                | NIC Nanded      | 1.93   | 3.66     | 3.88    | 5.97    | 1.13     |         |        | VG   |
|                | CADA Nashik     | 13.29  | 10.89    | 11.62   | 16.53   | 10.53    |         |        | VG   |
| Normal         | YIC Yavatmal    | 1.26   | No Water | 0.89    | 2.70    | 0.79     |         |        | BA   |
|                | AIC Akola       | 1.74   | No Water | 1.75    | 2.18    | 1.27     |         |        | F    |
|                | UWPC Amravati   | 0.94   | 1.08     | 2.40    | 2.40    | 0.47     |         |        | M    |
|                | NIC Nanded      | 1.96   | 6.76     | 2.55    | 6.76    | 1.15     |         |        | M    |
|                | CIPC Chandrapur | 2.32   | 2.48     | 3.04    | 7.10    | 1.62     | 3.58    | 3.38   | G    |
|                | PIC Pune        | 2.21   | 2.42     | 4.89    | 12.24   | 0.45     |         |        | VG   |
|                | CADA Pune       | 5.35   | 4.64     | 5.00    | 6.67    | 3.18     |         |        | VG   |
|                | CADA Nashik     | 2.07   | 2.22     | 7.91    | 176.24  | 0.88     |         |        | VG   |
| Surplus        | CADA Jalgaon    | 7.44   | 8.70     | 10.46   | 19.09   | 1.24     |         |        | VG   |
|                | CADA Nagpur     | 2.80   | 2.50     | 3.41    | 5.05    | 1.43     | 3.41    | 3.25   | VG   |
| Abundant       | TIC Thane       | 1.04   | 1.80     | 1.28    | 4.11    | No Water |         |        | BA   |
|                | SIC Sangli      | 5.12   | 5.11     | 4.04    | 6.61    | 2.08     |         |        | G    |
|                | CADA Pune       | 3.86   | 3.26     | 4.14    | 5.12    | 3.63     | 4.09    | 4.16   | G    |
|                | CIPC Chandrapur | 4.85   | 6.27     | 4.77    | 7.12    | 3.63     |         |        | VG   |

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 V: Cost Recovery Ratio**

### **Highly Deficit Plan group**

CADA Solapur: In Bhima project, the ratio is 0.88 which is 46.67 percent lower than last year's performance. Performance is lowered in comparison with five years' performance.

### **Deficit Plan group**

BIPC Buldhana: In Wan project, ratio is very low (0.28) compared to last years performance (0.97). Though there is increase in irrigation compared to last year, revenue recovery on part of irrigation appears to be low. Late and part sanctioning of irrigation assessment may be the reason for low recovery. Field officers are advised to investigate the exact reason and take suitable actions for improving the revenue recovery.

AIC Akola: In Katepurna project the ratio (0.31) is declined compared to last year (0.63). It is well below the State norm. There is no recovery and ninety percent recovery against the irrigation and non irrigation assessment respectively. Successive two drought years in the past have weakened the economical condition of farmers, which naturally has an impact on irrigation revenue collection. Secondly, there is increase in O&M cost compared to last year. In Nalganga project, due to low potential utilisation and unavoidable O&M expenditure during the current year, the cost recovery ratio has rolled down to 0.28 compared to last year (0.55). There is low revenue recovery on the part of both irrigation and non irrigation water supply.

CADA Beed: As the recovery is directly dependent on availability of water. The ratio in Majalgaon project is low due to lesser recovery as there was no water in the reservoir during 2004-05.

### **Normal Plan group**

YIC Yeotmal: There is no recovery on the part of irrigation due to drought condition in last year. Weaker economical condition of farmers has put constraint over revenue collection. Therefore ratio is very low (0.03).

NIC Nanded: In UPP, the O&M expenditure is as high as Rs. 847.47 lakhs which includes Rs. 638.40 lakh towards establishment charges, whereas the recovery is only Rs. 108.24 lakh, causing reduction in ratio.

CADA Pune : In Kukadi project, the cost recovery ratio is 0.17. It is 62 percent lower than last year's performance. The field officers have to take more efforts for better recovery. In Ghod project the cost recovery ratio is reduced by 79 percent than the last year value and it is far below the five years average and State target. The field officers have to take more efforts for improving the recovery.

CIPC Chandrapur: In Bor project, the ratio (0.40) has improved compared to last year (0.12). Still it is very low compared to the State norm.

UWPC Amrawati: In Upper Wardha project, cost recovery ratio is slightly improved (0.67) compared to last year (0.60) but it is still below the State norm.

CADA Nashik: In Waghad project, the non-irrigation water use, which fetches high returns is merely 3 percent & the establishment cost is Rs. 44.44 lakh. Moreover lesser

recovery of NI uses has affected the ratio. As the management of the project is totally handed over to WUA, improvement in the ratio is expected in future. In Kadwa project, lesser recovery (only 5 percent) for irrigation water use has affected the ratio. In Gangapur project, the ratio is high due to predominant use (69 percent) for non irrigation purposes. However, there is reduction over past values.

PIC Pune: In Khadakwasla, NLBC, NRBC and Pawana, the cost recovery ratio is 1.36, 1.70, 0.93 and 9.24 respectively.

AIC Akola: In Pus project, though the ratio (0.72) is low compared to State norm, it is appreciable as compared to other projects under this plan group. The performance is improved compared to last year performance (0.62).

### **Surplus Plan group**

CADA Nagpur: In case of Bagh (0.17) & Itiadoh (0.33), though there is improvement over the last year performance (0.05 & 0.10 respectively), it is still low compared to State norm. Percentage of revenue recovery on part of irrigation & non irrigation is quite low on Bagh compared to Itiadoh project. More efforts are needed for improving the performance. In Pench project, the ratio (2.45) is quite good compared to State norm. Appreciable non irrigation water supply and recovery on its part (Rs. 22.57 Million) has helped crossing the State norm. However, compared to last year performance (3.26), the performance is declined.

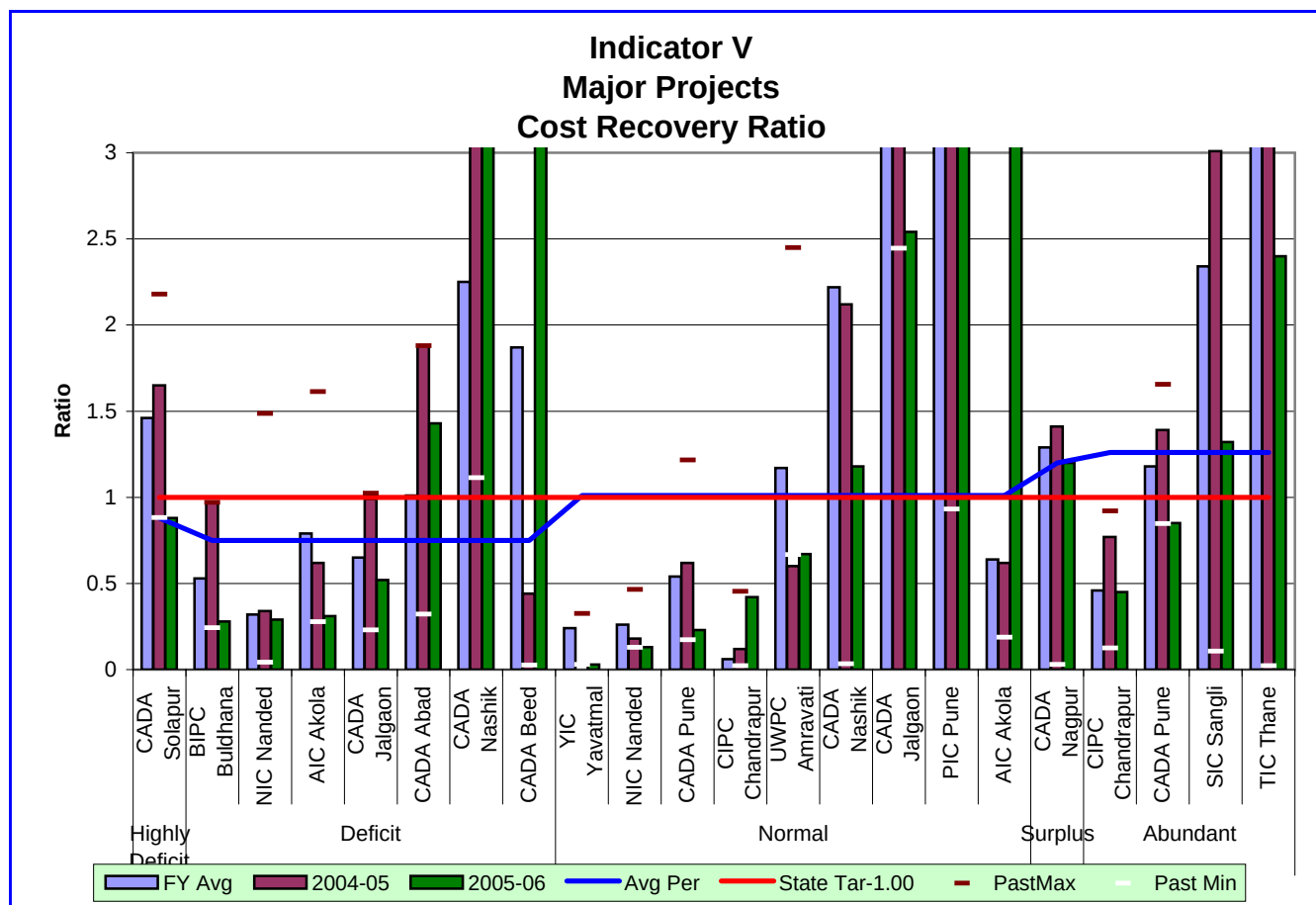
### **Abundant Plan group**

CIPC Chandrapur: In both the projects, Dina (0.08) & Asolamendha (0.45), due to low revenue recovery the ratio is low compared to State norm. In Asolamendha revenue recovery has improved the ratio compared to its past performance.

CADA Pune: In Krishna project the value of ratio is reduced due to increase in O&M expenditure by 38.85 percent since last year.

SIC Sangli: In Dudhganga project, cost recovery ratio is 2.51. In Radhanagri project, the ratio is 1.62. However in Tulshi project the ratio is 0.11 which is 71.05 percent lower than last year's performance. In Warna project cost recovery ratio is 0.98 which is 26.67 percent lower than last year's performance. Performance is lowered in comparison with five years' performance.

TIC Thane: In Bhatsa project the ratio is 8.94, which is 23.13 percent lower than last year's performance. Performance is lowered in comparison with five years' performance. In Surya project it is 1.53 which is 60.05 percent lower than last year's performance. In Kal-Amba and Rajanalla projects the ratio is only 0.13 and 0.07. It is far below State norm.



| Plangroup      | Circle          | FY Avg | 2004-05 | 2005-06 | PastMax | Past Min | Avg Per | Rank |
|----------------|-----------------|--------|---------|---------|---------|----------|---------|------|
| Highly Deficit | CADA Solapur    | 1.46   | 1.65    | 0.88    | 2.18    | 0.88     | 0.88    | G    |
| Deficit        | BIPC Buldhana   | 0.53   | 0.97    | 0.28    | 0.97    | 0.24     | 0.75    | BA   |
|                | NIC Nanded      | 0.32   | 0.34    | 0.29    | 1.49    | 0.04     |         | BA   |
|                | AIC Akola       | 0.79   | 0.62    | 0.31    | 1.61    | 0.28     |         | BA   |
|                | CADA Jalgaon    | 0.65   | 0.99    | 0.52    | 1.02    | 0.23     |         | F    |
|                | CADA Abad       | 1.01   | 1.88    | 1.43    | 1.88    | 0.32     |         | VG   |
|                | CADA Nashik     | 2.25   | 3.07    | 4.08    | 4.08    | 1.11     |         | VG   |
|                | CADA Beed       | 1.87   | 0.44    | 4.97    | 14.26   | 0.03     |         | VG   |
| Normal         | YIC Yavatmal    | 0.24   | 0.00    | 0.03    | 0.33    | 0.03     | 1.01    | BA   |
|                | NIC Nanded      | 0.26   | 0.18    | 0.13    | 0.47    | 0.13     |         | BA   |
|                | CADA Pune       | 0.54   | 0.62    | 0.23    | 1.22    | 0.17     |         | BA   |
|                | CIPC Chandrapur | 0.06   | 0.12    | 0.42    | 0.45    | 0.02     |         | BA   |
|                | UWPC Amravati   | 1.17   | 0.60    | 0.67    | 2.45    | 0.67     |         | F    |
|                | CADA Nashik     | 2.22   | 2.12    | 1.18    | 67.62   | 0.03     |         | VG   |
|                | CADA Jalgaon    | 6.35   | 5.47    | 2.54    | 10.87   | 2.45     |         | VG   |
|                | PIC Pune        | 3.71   | 5.55    | 3.19    | 21.71   | 0.93     |         | VG   |
|                | AIC Akola       | 0.64   | 0.62    | 3.47    | 13.28   | 0.19     |         | VG   |
| Surplus        | CADA Nagpur     | 1.29   | 1.41    | 1.20    | 3.06    | 0.03     | 1.20    | VG   |
| Abundant       | CIPC Chandrapur | 0.46   | 0.77    | 0.45    | 0.92    | 0.13     | 1.26    | BA   |
|                | CADA Pune       | 1.18   | 1.39    | 0.85    | 1.66    | 0.85     |         | G    |
|                | SIC Sangli      | 2.34   | 3.01    | 1.32    | 8.51    | 0.11     |         | VG   |
|                | TIC Thane       | 16.23  | 11.13   | 2.40    | 213.59  | 0.02     |         | VG   |

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

## **Indicator V (I)**

### **Cost Recovery Ratio (Irrigation)**

#### **Highly Deficit Plan group**

CADA Solapur: In Bhima project, the cost recovery ratio is 0.49 which is lower than last year's value. It is due to reduction in recovery during 2005-06.

#### **Deficit Plan group**

Except projects under AIC Akola (Normal), which has 50 percent achievement all projects under Amrawati & Nagpur region (Deficit, Normal, Surplus & Abundant) had very low achievement compared to the State norm. Low performance may be due to more M&R expenditure and less recovery.

CADA Jalgaon, CADA Nashik & NIC Nanded: The ratio is less than 0.18 in all these circles. However, in NIC Nanded, it is improved from 0.11 to 0.18 over last year in spite of doubled O&M cost in all the three projects. The improvement is particularly due to increase in revenue by nearly 8 times in Purna project.

In Girna project the ratio is reduced from 0.17 (2004-05) to 0.09 (2005-06), it is mainly due to increase in O&M cost by 2.5 times though the revenue has increased by 1.39 times.

CADA Aurangabad: The ratio has improved from 0.08 (2004-05) to 0.3 (2005-06), mainly due to increase in recovery by four times over last year.

#### **Normal Plan group**

CADA Pune: In Kukadi and Ghod projects, the ratio is lowered over last years value due to reduction in recovery.

PIC Pune: In Khadakwasla, NLBC, NRBC and Pawana project, the ratio is reduced over last year. It is due to reduction in recovery in all the four projects.

CADA Jalgaon, Nashik & NIC Nanded: The ratio is below 0.21. In Hatnur project (CADA Jalgaon), the ratio is only 0.06. This is because of lesser recovery of assessed water charges.

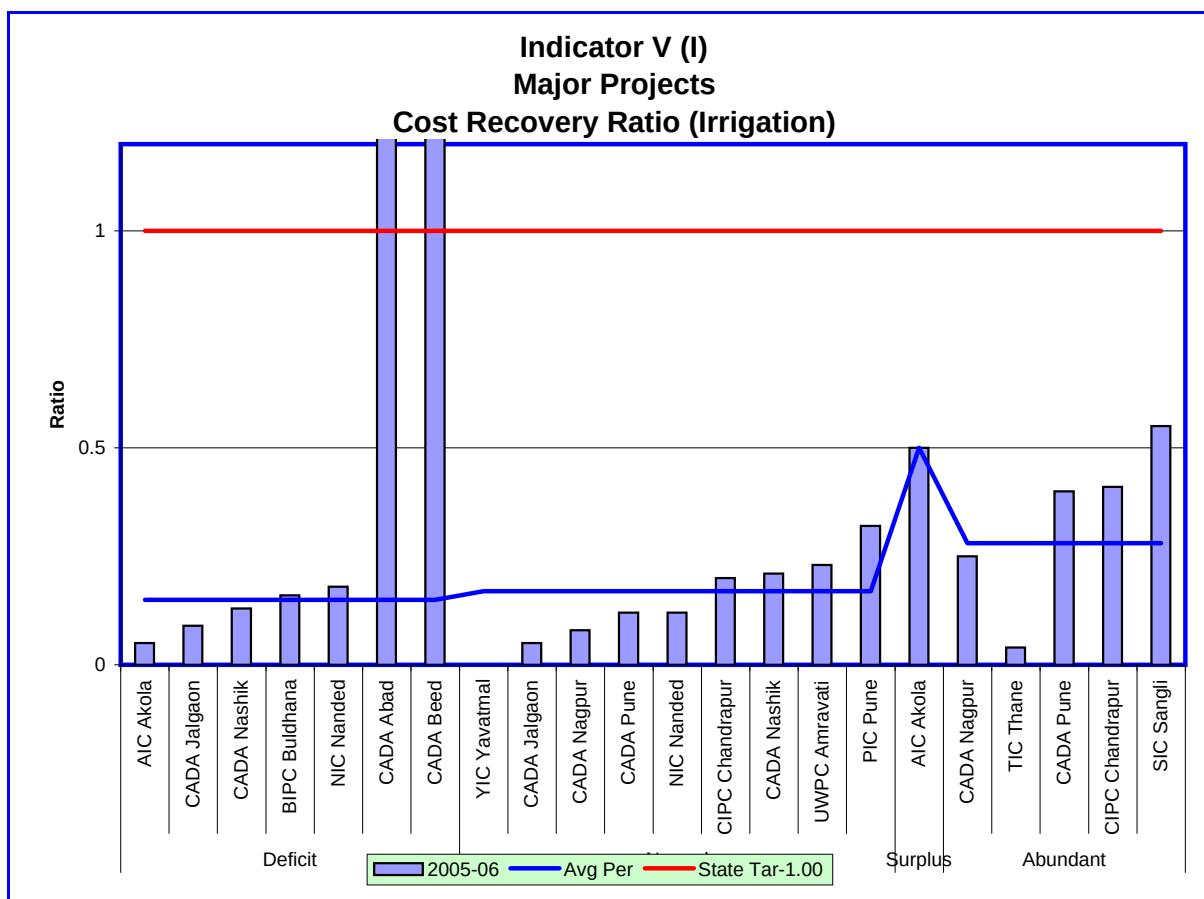
#### **Abundant Plan group**

TIC Thane: In Bhatsa, Surya, Kal-Amba, Rajanala projects, the cost recovery ratio is low compared to last year due to increase in expenditure on maintenance works.

CADA Pune: In Krishna project the ratio is reduced due to increased O&M expenditure by 38.85 percent since last year.

SIC Sangli: In Dudhganga, Warna, Radhanagari & Tusli projects, the cost recovery ratio is reduced from 1.31 to 0.55 since last year due to increase in expenditure on special repairs in all the four projects.





| Plangroup      | Circle          | 2005-06 | Avg Per | State Tar-1.00 | Rank |
|----------------|-----------------|---------|---------|----------------|------|
| Highly Deficit | CADA Solapur    | 0.49    | 0.49    | 1.00           | BA   |
| Deficit        | AIC Akola       | 0.05    | 0.15    | 1.00           | BA   |
|                | CADA Jalgaon    | 0.09    |         | 1.00           | BA   |
|                | CADA Nashik     | 0.13    |         | 1.00           | BA   |
|                | BIPC Buldhana   | 0.16    |         | 1.00           | BA   |
|                | NIC Nanded      | 0.18    |         | 1.00           | BA   |
|                | CADA Abad       | 2.17    |         | 1.00           | BA   |
|                | CADA Beed       | 4.86    |         | 1.00           | VG   |
| Normal         | YIC Yavatmal    | 0.00    | 0.17    | 1.00           | BA   |
|                | CADA Jalgaon    | 0.05    |         | 1.00           | BA   |
|                | CADA Nagpur     | 0.08    |         | 1.00           | BA   |
|                | CADA Pune       | 0.12    |         | 1.00           | BA   |
|                | NIC Nanded      | 0.12    |         | 1.00           | BA   |
|                | CIPC Chandrapur | 0.20    |         | 1.00           | BA   |
|                | CADA Nashik     | 0.21    |         | 1.00           | BA   |
|                | UWPC Amravati   | 0.23    |         | 1.00           | BA   |
|                | PIC Pune        | 0.32    |         | 1.00           | BA   |
| Surplus        | AIC Akola       | 0.50    | 0.50    | 1.00           | BA   |
| Abundant       | CADA Nagpur     | 0.25    | 0.28    | 1.00           | BA   |
|                | TIC Thane       | 0.04    |         | 1.00           | BA   |
|                | CADA Pune       | 0.40    |         | 1.00           | BA   |
|                | CIPC Chandrapur | 0.41    |         | 1.00           | BA   |
|                | SIC Sangli      | 0.55    |         | 1.00           | F    |

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

## **Indicator V (NI)**

### **Cost Recovery Ratio (Non-irrigation)**

#### **Highly Deficit Plan group**

CADA Solapur: In Bhima project, the ratio is lower than last year by 66 percent. However, it is above State norm.

#### **Deficit Plan group**

Cost recovery ratio for all projects (Katepurna, Nalganga & Pus) under AIC Akola (Deficit & Normal), Upper Wardha (UWPC Amrawati, Normal), CADA Nagpur (Normal), CIPC Chandrapur (Normal) is far better than the State norm. Better performance can be attributed to better realisation of water charges and low M&R cost incurred on these projects.

For Wan project under BIPC Buldhana (Deficit), Arunawati under YIC Yeotmal (Normal) and Asolamendha & Dina under CIPC Chandrapur (Abundant), the cost recovery ratio is indicated as zero, as there was no water supply for NI use.

CADA Jalgaon: The ratio is reduced from 112.81 (2004-05) to 1.25 (2005-06). It is due to increase in revenue by 2.43 times. In 2004-05 the O&M cost for NI uses was wrongly communicated (Rs. 1.50 lakh) causing the ratio very high in that year.

#### **Normal Plan group**

CADA Pune: The ratio is lowered by 49 percent since last year. It is due to less recovery in Kukadi project.

PIC Pune: The ratio is reduced since last year by 81 percent.

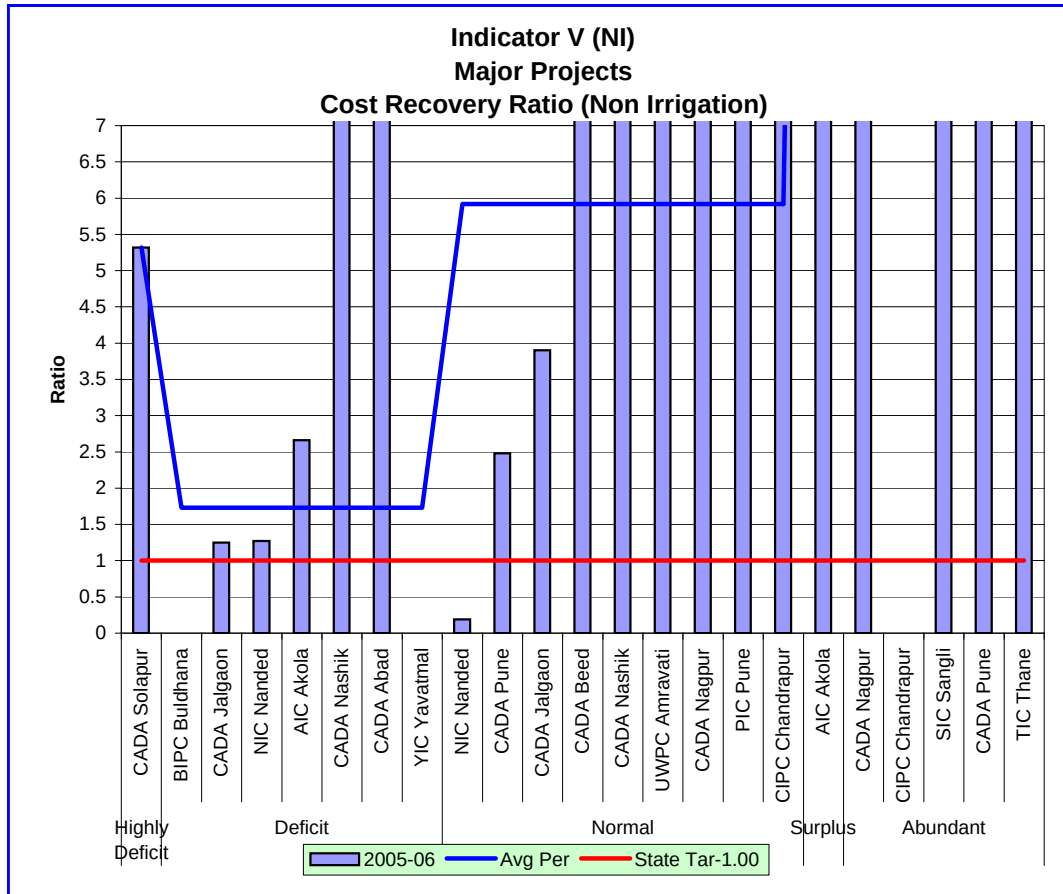
CADA Jalgaon: In Hatnur project, the ratio has come down from 27.86 in 2004-05 to 3.90 in 2005-06. The main reason for this reduction is realisation of less revenue (27 percent of 2004-05) and more O&M expenditure in 2005-06 (9.5 times of 2004-05).

#### **Abundant Plan group**

CADA Pune: In Krishna project, the ratio decreased by 36 percent since last year due to increase in expenditure on maintenance cost from Rs. 13.27 Million in 2004-05 to Rs. 36.92 Million in 2005-06.

SIC Sangli: In Dudhganga, Warna and Radhanagri projects, the ratio is lowered by 51 percent since last year due to increase in maintenance expenditure and less recovery.

TIC Thane: The ratio is lowered during the year due to expenditure on repairs works of Bhatsa and Surya projects.



| Plangroup      | Circle          | 2005-06 | Avg Per | State Tar-1.00 | Rank |
|----------------|-----------------|---------|---------|----------------|------|
| Highly Deficit | CADA Solapur    | 5.32    | 5.32    | 1.00           | VG   |
| Deficit        | BIPC Buldhana   | 0.00    | 1.73    | 1.00           | BA   |
|                | CADA Jalgaon    | 1.25    |         | 1.00           | VG   |
|                | NIC Nanded      | 1.27    |         | 1.00           | VG   |
|                | AIC Akola       | 2.66    |         | 1.00           | VG   |
|                | CADA Nashik     | 7.90    |         | 1.00           | VG   |
|                | CADA Abad       | 13.69   |         | 1.00           | VG   |
|                | YIC Yavatmal    | 0.00    |         | 1.00           | BA   |
| Normal         | NIC Nanded      | 0.19    | 5.92    | 1.00           | BA   |
|                | CADA Pune       | 2.48    |         | 1.00           | VG   |
|                | CADA Jalgaon    | 3.90    |         | 1.00           | VG   |
|                | CADA Beed       | 7.11    |         | 1.00           | VG   |
|                | CADA Nashik     | 7.13    |         | 1.00           | VG   |
|                | UWPC Amravati   | 10.17   |         | 1.00           | VG   |
|                | CADA Nagpur     | 24.41   |         | 1.00           | VG   |
|                | PIC Pune        | 28.17   |         | 1.00           | VG   |
|                | CIPC Chandrapur | 31.66   |         | 1.00           | VG   |
| Surplus        | AIC Akola       | 35.85   | 35.85   | 1.00           | VG   |
| Abundant       | CADA Nagpur     | 8.23    | 7.78    | 1.00           | VG   |
|                | CIPC Chandrapur | 0.00    |         | 1.00           | BA   |
|                | SIC Sangli      | 7.76    |         | 1.00           | VG   |
|                | CADA Pune       | 7.80    |         | 1.00           | VG   |
|                | TIC Thane       | 46.86   |         | 1.00           | VG   |

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

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

### **Highly Deficit Plan group**

CADA Solapur: In Bhima project O&M cost per unit area is Rs. 1016/ha which is doubled over last year's cost. The increase is mainly due to execution of canal repairs. This cost is also more than five years' average cost.

### **Deficit Plan group**

BIPC Buldhana: In Wan project, O&M cost per unit irrigated area is fair (Rs.925) compared to State norm.

AIC Akola: Due to low irrigation potential utilisation in Katepurna project, the O&M cost per unit area irrigated is about four times more (Rs. 5388) than the State norm (Rs.1250). In Nalganga project, more maintenance expenditure for rehabilitation of distribution system prior to handing over the command area to WUA'S along with low potential utilisation has raised the ratio to Rs. 3081/ha.

CADA Beed: In Manjra project, the O&M cost per unit area is 3 times more than State norm. However, it is less than five years average value. Moreover, the operation (establishment) cost is 61 percent of total O&M cost. In Majalgaon, Lower Terna & PRBC the O&M cost is very high. The field officers are required to take review of existing establishment.

### **Normal Plan group**

AIC Akola: In Pus project, the O&M cost per unit irrigated area is well within the State norm.

PIC Pune: In Khadakwasla project the O&M cost per unit area is Rs. 3668/ha. It is increased over the last year by 93 percent and is more than five years' average value. However, in NLBC and NRBC, the cost Rs. 594 and 688 per ha. It is due to increase in expenditure on maintenance of canal system. In Pawana project, the O&M cost per unit area is 5162 Rs./ha which increased since last year, due to increase in expenditure of Rs. 134.53 lakhs on maintenance of dam.

CIPC Chandrapur: In case of Bor project, the O&M cost per unit irrigated area is high (Rs.1783).

YIC Yeotmal: In Arunawati project, the O&M cost per unit irrigated area is well within the State norm.

UWPC Amrawati: In Upper Wardha the O&M cost per unit irrigated area is well within the State norm.

CADA Pune: In Kukadi project the O&M cost per unit area is Rs.1344/ha. it is nearly three times more than the last year's value and it is nearly double the five years' average cost. It is due to increase expenditure on repairs of canal system. In Ghod project the O&M expenditure is Rs.2311/ha. It has increased considerably, which resulted in enhancing the ratio by 3.5 times over last year, due to increase in expenditure on maintenance cost of canal system.

NIC Nanded: In Visnupuri & Manar projects the O&M cost is high as canal repairs on large scale were taken up. As per field officers the reason for higher O&M expenditure is deferred payment made to mechanical wing during 2005-06, towards maintenance of canals. The share of maintenance cost to total cost is 66 percent & 40 percent respectively. In both the projects the establishment cost is near about same in both the years.

CADA Jalgaon: In Hatnur project the O&M cost is nearly 4 times the State target.

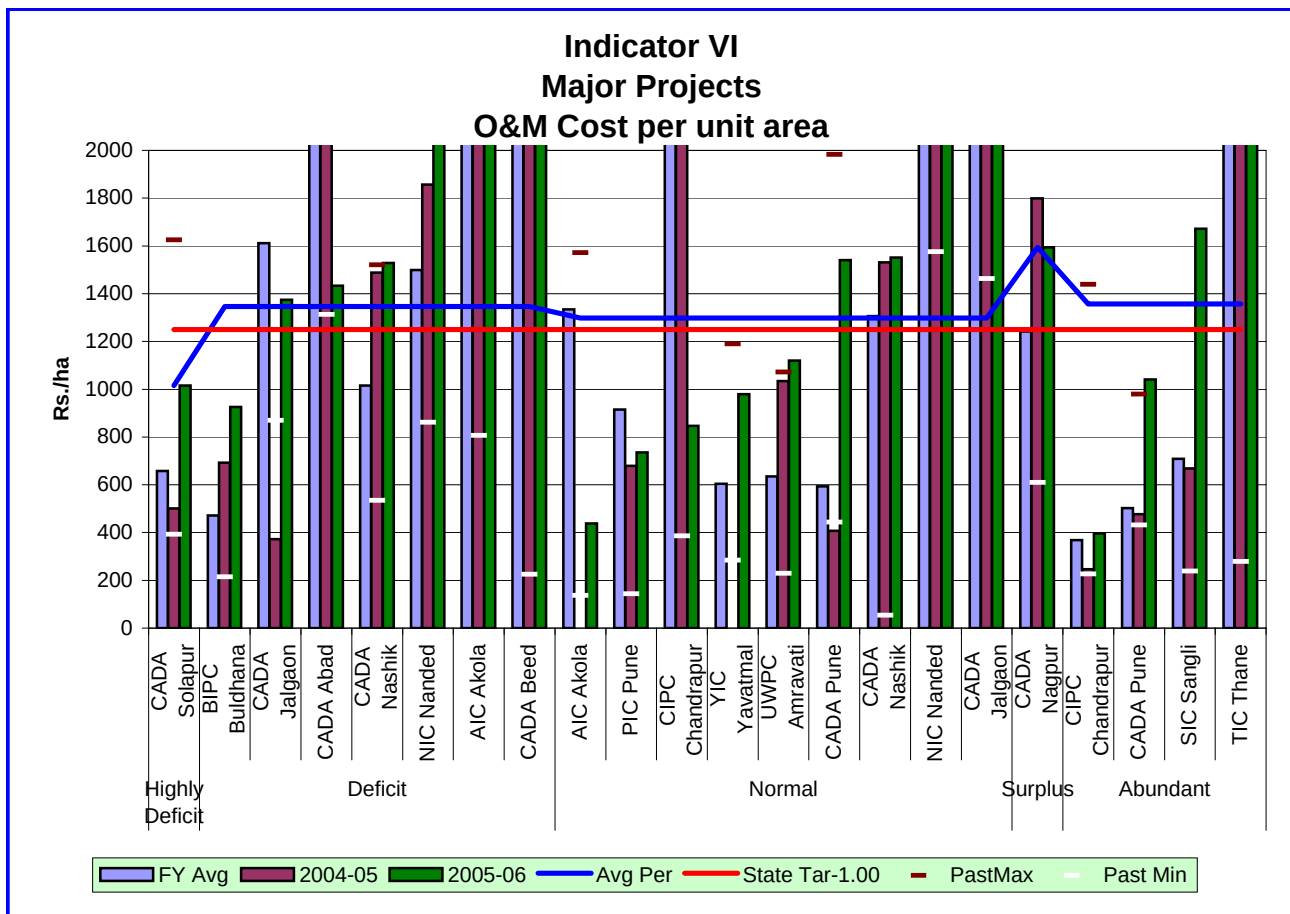
### **Abundant Plan group**

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 in Dina & Asolamendha (Rs.406) projects.

CADA Pune: In Krishna project, O&M cost per unit area is Rs.1041/ha which is below State target.

SIC Sangli: In Dudhganga project O&M cost per unit area is Rs.1969/ha. It is slightly more than five years' average cost. In Radhanagari project, the cost is Rs.1388/ha which is 1.44 times more than last year's cost. In Tulshi project the cost per unit area is Rs.8651/ha which is 2.73 times more than last year's value.

TIC Thane: In Bhatsa project O&M cost per unit area is Rs.12046/ha which is 28.34 percent lower than last year's cost. In Surya project, it is Rs. 23611/ha which is 1.55 times more than last year's cost. In Kal-Amba project cost is Rs.5492/ha which is 2.62 times more than last year's cost.



| Plangroup      | Circle          | FY Avg | 2004-05 | 2005-06 | PastMax | Past Min | Avg Per | Rank |
|----------------|-----------------|--------|---------|---------|---------|----------|---------|------|
| Highly Deficit | CADA Solapur    | 658    | 501     | 1016    | 1625    | 393      | 1016    | VG   |
| Deficit        | BIPC Buldhana   | 471    | 692     | 925     | 2097    | 214      | 1346    | VG   |
|                | CADA Jalgaon    | 1612   | 373     | 1374    | 230435  | 869      |         | G    |
|                | CADA Abad       | 3635   | 2224    | 1434    | 7865    | 1313     |         | G    |
|                | CADA Nashik     | 1015   | 1488    | 1529    | 1521    | 534      |         | M    |
|                | NIC Nanded      | 1499   | 1857    | 2194    | 5572    | 861      |         | BA   |
|                | AIC Akola       | 2030   | 9957    | 4950    | 9957    | 807      |         | BA   |
|                | CADA Beed       | 4980   | 6407    | 5426    | 65067   | 225      |         | BA   |
| Normal         | AIC Akola       | 1334   | No Irr  | 438     | 1571    | 137      | 1298    | VG   |
|                | PIC Pune        | 915    | 679     | 736     | 4594    | 143      |         | VG   |
|                | CIPC Chandrapur | 8607   | 3688    | 847     | 15681   | 386      |         | VG   |
|                | YIC Yavatmal    | 604    | No Irr  | 979     | 1190    | 284      |         | VG   |
|                | UWPC Amravati   | 635    | 1034    | 1120    | 1071    | 229      |         | VG   |
|                | CADA Pune       | 594    | 407     | 1540    | 1982    | 444      |         | M    |
|                | CADA Nashik     | 1306   | 1531    | 1551    | 21365   | 54       |         | M    |
|                | NIC Nanded      | 2691   | 6877    | 2709    | 6877    | 1575     |         | BA   |
|                | CADA Jalgaon    | 2457   | 2942    | 4840    | 3338    | 1463     |         | BA   |
| Surplus        | CADA Nagpur     | 1242   | 1799    | 1594    | 2387    | 610      | 1594    | M    |
| Abundant       | CIPC Chandrapur | 368    | 247     | 396     | 1439    | 227      | 1357    | VG   |
|                | CADA Pune       | 502    | 477     | 1041    | 979     | 432      |         | VG   |
|                | SIC Sangli      | 708    | 668     | 1672    | 6446    | 238      |         | F    |
|                | TIC Thane       | 3013   | 5215    | 10404   | 23611   | 278      |         | BA   |

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

### **Highly Deficit Plan group**

CADA Solapur: In Bhima project, the O&M cost is Rs. 0.12/cum which is 1.4 times more than last year's cost. It is more than five years' average cost.

### **Deficit Plan group**

CADA Nashik: In Ozarkhed project, the ratio is high. The project authorities are required to take steps to keep the cost low. In Darna project, the ratio is very high due to increase in O&M cost from Rs. 257.52 lakh in 2004-05 to Rs. 448.49 lakhs in 2005-06.

CADA Beed: In Majalgaon project, the O&M cost per unit water supplied is increased over past as repairs & maintenance on large scale were taken up for handing over some minors to WUAs. In Lower Terna project, the ratio is very high. The project authorities are required to take steps to keep the cost low.

AIC Akola: O&M cost per unit water supplied on Katepurna & Nalganga project is more than State norm on account of increased maintenance expenditure.

### **Normal Plan group**

AIC Akola & YIC Yeotmal: In Pus & Arunawati projects, performance is well below or close to State norm due to excessive water supply for irrigation.

PIC Pune: In Khadakwasla, NLBC, NRBC and Pawana the O&M cost per unit water supplied is Rs. 0.14, 0.10, 0.10 and 0.16 per cum.

UWPC Amrawati & CIPC Chandrapur: In Upper Wardha & Bor projects, the cost is well below or close to State norm due to excessive water supply for irrigation.

CADA Pune: In Kukadi project O&M cost is Rs.0.24/cum which is nearly 2 times more than last year's performance. In Ghod project it is Rs.0.34/cum which is nearly 4.6 times more than last year's performance.

### **Surplus Plan group**

CADA Nagpur: In Bagh & Itiadh projects, O&M cost for unit water supply is more than State norm. But in case of Pench, appreciable quantity of non irrigation water supply, which requires comparatively low O&M cost has led to the moderate performance compared to State norm.

### **Abundant Plan group**

CIPC Chandrapur: Protective irrigation in Kharif in Asolamendha & Dina projects has restricted the O&M cost per unit water supply well within the State norm.

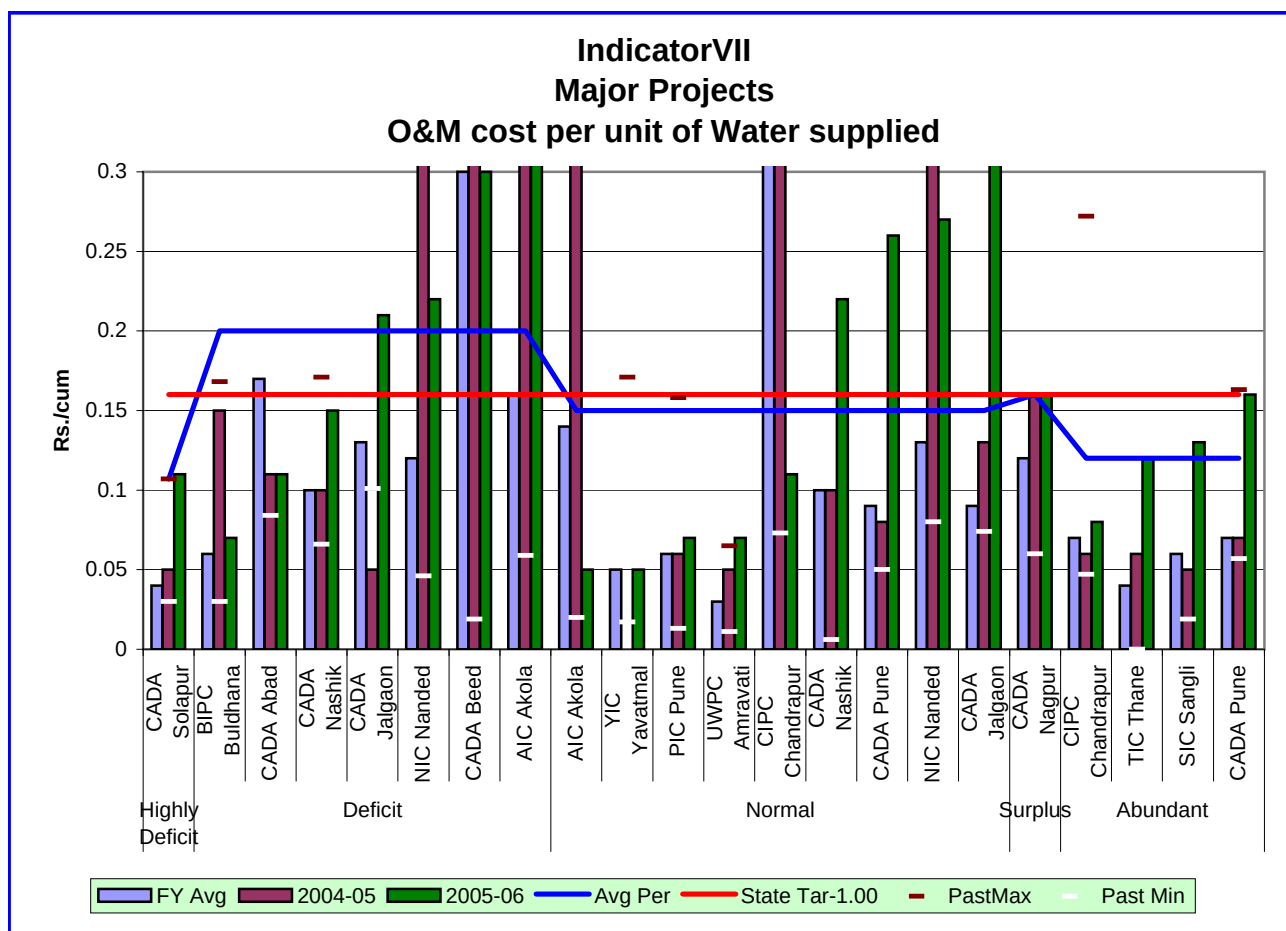
TIC Thane: In Bhatsa and Surya projects the O&M cost per unit area is Rs.0.56 and 0.82. In Surya project it is 1.15 times more than last year's cost. The increase is due to repairs worth Rs. 18.85 lakhs on canal system. In Kal-Amba, the cost is Rs.0.20/cum which is 3 times more than last year's cost. In Rajanalla project O&M cost is Rs.0.08 /cum

SIC Sangli: In Dudhganga project, O&M cost is 0.09 Rs./cum which is 2 times more than last year's cost. It is due to Rs. 100.53 lakhs extra expenditure on repair works. In Radhanagri project, the cost is Rs.0.14/cum which is 1.33 times more than last year's

cost. It is due to extra expenditure Rs. 137.86 lakhs on special repairs of dam and K.T. Weirs. In Tulshi project, it is Rs.0.58/cum which is 2.41 times more than last year's cost. It is due to extra expenditure of Rs. 86.04 lakhs on dams and structures. In Warna project the cost is Rs.0.11/cum which is 37.50 percent more than last year's cost.

CADA Pune: In Krishna project O&M cost is Rs.0.16/cum which is nearly 1.28 times more than last year's value.





| Plangroup      | Circle          | FY Avg | 2004-05 | 2005-06 | PastMax | Past Min | Avg Per | Rank |
|----------------|-----------------|--------|---------|---------|---------|----------|---------|------|
| Highly Deficit | CADA Solapur    | 0.04   | 0.05    | 0.11    | 0.11    | 0.03     | 0.11    | VG   |
| Deficit        | BIPC Buldhana   | 0.06   | 0.15    | 0.07    | 0.17    | 0.03     | 0.20    | VG   |
|                | CADA Abad       | 0.17   | 0.11    | 0.11    | 0.48    | 0.08     |         | VG   |
|                | CADA Nashik     | 0.10   | 0.10    | 0.15    | 0.17    | 0.07     |         | VG   |
|                | CADA Jalgaon    | 0.13   | 0.05    | 0.21    | 0.89    | 0.10     |         | M    |
|                | NIC Nanded      | 0.12   | 0.31    | 0.22    | 0.38    | 0.05     |         | F    |
|                | CADA Beed       | 0.30   | 0.40    | 0.30    | 1.86    | 0.02     |         | BA   |
|                | AIC Akola       | 0.16   | 0.67    | 0.40    | 0.67    | 0.06     |         | BA   |
| Normal         | AIC Akola       | 0.14   | 1.66    | 0.05    | 1.66    | 0.02     | 0.15    | VG   |
|                | YIC Yavatmal    | 0.05   | 0.00    | 0.05    | 0.17    | 0.02     |         | VG   |
|                | PIC Pune        | 0.06   | 0.06    | 0.07    | 0.16    | 0.01     |         | VG   |
|                | UWPC Amravati   | 0.03   | 0.05    | 0.07    | 0.07    | 0.01     |         | VG   |
|                | CIPC Chandrapur | 0.89   | 0.43    | 0.11    | 1.58    | 0.07     |         | VG   |
|                | CADA Nashik     | 0.10   | 0.10    | 0.22    | 1.31    | 0.01     |         | F    |
|                | CADA Pune       | 0.09   | 0.08    | 0.26    | 0.34    | 0.05     |         | BA   |
|                | NIC Nanded      | 0.13   | 0.62    | 0.27    | 0.62    | 0.08     |         | BA   |
|                | CADA Jalgaon    | 0.09   | 0.13    | 0.40    | 0.40    | 0.07     |         | BA   |
| Surplus        | CADA Nagpur     | 0.12   | 0.16    | 0.16    | 0.30    | 0.06     | 0.16    | VG   |
| Abundant       | CIPC Chandrapur | 0.07   | 0.06    | 0.08    | 0.27    | 0.05     | 0.12    | VG   |
|                | TIC Thane       | 0.04   | 0.06    | 0.12    | 0.52    | 0.00     |         | VG   |
|                | SIC Sangli      | 0.06   | 0.05    | 0.13    | 0.57    | 0.02     |         | VG   |
|                | CADA Pune       | 0.07   | 0.07    | 0.16    | 0.16    | 0.06     |         | VG   |

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

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

### **Highly Deficit Plan group**

CADA Solapur: In Bhima project, revenue is Rs.2.23/cum which is 12.50 percent more than last year's revenue. However, it is below the State target.

### **Deficit Plan group**

BIPC Buldhana: In case of Wan project, low irrigation recovery and more water use has led to lower down the ratio.

AIC Akola: Due to excess water supply, ratio in case of Katepurna appears close to State norm.

CADA Aurangabad: In spite of project authorities' efforts to recover the water charges for irrigation and non-irrigation uses to the fullest extent, there is reduction in revenue (from Rs. 0.21 to Rs. 0.15 per cum) in 2005-06.

CADA Beed: In Lower Terna project, 11 percent water was used for non-irrigation purposes, the recovery for which is only 56 percent of assessment, which has lowered the revenue to Rs. 0.07 per cum.

### **Normal Plan group**

YIC Yeotmal: In Arunawati project, the ratio is low. Actions for more recovery of revenue along with economical water use are required at project level.

UWPC Amrawati & CIPC Chandrapur: In Upper Wardha & Bor projects, it has rolled down compared to State norm. Actions for more realisation of revenue recovery along with economical water use is required at project level for improving the performance.

CADA Pune: In Kukadi project revenue is Rs.0.04/cum. Field officers will have to take more efforts to enhance the performance. In Ghod project, the revenue is Rs.0.12/cum. It has been increased by 20 percent since last year and it is more than five years' average performance.

AIC Akola: In Pus project, the ratio is low compared to State norm. The project authorities should take efforts for recovery.

PIC Pune: In Khadakwasla project, the revenue is Rs. 0.19/cum. It has been decreased by 40 percent since last year. In NLBC, it is Rs.0.18/cum. It has been increased by 80 percent since last year. In NRBC, it is Rs.0.09/cum. It has been decreased by 10 percent since last year. In Pawana project revenue is Rs.1.46/cum. It is lowered down by 27.3 percent compared to last year.

CADA Nashik: In Kadwa project, the revenue per cubic metre of water is dropped from Rs. 0.08 to 0.01 due to lesser recovery of irrigation water charges. In Gangapur project also there is reduction in revenue owing to lesser recovery.

### **Surplus Plan group**

CADA Nagpur: Low revenue recovery along with excessive water use in all projects (except Bagh), can be attributed to low performance compared to State target.

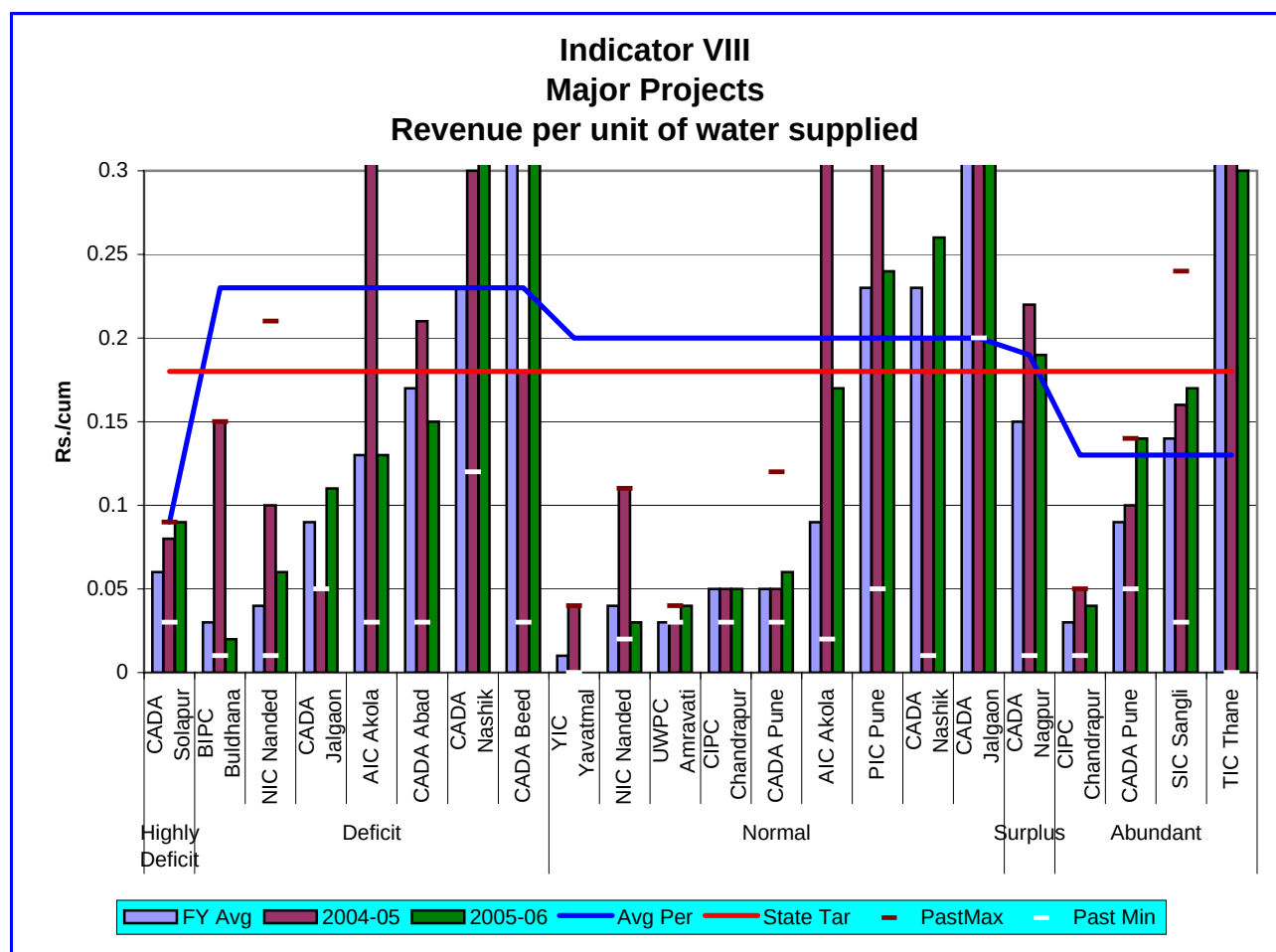
**Abundant Plan group**

CIPC Chandrapur: Low irrigation revenue recovery in Asolamendha & Dina projects has lowered down the performance compared to State norm and performance of last year.

CADA Pune: In Krishna project, the revenue is Rs.0.14/cum. It is increased by 40 percent since last year's value.

SIC Sangli: In Dudhganga project, revenue is Rs.0.21/cum, which is 40 percent more than last year's revenue. In Radhanagri project, revenue per unit area is Rs.0.19/cum. In Tulshi project, the revenue is Rs.0.06/cum. In Warna project it is Rs.0.10/cum which is equal to last year's value.

TIC Thane: In Bhatsa project, revenue is Rs.0.26/cum which is 44.68 percent lower than last year's revenue. In Surya project. it is Rs.0.79/cum. In Kal-Amba project it is Rs.0.03/cum which is 97.89 percent lower than last year's value. In Rajanalla project, it is only Rs.0.01/cum which is 66.67 percent below than last year's revenue.



| Plangroup      | Circle          | FY Avg | 2004-05 | 2005-06 | PastMax | Past Min | Avg Per | Rank |
|----------------|-----------------|--------|---------|---------|---------|----------|---------|------|
| Highly Deficit | CADA Solapur    | 0.06   | 0.08    | 0.09    | 0.09    | 0.03     | 0.09    | F    |
| Deficit        | BIPC Buldhana   | 0.03   | 0.15    | 0.02    | 0.15    | 0.01     | 0.23    | BA   |
|                | NIC Nanded      | 0.04   | 0.10    | 0.06    | 0.21    | 0.01     |         | BA   |
|                | CADA Jalgaon    | 0.09   | 0.05    | 0.11    | 0.33    | 0.05     |         | F    |
|                | AIC Akola       | 0.13   | 0.42    | 0.13    | 0.42    | 0.03     |         | F    |
|                | CADA Abad       | 0.17   | 0.21    | 0.15    | 0.36    | 0.03     |         | M    |
|                | CADA Nashik     | 0.23   | 0.30    | 0.63    | 0.63    | 0.12     |         | VG   |
|                | CADA Beed       | 0.55   | 0.18    | 1.50    | 17.65   | 0.03     |         | VG   |
| Normal         | YIC Yavatmal    | 0.01   | 0.04    | 0.00    | 0.04    | 0.00     | 0.20    | BA   |
|                | NIC Nanded      | 0.04   | 0.11    | 0.03    | 0.11    | 0.02     |         | BA   |
|                | UWPC Amravati   | 0.03   | 0.03    | 0.04    | 0.04    | 0.03     |         | BA   |
|                | CIPC Chandrapur | 0.05   | 0.05    | 0.05    | 0.33    | 0.03     |         | BA   |
|                | CADA Pune       | 0.05   | 0.05    | 0.06    | 0.12    | 0.03     |         | BA   |
|                | AIC Akola       | 0.09   | 1.03    | 0.17    | 1.03    | 0.02     |         | G    |
|                | PIC Pune        | 0.23   | 0.32    | 0.24    | 1.46    | 0.05     |         | VG   |
|                | CADA Nashik     | 0.23   | 0.20    | 0.26    | 9.01    | 0.01     |         | VG   |
|                | CADA Jalgaon    | 0.56   | 0.74    | 1.01    | 1.01    | 0.20     |         | VG   |
| Surplus        | CADA Nagpur     | 0.15   | 0.22    | 0.19    | 0.38    | 0.01     | 0.19    | VG   |
| Abundant       | CIPC Chandrapur | 0.03   | 0.05    | 0.04    | 0.05    | 0.01     | 0.13    | BA   |
|                | CADA Pune       | 0.09   | 0.10    | 0.14    | 0.14    | 0.05     |         | M    |
|                | SIC Sangli      | 0.14   | 0.16    | 0.17    | 0.24    | 0.03     |         | G    |
|                | TIC Thane       | 0.57   | 0.70    | 0.30    | 1.92    | 0.00     |         | VG   |

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

## **Indicator VIII (I)**

### **Revenue per unit Water Supplied (Irrigation)**

#### **Highly Deficit Plan group**

CADA Solapur: In Bhima project the performance is enhanced over last year by 25 percent and it is above State norm.

#### **Deficit Plan group**

BIPC Buldhana: In Wan project under the revenue per unit of water supplied for irrigation is very low (0.01) compared to the State norm. It may be so on account of low recovery and more water use per unit area irrigated.

AIC Akola: The performance is close to the state norm (0.03)

The ratio is zero for Arunavati project under YIC Yeotmal (Normal) as there was no revenue recovery. But in case of projects under CADA Nagpur, CIPC Chandrapur (Normal) and UWPC Amravati, AIC Akola (Normal) the achievement is 50 percent of State target.

Due to better recovery, the ratio is as per the State norm for projects under CADA Nagpur (Surplus) and is better compared to State norm for projects under CIPC Chandrapur (Abundant). The value is 0.03.

#### **Normal Plan group**

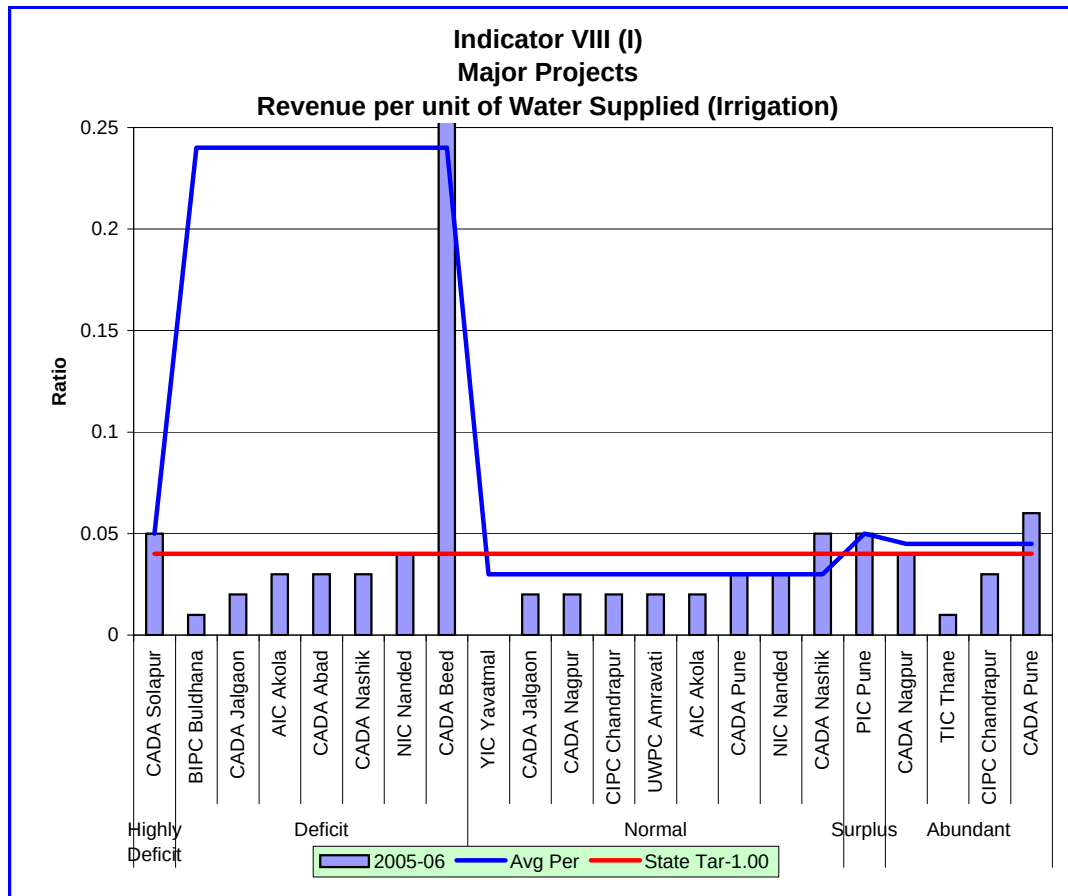
CADA Pune: The revenue per unit of water supplied is same as last year and it is less than State norms.

PIC Pune: The revenue per unit of water supply is same as last year but it is more than State norms.

#### **Abundant Plan group**

TIC Thane: The revenue per unit of water supply is same as last year and below State norms.

CADA Pune: The revenue per unit of water supply increased over last year and is more than State norms.



| Plangroup      | Circle          | 2005-06 | Avg Per | State Tar-1.00 | Rank |
|----------------|-----------------|---------|---------|----------------|------|
| Highly Deficit | CADA Solapur    | 0.05    | 0.05    | 0.04           | VG   |
| Deficit        | BIPC Buldhana   | 0.01    | 0.24    | 0.04           | BA   |
|                | CADA Jalgaon    | 0.02    |         | 0.04           | BA   |
|                | AIC Akola       | 0.03    |         | 0.04           | M    |
|                | CADA Abad       | 0.03    |         | 0.04           | M    |
|                | CADA Nashik     | 0.03    |         | 0.04           | M    |
|                | NIC Nanded      | 0.04    |         | 0.04           | VG   |
|                | CADA Beed       | 1.51    |         | 0.04           | VG   |
|                |                 |         |         |                |      |
| Normal         | YIC Yavatmal    | 0.00    | 0.03    | 0.04           | BA   |
|                | CADA Jalgaon    | 0.02    |         | 0.04           | BA   |
|                | CADA Nagpur     | 0.02    |         | 0.04           | BA   |
|                | CIPC Chandrapur | 0.02    |         | 0.04           | BA   |
|                | UWPC Amravati   | 0.02    |         | 0.04           | BA   |
|                | AIC Akola       | 0.02    |         | 0.04           | BA   |
|                | CADA Pune       | 0.03    |         | 0.04           | M    |
|                | NIC Nanded      | 0.03    |         | 0.04           | M    |
|                | CADA Nashik     | 0.05    |         | 0.04           | VG   |
|                |                 |         |         |                |      |
| Surplus        | PIC Pune        | 0.05    | 0.05    | 0.04           | VG   |
| Abundant       | CADA Nagpur     | 0.04    | 0.05    | 0.04           | VG   |
|                | TIC Thane       | 0.01    |         | 0.04           | BA   |
|                | CIPC Chandrapur | 0.03    |         | 0.04           | M    |
|                | CADA Pune       | 0.06    |         | 0.04           | VG   |
|                | SIC Sangli      | 0.07    |         | 0.04           | VG   |

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

## **Indicator VIII (NI)**

### **Revenue per unit Water Supplied (Non-irrigation)**

#### **Highly Deficit Plan group**

CADA Solapur: In Bhima project, the revenue per unit water supplied is lowered down since last year but it is above State norms.

#### **Deficit Plan group**

The revenue per unit water supplied (NI) is better as compared to the State norm, for all projects Amrawati & Nagpur region except CIPC Chandrapur. In case of Asolamendha & Dina project under CIPC Chandrapur, there was no water supply for NI use.

CADA Jalgaon, Nashik, Aurangabad, Beed and NIC Nanded: The State target is achieved consistently for last 2 years.

#### **Normal Plan group**

CADA Pune: The value is lowered down since last year from 8.97 to 2.49 due to less recovery and increase in water use in Kukadi project.

PIC Pune: Due to less recovery in Pawana project the cost recovery ratio is decreased.

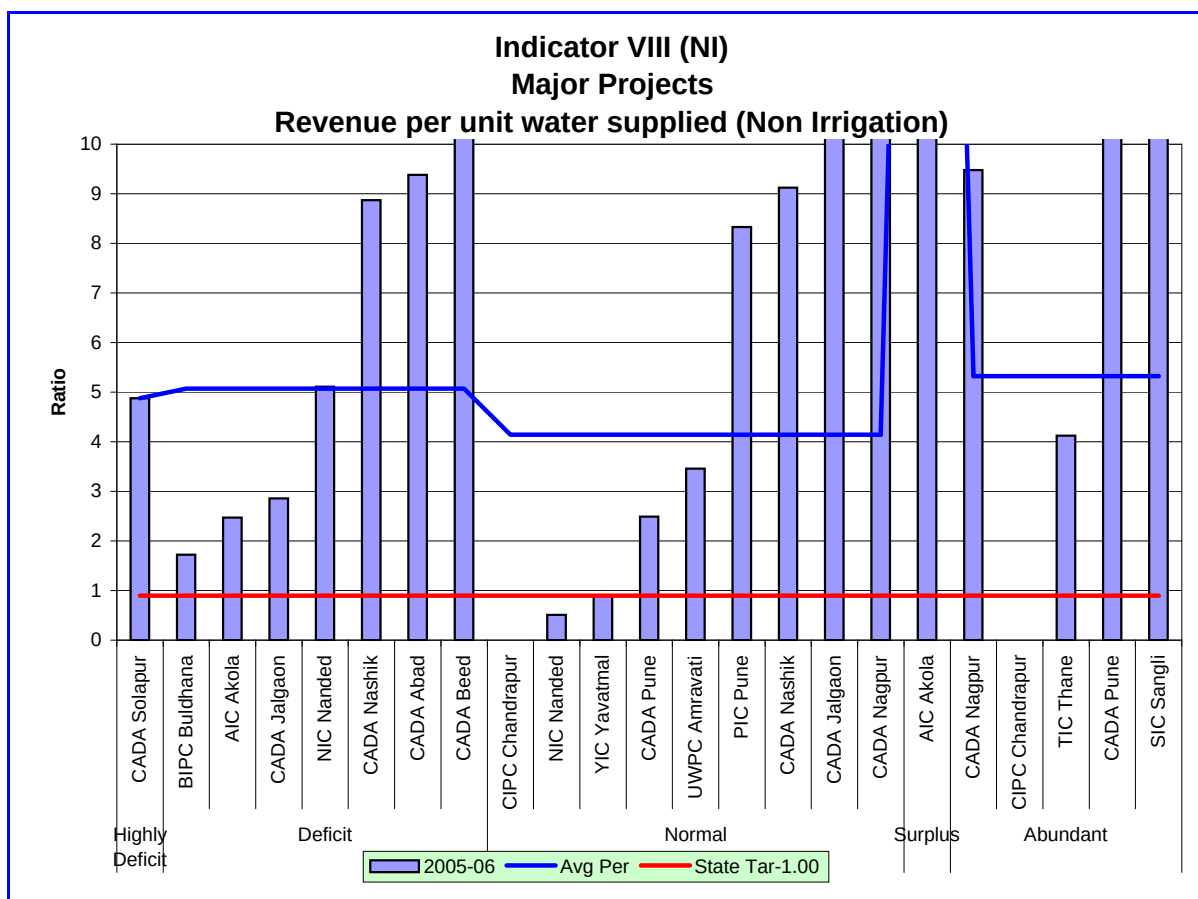
NIC Nanded: The ratio in Upper Penganga project has decreased from 0.18 (2004-05) to 0.03 (2005-06). Reduction in realisation of recovery towards NI uses to nearly 1/3 of last year has affected the ratio. However, the water use for NI use is also reduced from 78.12 to 43.41 Mcum.

CADA Jalgaon & Nashik: These circles have achieved the State target consistently for last two years.

#### **Abundant Plan group**

TIC Thane: The revenue per unit of water supplied is lowered down by 50 percent over last year due to decrease in recovery of water charges and increased water use in Bhatsa project.

CADA Pune: In Krishna project the revenue per unit water supply is increased by 65 percent since last year due increase in recovery of water charges but it is still below State norms.



| Plangroup      | Circle          | 2005-06 | Avg Per | State Tar-1.00 | Rank |
|----------------|-----------------|---------|---------|----------------|------|
| Highly Deficit | CADA Solapur    | 4.88    | 4.88    | 0.90           | VG   |
| Deficit        | BIPC Buldhana   | 1.72    | 5.07    | 0.90           | VG   |
|                | AIC Akola       | 2.47    |         | 0.90           | VG   |
|                | CADA Jalgaon    | 2.86    |         | 0.90           | VG   |
|                | NIC Nanded      | 5.11    |         | 0.90           | VG   |
|                | CADA Nashik     | 8.87    |         | 0.90           | VG   |
|                | CADA Abad       | 9.38    |         | 0.90           | VG   |
|                | CADA Beed       | 13.33   |         | 0.90           | VG   |
| Normal         | CIPC Chandrapur | 0.00    | 4.14    | 0.90           | BA   |
|                | NIC Nanded      | 0.51    |         | 0.90           | F    |
|                | YIC Yavatmal    | 0.90    |         | 0.90           | VG   |
|                | CADA Pune       | 2.49    |         | 0.90           | VG   |
|                | UWPC Amravati   | 3.46    |         | 0.90           | VG   |
|                | PIC Pune        | 8.33    |         | 0.90           | VG   |
|                | CADA Nashik     | 9.12    |         | 0.90           | VG   |
|                | CADA Jalgaon    | 16.16   |         | 0.90           | VG   |
|                | CADA Nagpur     | 34.49   |         | 0.90           | VG   |
| Surplus        | AIC Akola       | 38.20   | 38.20   | 0.90           | VG   |
| Abundant       | CADA Nagpur     | 9.48    | 5.32    | 0.90           | VG   |
|                | CIPC Chandrapur | 0.00    |         | 0.90           | BA   |
|                | TIC Thane       | 4.12    |         | 0.90           | VG   |
|                | CADA Pune       | 13.69   |         | 0.90           | VG   |
|                | SIC Sangli      | 15.55   |         | 0.90           | VG   |

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



## **Indicator IX: Mandays for O&M per unit Area (Mandays/ha)**

### **Highly Deficit Plan group**

CADA Solapur: In Bhima project mandays per unit area are 2.23 which is within the State norm.

### **Deficit Plan group**

BIPC Buldhana: In Wan project, utilisation of mandays is within the State norm.

AIC Akola: Mandays utilisation on Katepurna is within the State norm. But in Nalganga project it is more than 2.5 times that of State norm due to low irrigation potential utilisation.

CADA Aurangabad: The mandays for O&M in Jayakwadi project is reduced from 8.67 in 2004-05 to 4.74 in 2005-06, as more area is brought under irrigation.

CADA Beed: In all the four major projects more mandays are required for O&M per unit irrigated area. The field officers are required to take efforts for reducing the same.

### **Normal Plan group**

Mandays utilisation per unit irrigated area in Bor (CIPC Chandrapur), Pus (AIC Akola) & Upper Wardha (UWPC Amrawati) is more than State norm. In Arunawati project (YIC Yeotmal) data about mandays utilisation appears to be erroneous.

PIC Pune : In Khadakwasla, NLBC, NRBC and Pawana, mandays for O&M per unit area irrigated area is 4.57, 2.15, 1.18 and 7.71 respectively.

CADA Pune: In Kukadi project, mandays for O&M per unit area irrigated area is 2.32. It has been decreased by 5.69 over last year. In Ghod project, it is 1.67.

CADA Nashik: In all projects the mandays for O&M have been reduced substantially.

CADA Jalgaon: In Hatnur project, the mandays are reduced compared to past. However there still scope to achieve the State target.

NIC Nanded: In UPP project, the mandays are reduced compared to past.

### **Surplus Plan group**

CADA Nagpur: Though potential utilisation on all the projects (Bagh, Itiadh, Pench) is appreciable, mandays utilisation per unit irrigated area is above the State norm.

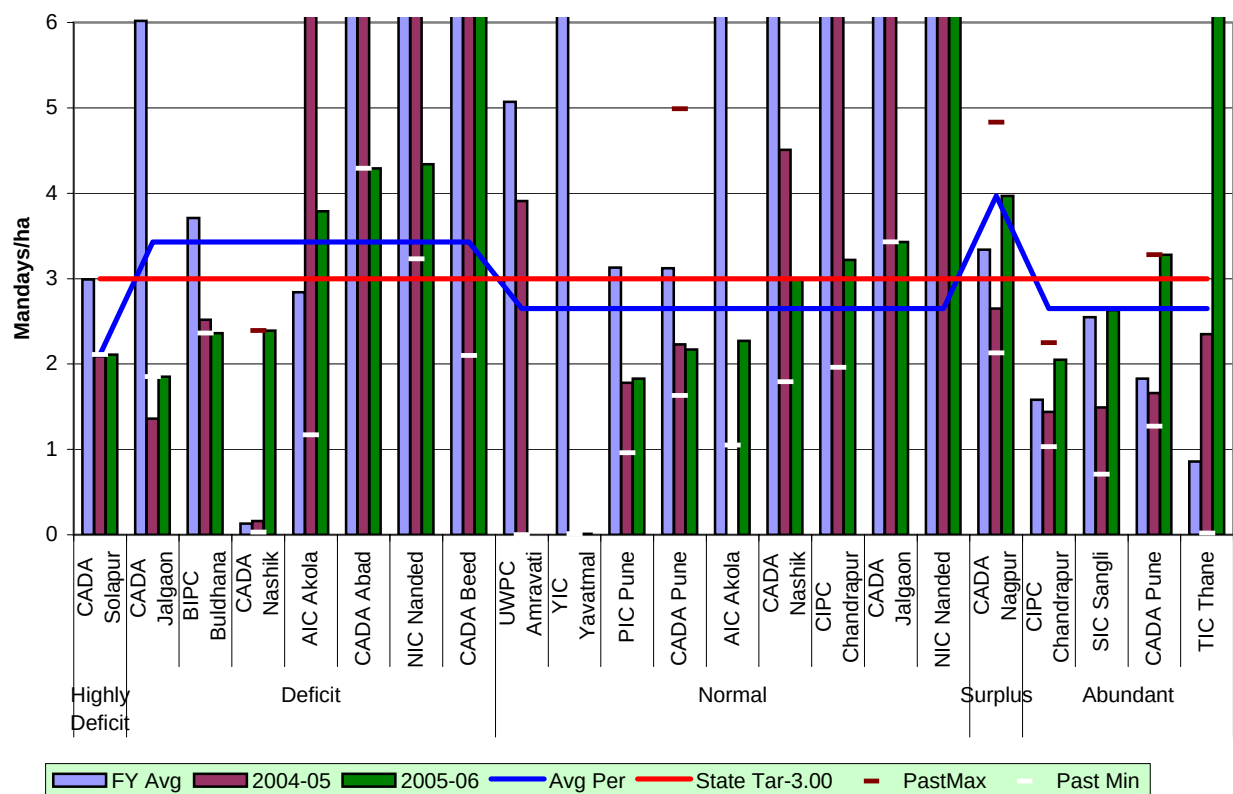
### **Abundant Plan group**

CIPC Chandrapur: Appreciable potential utilisation has kept the mandays utilisation for unit area irrigated well within the State norm in Asolamendha & Dina projects.

SIC Sangli: In Dudhganga project, mandays per unit area are 4.08 which is 32.47 percent above last year's value. In Radhanagri project it is 2.52. In Tulshi project, mandays 11.30/ha which is 65.45 percent above to last year's value.

TIC Thane: In Bhatsa project, mandays are 8.84/ha which is 66.68 percent lower than last year's value. In Surya, Kal-Amba and Rajanalla, mandays are 14.83, 7.01 and 4.22 /ha, which are increased abruptly over last year's value.

**Indicator IX**  
**Major Projects**  
**Mandays for O&M per unit area**



| Plangroup      | Circle          | FY Avg | 2004-05 | 2005-06 | PastMax | Past Min | Avg Per | Rank |
|----------------|-----------------|--------|---------|---------|---------|----------|---------|------|
| Highly Deficit | CADA Solapur    | 2.99   | 2.09    | 2.11    | 7.59    | 2.11     | 2.11    | VG   |
|                | CADA Jalgaon    | 6.02   | 1.36    | 1.85    | 498.71  | 1.85     |         | VG   |
|                | BIPC Buldhana   | 3.71   | 2.52    | 2.36    | 8.66    | 2.36     |         | VG   |
|                | CADA Nashik     | 0.13   | 0.16    | 2.39    | 2.39    | 0.03     |         | VG   |
|                | AIC Akola       | 2.84   | 9.72    | 3.79    | 9.72    | 1.17     | 3.43    | M    |
|                | CADA Abad       | 16.55  | 7.90    | 4.29    | 37.17   | 4.29     |         | F    |
|                | NIC Nanded      | 6.42   | 7.79    | 4.34    | 14.59   | 3.23     |         | F    |
|                | CADA Beed       | 18.72  | 19.09   | 12.32   | 167.53  | 2.10     |         | BA   |
| Normal         | UWPC Amravati   | 5.07   | 3.91    | No Irr  | 8.47    | No Irr   |         | --   |
|                | YIC Yavatmal    | 12.10  | No Irr  | 0.01    | 24.00   | 0.02     |         | VG   |
|                | PIC Pune        | 3.13   | 1.78    | 1.83    | 14.04   | 0.96     |         | VG   |
|                | CADA Pune       | 3.12   | 2.23    | 2.17    | 4.99    | 1.63     |         | VG   |
|                | AIC Akola       | 6.69   | No Irr  | 2.27    | 7.42    | 1.05     | 2.65    | VG   |
|                | CADA Nashik     | 6.77   | 4.51    | 3.00    | 32.78   | 1.79     |         | G    |
|                | CIPC Chandrapur | 7.13   | 13.75   | 3.22    | 13.75   | 1.96     |         | G    |
|                | CADA Jalgaon    | 11.24  | 7.29    | 3.43    | 12.97   | 3.43     |         | G    |
| Surplus        | NIC Nanded      | 12.27  | 21.46   | 6.59    | 21.46   | 6.59     |         | BA   |
|                | CADA Nagpur     | 3.34   | 2.65    | 3.97    | 4.83    | 2.13     | 3.97    | F    |
| Abundant       | CIPC Chandrapur | 1.58   | 1.44    | 2.05    | 2.25    | 1.03     |         | VG   |
|                | SIC Sangli      | 2.55   | 1.49    | 2.63    | 10.96   | 0.71     | 2.65    | VG   |
|                | CADA Pune       | 1.83   | 1.66    | 3.28    | 3.28    | 1.27     |         | G    |
|                | TIC Thane       | 0.86   | 2.35    | 7.63    | 14.83   | 0.02     |         | BA   |

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

2) Figures in blue excluded for Avg Per

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

### **Highly Deficit Plan group**

CADA Solapur: In Bhima project land damage index is 1.71 which is 14 percent higher than last year's index.

### **Deficit Plan group**

Land, less than 0.4 percent of CCA has been damaged due to water logging in Katepurna, Bor, Nalganga & Pench projects.

CADA Beed: In Manjra project, the affected area has increased to 440 ha, resulting in to land damage index as 1.86. The field officers are required to monitor the water use & drainage in the affected area.

NIC Nanded: In Manar project, increase in damaged area is observed. Efforts are required to reclaim. In Purna project, though the ratio appears as 0.91, the extent of damaged area is 681 ha.

CADA Aurangabad: In Jayakwadi project the land damage has increased from 1028 ha to 1988 ha.

### **Normal Plan group**

CADA Pune: In Kukadi project the land damage index is increased slightly since last year and last five year average. In Ghod project there is 2.0 ha area is damaged. In past there was no damaged area.

PIC Pune: In Khadakwasla project the land damaged area is reduced since last five years' average. In NLBC project the index is increased by 12.1 percent since last year. In NRBC project, the index is increased compared to last year. In Pawana project there is no land damage.

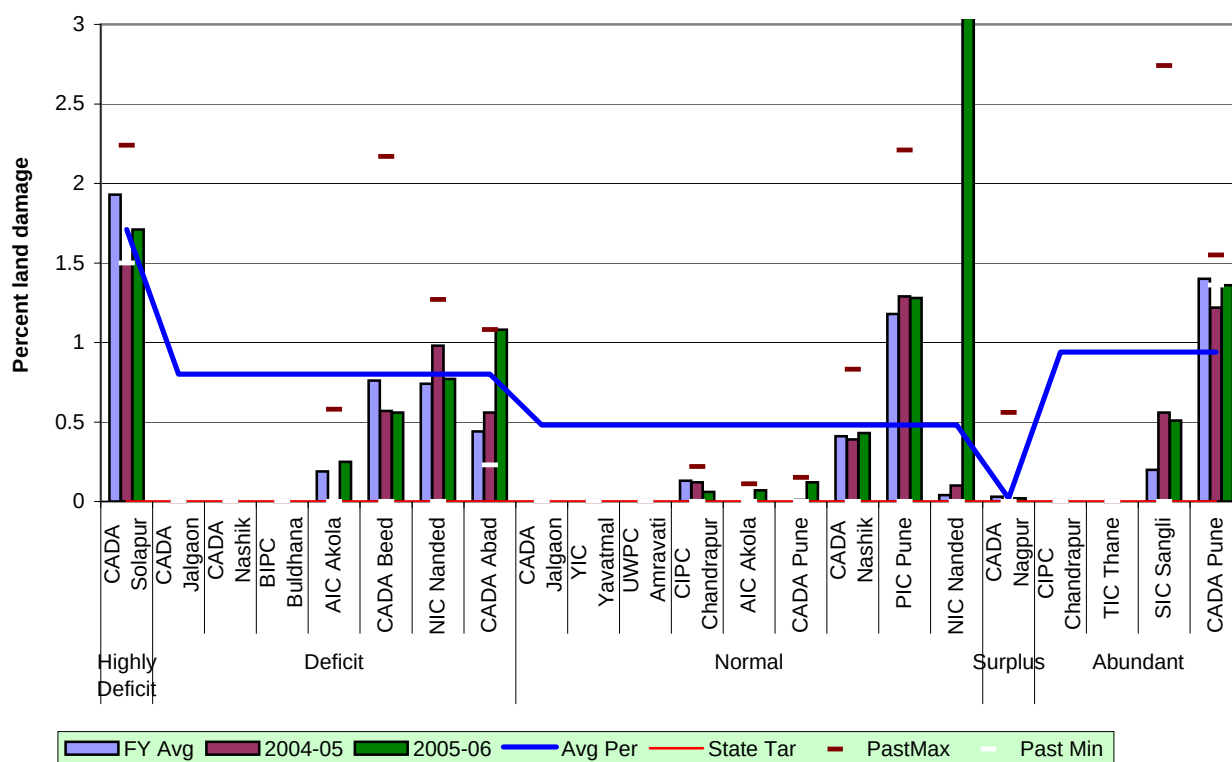
NIC Nanded: In UPP, the index has risen to 9.45 in 2005-06 from 0.1 in 2004-05. The field officers are required to monitor the water use.

### **Abundant Plan group**

SIC Sangli: In Radhanagri project, land damage index is 2.33 which is 25.08 percent lower than last year's index.

CADA Pune : In Krishna project, the index is on higher side since last year by 11.4 percent.

### Indicator X Major Projects Land Damage Index



| Plangroup      | Circle          | FY Avg | 2004-05 | 2005-06 | PastMax | Past Min | Avg Per | Rank |
|----------------|-----------------|--------|---------|---------|---------|----------|---------|------|
| Highly Deficit | CADA Solapur    | 1.93   | 1.50    | 1.71    | 2.24    | 1.50     | 1.71    | M    |
| Deficit        | CADA Jalgaon    | 0.00   | 0.00    | 0.00    | 0.00    | 0.00     | 0.80    | VG   |
|                | CADA Nashik     | 0.00   | 0.00    | 0.00    | 0.00    | 0.00     |         | VG   |
|                | BIPC Buldhana   | 0.00   | 0.00    | 0.00    | 0.00    | 0.00     |         | VG   |
|                | AIC Akola       | 0.19   | 0.00    | 0.25    | 0.58    | 0.00     |         | G    |
|                | CADA Beed       | 0.76   | 0.57    | 0.56    | 2.17    | 0.00     |         | G    |
|                | NIC Nanded      | 0.74   | 0.98    | 0.77    | 1.27    | 0.00     |         | G    |
|                | CADA Abad       | 0.44   | 0.56    | 1.08    | 1.08    | 0.23     |         | M    |
| Normal         | CADA Jalgaon    | 0.00   | 0.00    | 0.00    | 0.00    | 0.00     | 0.48    | VG   |
|                | YIC Yavatmal    | 0.00   | 0.00    | 0.00    | 0.00    | 0.00     |         | VG   |
|                | UWPC Amravati   | 0.00   | 0.00    | 0.00    | 0.00    | 0.00     |         | VG   |
|                | CIPC Chandrapur | 0.13   | 0.12    | 0.06    | 0.22    | 0.00     |         | VG   |
|                | AIC Akola       | 0.00   | 0.00    | 0.07    | 0.11    | 0.00     |         | VG   |
|                | CADA Pune       | 0.00   | 0.01    | 0.12    | 0.15    | 0.00     |         | G    |
|                | CADA Nashik     | 0.41   | 0.39    | 0.43    | 0.83    | 0.00     |         | G    |
|                | PIC Pune        | 1.18   | 1.29    | 1.28    | 2.21    | 0.00     |         | M    |
|                | NIC Nanded      | 0.04   | 0.10    | 9.45    | 9.45    | 0.00     |         | BA   |
| Surplus        | CADA Nagpur     | 0.03   | 0.00    | 0.02    | 0.56    | 0.00     | 0.02    | VG   |
| Abundant       | CIPC Chandrapur | 0.00   | 0.00    | 0.00    | 0.00    | 0.00     | 0.94    | VG   |
|                | TIC Thane       | 0.00   | 0.00    | 0.00    | 0.00    | 0.00     |         | VG   |
|                | SIC Sangli      | 0.20   | 0.56    | 0.51    | 2.74    | 0.00     |         | G    |
|                | CADA Pune       | 1.40   | 1.22    | 1.36    | 1.55    | 1.36     |         | M    |

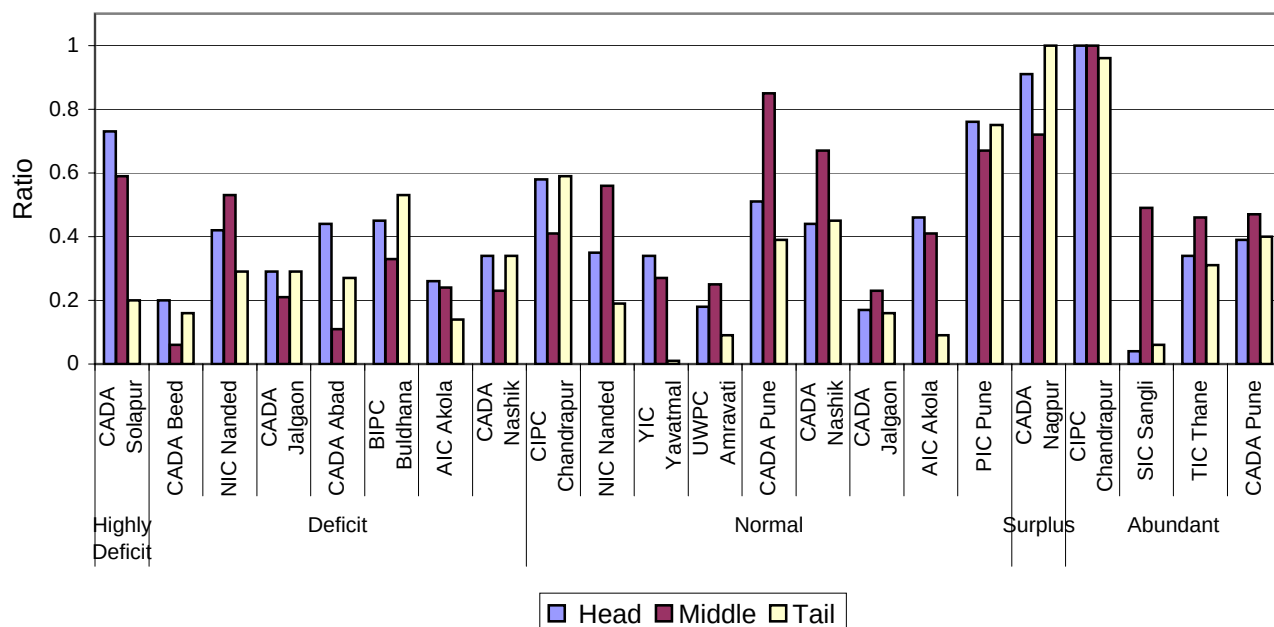
Note: 1) Figures in red exceeds range of graph. 2) Figures in blue excluded for Avg Per.

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

Potential utilisation is more or less equal in all the three reaches of command area of Katepurna [(AIC Akola), Bor (CIPC Chandrapur, (Normal)], Pench, Bagh & Itiadoh {(CADA Nagpur (Surplus))} and Asolamendha & Dina {(CIPC Chandrapur (Abundant))} projects.

Potential utilisation is more concentrated in head reaches of Nalganga (BIPC Buldhana-Deficit), Arunawati (YIC Yeotmal-Normal) In case of Pus project (YIC Yeotmal-Normal) Potential utilisation is more concentrated in middle reach than other reaches.

**Indicator XI  
Major Projects  
Equity Performance**



| Plangroup      | Circle          | 2005-06 |        |      |
|----------------|-----------------|---------|--------|------|
|                |                 | Head    | Middle | Tail |
| Highly Deficit | CADA Solapur    | 0.73    | 0.59   | 0.20 |
| Deficit        | CADA Beed       | 0.20    | 0.06   | 0.16 |
|                | NIC Nanded      | 0.42    | 0.53   | 0.29 |
|                | CADA Jalgaon    | 0.29    | 0.21   | 0.29 |
|                | CADA Abad       | 0.44    | 0.11   | 0.27 |
|                | BIPC Buldhana   | 0.45    | 0.33   | 0.53 |
|                | AIC Akola       | 0.26    | 0.24   | 0.14 |
|                | CADA Nashik     | 0.34    | 0.23   | 0.34 |
| Normal         | CIPC Chandrapur | 0.58    | 0.41   | 0.59 |
|                | NIC Nanded      | 0.35    | 0.56   | 0.19 |
|                | YIC Yavatmal    | 0.34    | 0.27   | 0.01 |
|                | UWPC Amravati   | 0.18    | 0.25   | 0.09 |
|                | CADA Pune       | 0.51    | 0.85   | 0.39 |
|                | CADA Nashik     | 0.44    | 0.67   | 0.45 |
|                | CADA Jalgaon    | 0.17    | 0.23   | 0.16 |
|                | AIC Akola       | 0.46    | 0.41   | 0.09 |
|                | PIC Pune        | 0.76    | 0.67   | 0.75 |
|                | CADA Nagpur     | 0.91    | 0.72   | 1.00 |
| Abundant       | CIPC Chandrapur | 1.00    | 1.00   | 0.96 |
|                | SIC Sangli      | 0.04    | 0.49   | 0.06 |
|                | TIC Thane       | 0.34    | 0.46   | 0.31 |
|                | CADA Pune       | 0.39    | 0.47   | 0.40 |

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

### **Highly Deficit Plan group**

CADA Solapur: In Bhima project the ratio is 0.43 which is lowered by 32.81 percent since last year. It is lower than five years' average ratio.

### **Deficit Plan group**

CADA Beed: In Manjra & Lower Terna projects, the State target of one was achieved by recovery of full water charges, i.e. Rs. 93.99 lakh & 6.89 lakh respectively. In PRBC the recovery is very poor. Rs. 26.06 lakhs were recovered against assessment of 160.33 lakh.

Due to drought condition in past two years in Akola & Yeotmal districts, the revenue recovery in Katepurna, Pus (AIC Akola) & Arunawati (YIC Yeotmal) is almost nil, against the sanctioned assessment. On Wan project, ratio has value more than one, it is either on account of mixing of arrears of revenue recovery with the recovery against the current assessment or assessment being partly sanctioned during the current year. Field officers are supposed to explore the real cause.

CADA Jalgaon: In Girna project, the ratio has come down to 0.53 against one in past. The field officers should exert more for recovery of water charges fully.

NIC Nanded: The ratio in Purna project is improved from 0.31 in 2004-05 to 0.99 in 2005-06 with recovery of Rs. 168.92 lakh for irrigation use.

CADA Aurangabad: In Jayakwadi project, full recovery of water charges for irrigation use (Rs.171.53 lakh) was done with the efforts of field officers.

### **Normal Plan group**

NIC Nanded: In UPP the recovery is very poor (Rs. 8.19 lakhs against assessment of Rs. 223.69 lakhs).

On Upper Wardha (UWPC Amrawati) & Bor project (CIPC Chandrapur), the revenue recovery against assessment is 42 & 45 percent only.

CADA Jalgaon: In Hatnur project, the recovery of water charges against assessment is only 31 percent (Rs. 14.16 lakh against Rs. 45.52 lakh)

CADA Nashik: In Waghad project, which is totally handed over to WUAs for management, full recovery of water charges should have been affected. The field officers should take a note of this. In Mula project, the percentage of recovery to assessment is reduced from 0.58 in 2004-05 to 0.43 in 2005-06. In Kadwa project, the recovery is very poor (Rs. 0.26 lakhs against assessment of Rs. 5.39 lakhs). In Gangapur, Darna & Bhandardara projects, the recovery is reduced to nearly 50 percent of past values. The field officers should take efforts for full recovery.

PIC Pune: In Khadakwasla project the ratio is 0.84 which is increased by 33.33 percent since last year. It is higher than five years' average ratio. In NLBC, it is 0.55 which is increased by 41.03 percent since last year. In NRBC, it is 0.58 which is increased by 26.09 percent since last year. In Pawana project, it is 0.31 which is lowered by 66.67 percent since last year. It is lower than five years' average ratio.



CADA Pune: In Kukadi project, the ratio is 0.20 which is lowered by 80 percent since last year. It is lower than five years' average ratio. In Ghod project, ratio is 1.00.

### **Surplus Plan group**

CADA Nagpur: Revenue recovery against assessment in Itiadoh (53 percent) & Pench project (71 percent) is appreciable compared to it in the Bagh project. There is improvement in revenue recovery in these projects compared to last year (2004-05).

### **Abundant Plan group**

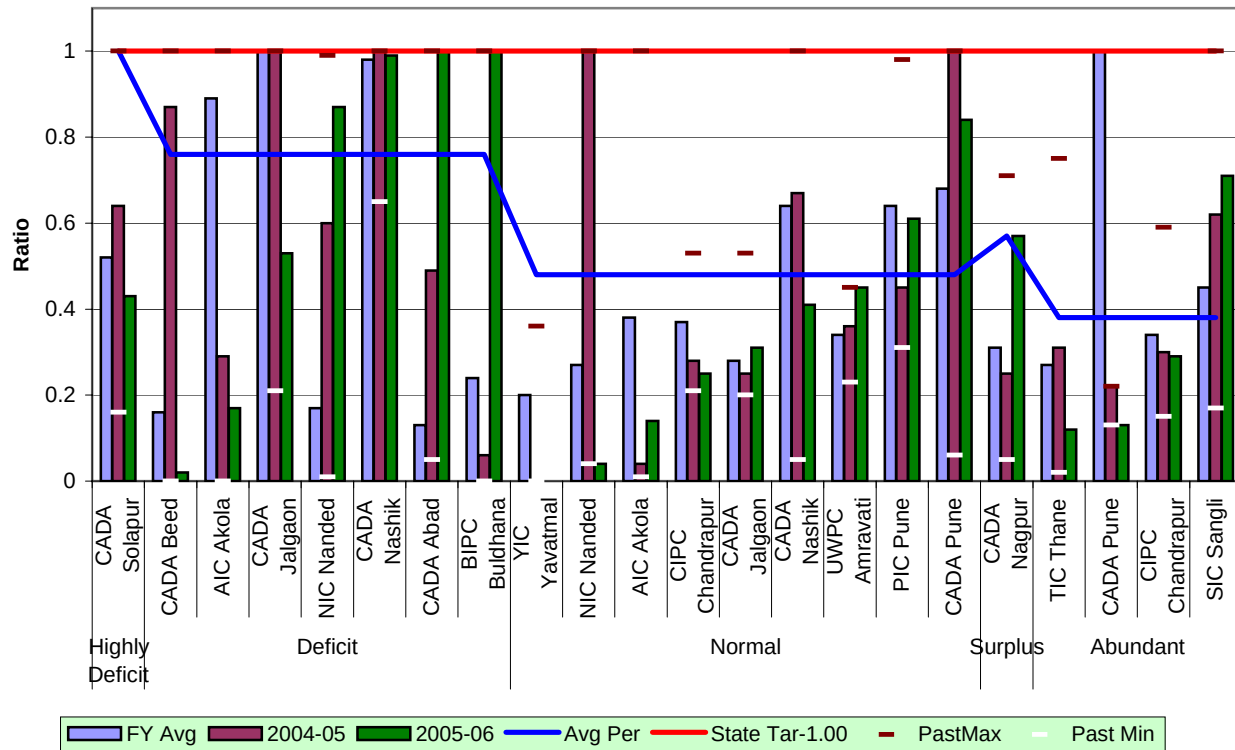
TIC Thane: In Bhatsa project, ratio is 0.40 which is lowered by 55.56 percent since last year. In Surya project, it is only 0.02 which is lowered by 86.67 percent since last year. In Kal-Amba project the ratio is 0.28 which is lowered by 26.32 percent since last year. In Rajanalla project it is 0.10 which is lowered by 33.33 percent since last year.

CADA Pune: In Krishna project, the ratio is 0.13, which is lowered by 40.91 percent since last year.

CIPC Chandrapur: Ratio in case of Asolamendha (0.21) compared to Dina project has low value. Though recovery percentage against assessment is low in these projects, there is improvement in performance compared to last year.

SIC Sangli: In Dudhganga project, the ratio is 0.76 which is increased by 68.89 percent since last year. In Radhanagri project, it is 0.58 which is lowered by 14.71 percent over last year. In Tulshi project, ratio is 0.54. In Warna project, the ratio is 0.88 which is increased by 31.34 percent over last year.

**Indicator XII -I  
Major Projects  
Assessment Recovery Ratio (Irrigation)**



| Plangroup      | Circle          | FY Avg | 2004-05 | 2005-06 | PastMax | Past Min | Avg Per | Rank |
|----------------|-----------------|--------|---------|---------|---------|----------|---------|------|
| Highly Deficit | CADA Solapur    | 0.52   | 0.64    | 0.43    | 1.00    | 0.16     | 1.00    | BA   |
| Deficit        | CADA Beed       | 0.16   | 0.87    | 0.02    | 1.00    | 0.00     | 0.76    | BA   |
|                | AIC Akola       | 0.89   | 0.29    | 0.17    | 1.00    | 0.00     |         | BA   |
|                | CADA Jalgaon    | 1.00   | 1.00    | 0.53    | 1.00    | 0.21     |         | F    |
|                | NIC Nanded      | 0.17   | 0.60    | 0.87    | 0.99    | 0.01     |         | G    |
|                | CADA Nashik     | 0.98   | 1.00    | 0.99    | 1.00    | 0.65     |         | G    |
|                | CADA Abad       | 0.13   | 0.49    | 1.00    | 1.00    | 0.05     |         | VG   |
|                | BIPC Buldhana   | 0.24   | 0.06    | 1.00    | 1.00    | 0.00     |         | VG   |
|                | YIC Yavatmal    | 0.20   | 0.00    | 0.00    | 0.36    | 0.00     |         | BA   |
| Normal         | NIC Nanded      | 0.27   | 1.00    | 0.04    | 1.00    | 0.15     | 0.48    | BA   |
|                | AIC Akola       | 0.38   | 0.04    | 0.14    | 1.00    | 0.01     |         | BA   |
|                | CIPC Chandrapur | 0.37   | 0.28    | 0.25    | 0.53    | 0.21     |         | BA   |
|                | CADA Jalgaon    | 0.28   | 0.25    | 0.31    | 0.53    | 0.20     |         | BA   |
|                | CADA Nashik     | 0.64   | 0.67    | 0.41    | 1.00    | 0.05     |         | BA   |
|                | UWPC Amravati   | 0.34   | 0.36    | 0.45    | 0.45    | 0.23     |         | BA   |
|                | PIC Pune        | 0.64   | 0.45    | 0.61    | 0.98    | 0.31     |         | F    |
|                | CADA Pune       | 0.68   | 1.00    | 0.84    | 1.00    | 0.06     |         | M    |
| Surplus        | CADA Nagpur     | 0.31   | 0.25    | 0.57    | 0.71    | 0.05     | 0.57    | F    |
| Abundant       | TIC Thane       | 0.27   | 0.31    | 0.12    | 0.75    | 0.18     | 0.38    | BA   |
|                | CADA Pune       | 1.00   | 0.22    | 0.13    | 0.22    | 0.13     |         | BA   |
|                | CIPC Chandrapur | 0.34   | 0.30    | 0.29    | 0.59    | 0.15     |         | BA   |
|                | SIC Sangli      | 0.45   | 0.62    | 0.71    | 1.00    | 0.17     |         | M    |

Note: Figures in blue are excluded for Avg Per.

## **Indicator XII (B): Assessment Recovery Ratio (Non-irrigation)**

### **Highly Deficit Plan group**

CADA Solapur: In Bhima project the ratio is 0.87 which is lowered by 13 percent since last year.

### **Deficit Plan group**

BIPC Buldhana: In Wan project, recovery is very low (20 percent) against assessment.

NIC Nanded: In Purna project, the recovery is only Rs. 3.90 lakhs against assessment of Rs. 34.77 lakhs.

CADA Beed: In PRBC, the recovery is only Rs. 72.54 lakhs against assessment of Rs. 198.64 lakhs. The field officers should take efforts for full NI recovery.

AIC Akola: Revenue recovery against assessment in Katepurna (88 percent) & Nalganga (74 percent) is less than State norm.

### **Normal Plan group**

NIC Nanded: In UPP, the recovery of water charges for NI use is only Rs. 22.17 lakhs against assessment of Rs. 448.34 lakhs resulting in the ratio as 0.05.

Recovery in Lower Wunna (CADA Nagpur) is 93 percent, whereas it is 100 percent in Upper Wardha project (UWPC Amrawati)

More efforts are needed in Arunawati (YIC Yeotmal), Bor (CIPC Chandrapur) & Pus (AIC Akola) projects where recovery rate is very poor compared to State target.

CADA Pune: In Kukadi project, ratio is 0.06 which is lowered by 94 percent since last year. In Ghod project, it is 0.99.

CADA Nashik: In Waghad project, the recovery of water charges for NI use is only Rs. 0.53 lakhs against assessment of Rs. 9.21 lakh. In Bhandardara also only 11 percent of assessed water charges for NI use were recovered (Rs. 3`1.59 lakhs against assessment of Rs. 275.88 lakhs).

PIC Pune: In Khadakwasla project, ratio is 0.99 which is increased by 83.33 percent since last year. In NLBC and NRBC, State target of one was achieved.

PIC Pune: In Pawana project, the ratio is 0.70 which is low by 12.5 percent over last year.

### **Surplus Plan group**

CADA Nagpur: Recovery rate against assessment in Itiadh & Pench projects is appreciable but it is low in Bagh project.

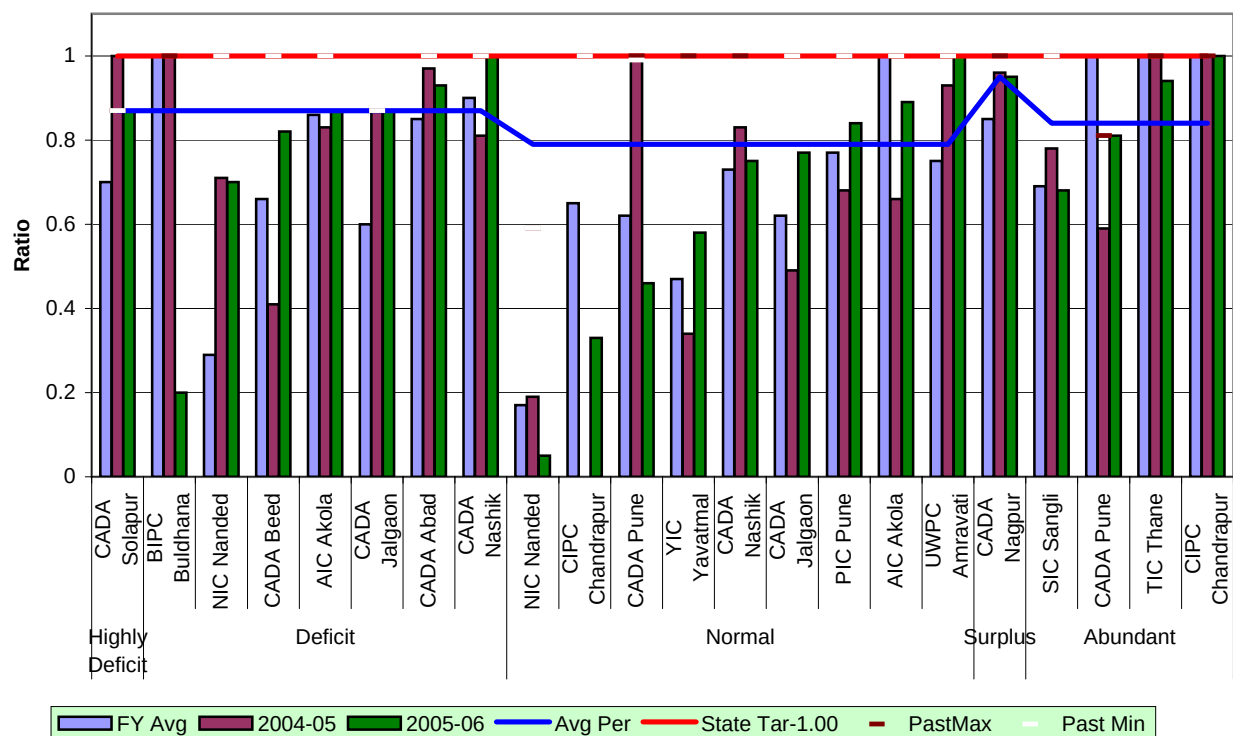
### **Abundant Plan group**

SIC Sangli: In Dudhganga project, the ratio is 0.85. In Radhanagri project, it is 0.61 which is lowered by 17.57 percent over last year. In Tulshi project, State target of one was achieved. In Warna project, it is 0.54 which is decreased by 28 percent over last year.

CADA Pune: In Krishna project, the ratio is 0.81 which is increased by 37 percent since last year.

TIC Thane: In Bhatsa project, the ratio is 0.90, which is lowered by 10 percent since last year. In Surya project, it is only 0.02 which is lowered by 86.67 percent since last year. In Kal-Amba project, State target of one could be achieved.

**Indicator XII-NI**  
**Major Projects**  
**Assessment Recovery Ratio (Non Irrigation)**



| Plangroup      | Circle          | FY Avg | 2004-05 | 2005-06 | PastMax | Past Min | Avg Per | Rank |
|----------------|-----------------|--------|---------|---------|---------|----------|---------|------|
| Highly Deficit | CADA Solapur    | 0.70   | 1.00    | 0.87    | 0.87    | 0.87     | 0.87    | G    |
| Deficit        | BIPC Buldhana   | 1.00   | 1.00    | 0.20    | 1.00    | ---      | 0.87    | BA   |
|                | NIC Nanded      | 0.29   | 0.71    | 0.70    | 1.00    | 1.00     |         | M    |
|                | CADA Beed       | 0.66   | 0.41    | 0.82    | 1.00    | 1.00     |         | M    |
|                | AIC Akola       | 0.86   | 0.83    | 0.87    | 1.00    | 1.00     |         | G    |
|                | CADA Jalgaon    | 0.60   | 0.87    | 0.87    | 0.87    | 0.87     |         | G    |
|                | CADA Abad       | 0.85   | 0.97    | 0.93    | 1.00    | 1.00     |         | G    |
|                | CADA Nashik     | 0.90   | 0.81    | 1.00    | 1.00    | 1.00     |         | VG   |
| Normal         | NIC Nanded      | 0.17   | 0.19    | 0.05    | 0.59    | 0.59     | 0.79    | BA   |
|                | CIPC Chandrapur | 0.65   | 0.00    | 0.33    | 1.00    | 1.00     |         | BA   |
|                | CADA Pune       | 0.62   | 1.00    | 0.46    | 1.00    | 0.99     |         | BA   |
|                | YIC Yavatmal    | 0.47   | 0.34    | 0.58    | 1.00    | ---      |         | F    |
|                | CADA Nashik     | 0.73   | 0.83    | 0.75    | 1.00    | ---      |         | M    |
|                | CADA Jalgaon    | 0.62   | 0.49    | 0.77    | 1.00    | 1.00     |         | M    |
|                | PIC Pune        | 0.77   | 0.68    | 0.84    | 1.00    | 1.00     |         | M    |
|                | AIC Akola       | 1.00   | 0.66    | 0.89    | 1.00    | 1.00     |         | G    |
|                | UWPC Amravati   | 0.75   | 0.93    | 1.00    | 1.00    | 1.00     |         | VG   |
| Surplus        | CADA Nagpur     | 0.85   | 0.96    | 0.95    | 1.00    | ---      | 0.95    | G    |
| Abundant       | SIC Sangli      | 0.69   | 0.78    | 0.68    | 1.00    | 1.00     | 0.84    | F    |
|                | CADA Pune       | 1.00   | 0.59    | 0.81    | 0.81    | ---      |         | M    |
|                | TIC Thane       | 1.00   | 1.00    | 0.94    | 1.00    | ---      |         | G    |
|                | CIPC Chandrapur | 1.00   | 1.00    | 1.00    | 1.00    | ---      |         | VG   |

Note: Figures in blue are excluded for Avg Per.

## **Medium Projects**

### **Indicator I: Annual Irrigation Water Supply per unit Irrigated Area (cum/ha)**

#### **Highly Deficit**

CADA Beed: In Kurnoor project, the annual irrigation water supply per unit irrigated area is very high. This is due to more conveyance losses in initial reach of the main canal. The field officers are required to adopt measures for minimising the conveyance losses. In Khasapur project, Rabi Jowar is the prominent crop (1480 ha out of 1755 ha total irrigated area). Therefore, the water use per ha is less. In Khandeshwar project, the water supplied per unit area is 5158 cum, as Rabi Jowar is grown on 444 ha out of 696 ha, total irrigated area. In Chandani project, Rabi Jowar is grown 68 percent of area, causing lesser water use per ha.

PIC Pune: Average annual water supplied per unit irrigated area of three medium projects in this circle is 8442 cum/ha. There is increase by 58 percent over last year's value.

CADA Solapur: Average annual water supplied per unit irrigated area of five medium projects in this circle is 9411 cum/ha. It increased by 2.25 times than last year's performance.

#### **Deficit Plan group**

BIPC Buldhana: There was no planned irrigation in Mun & Torna projects as there was no water available for irrigation. As meager water is used on reservoir lift, very low rate of water use is observed compared to State norm.

CADA Nashik: In Kelzar project, the water use per ha is only 3129 cum. The reason being release of water in river and use by lifts instead of flow irrigation. In Ghatshil Pargaon, the water availability was very less. Only 1.9 Mcum yield was received in Rabi season. The water use for irrigation was only by reservoir lifts for irrigating 277 ha of Rabi Jowar and vegetables.

CADA Jalgaon: In Rangawali and Agnawati projects, the water use per ha is less than the State target. In Agnawati project, water use is only by reservoir lifts. In Rangawali however, only two rotations were supplied in Rabi season. Moreover, 927 ha out of 2201 ha annual irrigated area was in Kharif, resulting in lesser water use.

AIC Akola: Irrigation water use per unit area irrigated in projects under the circle is low (7931/cum) compared to State target and compared to last years performance. Water use in Shahanoor, Morna & Nirguna is more compared to Uma project.

CADA Beed: In Vati and Devarjan projects, the water use per unit irrigated area is more than the State norm. In Vati project, 41 percent of the irrigated area was under Sugarcane and HW Groundnut. In Devarjan project, 65 percent of area irrigated was under Sugarcane.

NIC Nanded: In Pethwadaj project, the area under HW Groundnut (507 ha) & Sugarcane (71 ha out of 736 ha total irrigated area), has caused more water use per unit area.

In Karadkhed project, the area under HW Groundnut (268 ha), Banana (26 ha) &

Sugarcane (11 ha) out of 445 ha total irrigated area, has resulted in more water use per unit area.

### **Normal Plan group**

CADA Aurangabad: In Karpara and Ajanta Andhari projects, the water use per unit area is much above the State norm. In Karpara project, 51 percent area was under water intensive crops like HW Groundnut, Sugarcane and Banana. However, in Ajanta Andhari, crops like Wheat, Sunflower and Vegetables were irrigated by reservoir lifts. The field officers are required to have proper control over utilisation of water.

PIC Pune: Average annual water supplied per unit irrigated area of four medium projects in this circle is 5782 cum/ha. It is slightly increased (by 5 percent) than last year's performance. This is due to less number of rotations in Wadiwale and Tisangi projects.

AIC Akola: Average rate of water use in group of projects under the circle has value (7817 cum/ha) very close to State norm. Reasons can be attributed to appreciable area irrigated (Ekburji & Koradi project) is on reservoir lift. Secondly, the principle crops grown on the group of projects are Rabi seasonals (like Gram) of which water requirement is quite low.

CADA Nagpur: Water use per unit irrigated area in Chandrabhaga & Wenna projects is 8617 cum, which is slightly higher than State norm. Water use in Chandrabhaga is more compared to Wenna project.

CIPC Chandrapur: Paldhag (13583 cum) & Pothra (10815cum) project have used more water compared to Amalnalla (6173cum) & State norm. Water use per unit area on these projects is increased compared to last year.

NIC Nanded: In Dongargaon project, the water use per ha is very high. HW Groundnut on 507 ha out of 534 ha is the main reason for more water use.

CADA Nashik: In Mandohol project, the water use per ha is as high as 23499 cum per ha in spite of area under crops requiring less water on larger area (504 ha Rabi Jowar out of 108 ha). The field officers are required to be careful for efficient water use.

YIC Yeotmal: Average water use of Adan & Navargaon projects per unit area irrigated is 19042 cum, which is 2.5 times the State norm. Water use in Navargaon is just 6776 cum/ha where as it is 23217 cum in Adan.

### **Surplus Plan group**

CADA Nagpur: Most of the projects under the circle are Kharif predominant where water is supplied as a protective irrigation. Hence, though water use in these projects is increased as compared to last year, it is low (4147 cum) compared to State norm.

CIPC Chandrapur: Average water use for unit area in 4 projects under the circle is slightly more (8439cum) than State norm & last year performance. Water use in Dongargaon project which is under construction has excessive water use to the tune of 17512 cum/ha. Rate of water use in Chargaon is also more.

**Abundant Plan group**

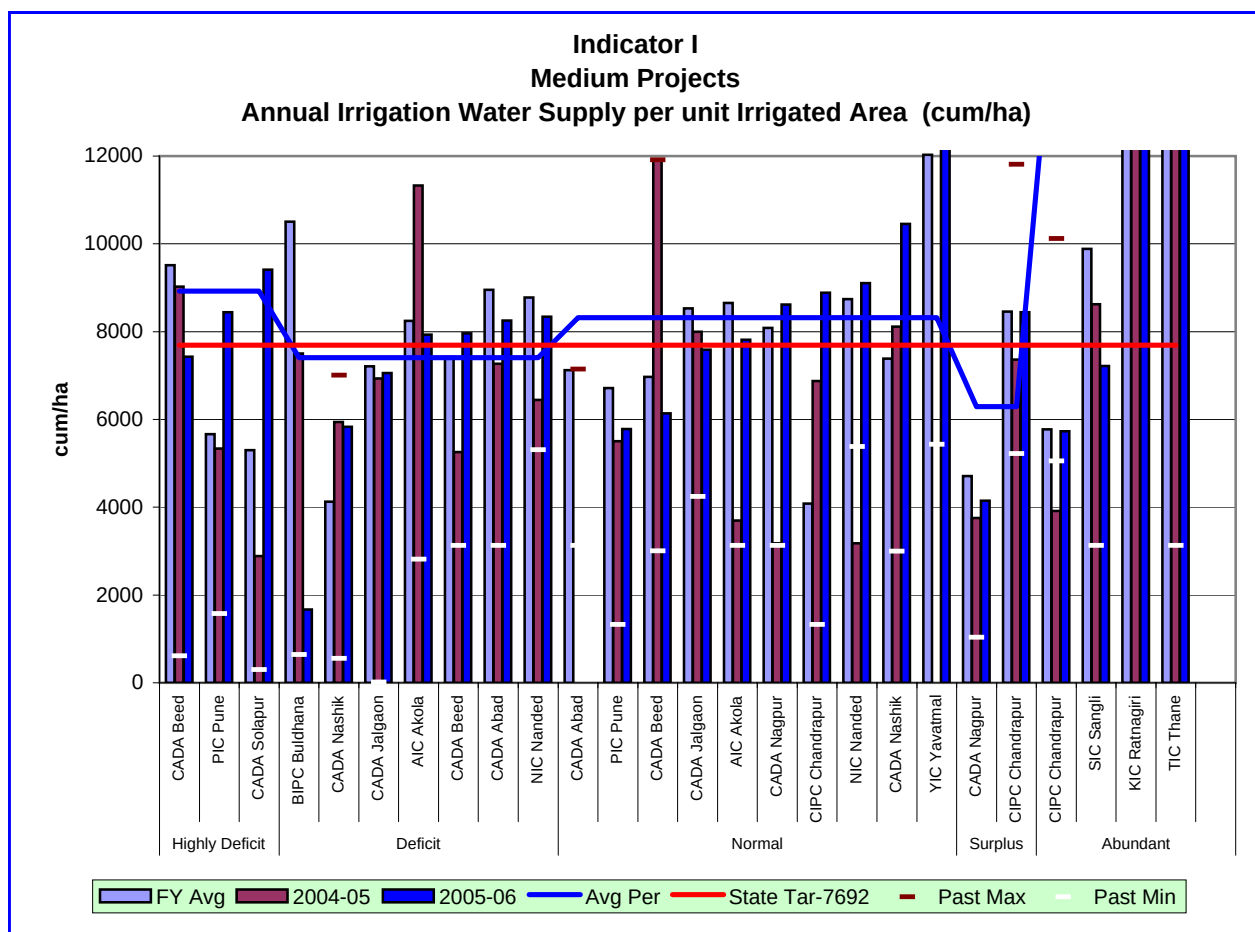
CIPC Chandrapur: Water use in Ghorazari is more compared to Naleshwar, though average water use of the project taken together is below the State norm.

SIC Sangli: Average annual water supplied per unit irrigated area of seven medium projects in this circle is 7214 cum/ha. It is decreased by 16 percent than last year's value.

KIC Ratnagiri: Average annual water supplied per unit irrigated area of Natuwadi project in this circle is 21429 cum/ha. It is decreased by 83 percent than last year's value.. Water utilisation is very high due to heavy leakages from canals as stated by field officers.

TIC Thane: The water use of Wandri project in this circle is 30750 cum/ha. It is more by 21 percent than last year's value. It is lower than five years' average value. It is due to paddy crops and hilly region command area in Konkan.





| Plangroup      | Circle          | FY Avg | 2004-05  | 2005-06  | Past Max | Past Min | Avg Per | Rank |
|----------------|-----------------|--------|----------|----------|----------|----------|---------|------|
| Highly Deficit | CADA Beed       | 9516   | 9027     | 7431     | 38000    | 610      | 8926    | VG   |
|                | PIC Pune        | 5663   | 5339     | 8442     | 12468    | 1576     |         | VG   |
|                | CADA Solapur    | 5303   | 2887     | 9411     | 15315    | 298      |         | M    |
| Deficit        | BIPC Buldhana   | 10506  | 7500     | 1667     | 25150    | 645      | 7406    | BA   |
|                | CADA Nashik     | 4125   | 5943     | 5829     | 7004     | 556      |         | M    |
|                | CADA Jalgaon    | 7213   | 6935     | 7055     | 804791   | 11       |         | VG   |
|                | AIC Akola       | 8245   | 11329    | 7931     | 53353    | 2817     |         | VG   |
|                | CADA Beed       | 7423   | 5257     | 7963     | 14782    | 3125     |         | VG   |
|                | CADA Abad       | 8952   | 7272     | 8253     | 22671    | 3125     |         | VG   |
|                | NIC Nanded      | 8779   | 6447     | 8342     | 18571    | 5306     |         | VG   |
|                |                 |        |          |          |          |          |         |      |
| Normal         | CADA Abad       | 7124   | No Water | No Water | 7143     | 3125     | 8317    | ---- |
|                | PIC Pune        | 6713   | 5504     | 5782     | 13162    | 1327     |         | ---- |
|                | CADA Beed       | 6971   | 11909    | 6137     | 11909    | 3007     |         | M    |
|                | CADA Jalgaon    | 8533   | 7997     | 7587     | 32940    | 4241     |         | VG   |
|                | AIC Akola       | 8657   | 3698     | 7817     | 15571    | 3125     |         | VG   |
|                | CADA Nagpur     | 8088   | 3181     | 8617     | 19549    | 3125     |         | VG   |
|                | CIPC Chandrapur | 4080   | 6877     | 8885     | 17512    | 1326     |         | M    |
|                | NIC Nanded      | 8740   | 3175     | 9107     | 19164    | 5377     |         | M    |
|                | CADA Nashik     | 7384   | 8117     | 10453    | 23499    | 3000     |         | F    |
|                | YIC Yavatmal    | 12031  | No Water | 19042    | 23218    | 5430     |         | BA   |
| Surplus        | CADA Nagpur     | 4710   | 3753     | 4147     | 59960    | 1032     | 6293    | F    |
|                | CIPC Chandrapur | 8460   | 7360     | 8439     | 11810    | 5218     |         | VG   |
| Abundant       | CIPC Chandrapur | 5775   | 3915     | 5731     | 10118    | 5054     | 16281   | M    |
|                | SIC Sangli      | 9887   | 8627     | 7214     | 22738    | 3125     |         | VG   |
|                | KIC Ratnagiri   | 83000  | 129172   | 21429    | 129172   | 21429    |         | BA   |
|                | TIC Thane       | 41489  | 25361    | 30750    | 49152    | 3125     |         | BA   |

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 II: Potential Created and Utilised**

### **Highly Deficit plan group**

CADA Beed: In Tawarja project, there was no live storage available and therefore, only 24 hectars irrigation was done through reservoir lifts. Therefore the potential utilised on canals is zero. In Turori project, in spite of 100 percent availability, the area irrigated on canals was only 27 Ha in HW season, resulting in lesser ratio of utilisation. In Kada project, only 33 percent yield was available the canal irrigation was not done , therefore the utilisation is nil. In Jakapur project, the availability was 69 percent. However, the water use by reservoir lifts was more than three times that by canals, resulting in lesser utilisation of potential.

PIC Pune: Average irrigation potential of three medium projects in this circle is 0.83. It increased by 130 percent than last year's performance. It is higher than five years' average value.

CADA Solapur: Full potential could be utilised in five medium projects in this circle.

### **Deficit plan group**

BIPC Buldhana: There was no water available for irrigation in Mun & Torna project. Whatever meager utilisation is there, it is on reservoir lift.

CADA Beed: In Wan project, in spite of 100 percent availability, only 16 percent of area on canals was irrigated. The field officers should take efforts for utilisation of created irrigation potential to the maximum possible extent. In Vati project, more area (41 percent) under water intensive crops leads to lesser utilisation of potential. Here, water use by reservoir lifts is more than 2.5 times of use by canals. In Tawarja project, 50 percent of water use was by reservoir lifts. This has resulted in lesser area under irrigation on canals. In Dewarjan project, 100 percent area irrigated being under Sugarcane, the utilisation of potential is less.

CADA Aurangabad: In Galhati project, the availability was 77 percent. However, the utilisation was only 25 percent of created potential. Nearly 20 percent water remained unutilized at the end of year. The field officers are required to pay attention for optimum utilisation of available water and created irrigation potential.

AIC Akola: Potential utilisation in the projects is low (0.63) as compared to created potential. Morna (0.41) Nirguna (0.37) and Shahanoor (0.35)

### **Normal Plan group**

YIC Yeotmal: Potential utilisation compared to created potential in both the projects Adan (30 percent) and Navergaon (23 percent) is quite low.

CADA Nagpur: Potential utilisation in Chandrabhaga & Wunna is very low compared to the State norm.

CIPC Chandrapur: Under potential utilisation in all the projects has resulted in 49 percent average potential utilisation, which is quite low compared to State norm.

AIC Akola: Storage position of projects under the circle was satisfactory during the year 2005-06. Hence the average utilisation is 67 percent of created potential. Borgaon, Saikheda & Lower Pus have less utilisation compared to Koradi & Ekburji.

CADA Jalgaon: In Karwand project, the utilisation was 25 percent in past and during 2005-06 also it was 26 percent only. The field officers are required to pay attention for utilisation of created potential.

PIC Pune: Average irrigation potential ratio of four projects in this circle is 1.

CADA Nashik: In Bhojapur project, in spite of water provided by canal system, in Rabi season only to crops like Wheat, Rabi Jowar and Gram, the utilisation of potential was only 33 percent. The field officers are required to pay attention for utilisation of created potential.

### **Surplus Plan group**

CIPC Chandrapur: Potential utilisation of projects combined together is 62 percent of potential created. It is low compared to State norm as well as last year performance. Only Chargaon project has better potential utilisation (92 percent)

CADA Nagpur: Most of the projects under the circle are Kharif dominated projects. Therefore average potential utilisation (83 percent) is quite good compared to State norm. Potential utilisation is low compared to last year, in the projects Betekar Bothli, Kesarnala, Khekrana, Kolar & Kanaholiba if considered individually.

### **Abundant Plan group**

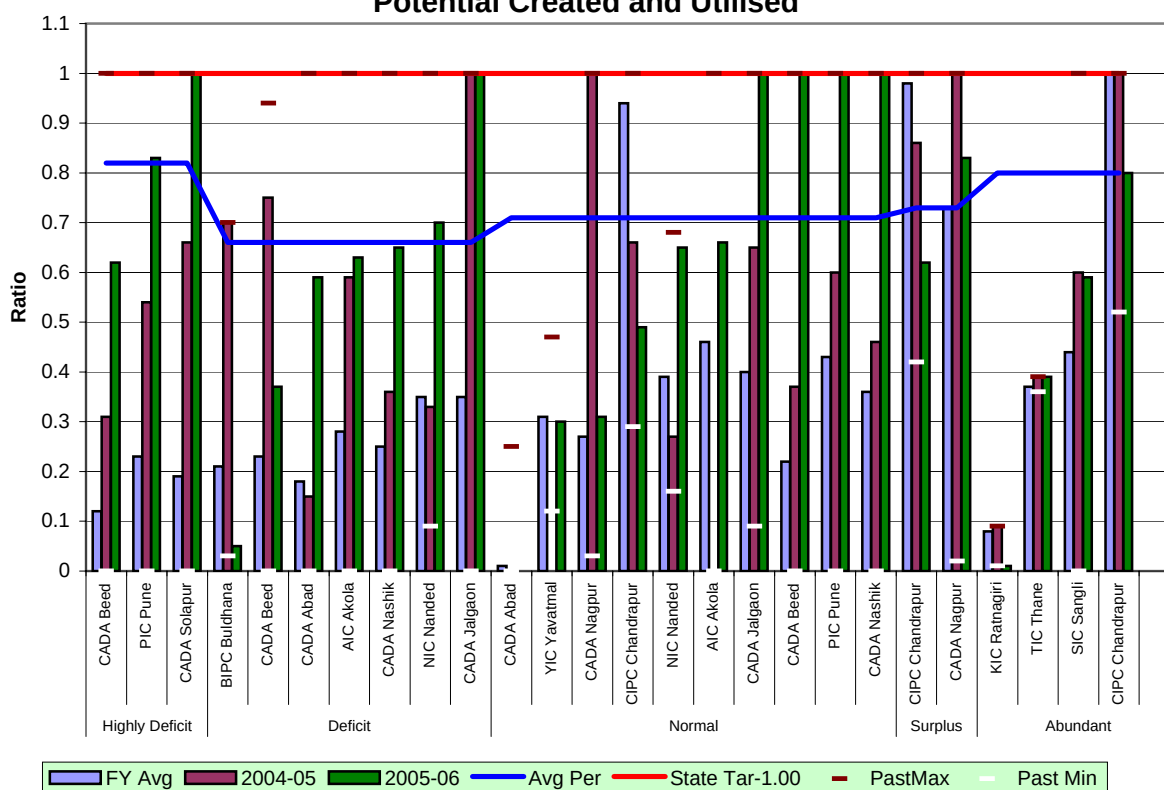
KIC Ratnagiri: Utilisation of potential in Natuwadi project in this circle is 0.01. It is decreased by 89 percent than last year's value. As per field officers, it is due to very less irrigated area and heavy leakages in the canal system.

TIC Thane: Utilisation of potential in Wandri project in this circle is 0.39.

SIC Sangli: Average utilisation of potential of five medium projects in this circle is 0.59. It is increased by 5 percent than last year's value.

CIPC Chandrapur: Potential utilisation in both Ghorazari & Naleshwar is as per State norm & last year performance.

**Indicator II**  
**Medium Projects**  
**Potential Created and Utilised**



| Plangroup      | Circle          | FY Avg | 2004-05  | 2005-06  | PastMax | Past Min | Avg Per | Rank |
|----------------|-----------------|--------|----------|----------|---------|----------|---------|------|
| Highly Deficit | CADA Beed       | 0.12   | 0.31     | 0.62     | 1.00    | 0.02     | 0.82    | F    |
|                | PIC Pune        | 0.23   | 0.54     | 0.83     | 1.00    | 0.02     |         | M    |
|                | CADA Solapur    | 0.19   | 0.66     | 1.00     | 1.00    | 0.05     |         | VG   |
| Deficit        | BIPC Buldhana   | 0.21   | 0.70     | 0.05     | 0.70    | 0.01     | 0.66    | BA   |
|                | CADA Beed       | 0.23   | 0.75     | 0.37     | 0.94    | No Water |         | BA   |
|                | CADA Abad       | 0.18   | 0.15     | 0.59     | 1.00    | 0.04     |         | F    |
|                | AIC Akola       | 0.28   | 0.59     | 0.63     | 1.00    | No Water |         | F    |
|                | CADA Nashik     | 0.25   | 0.36     | 0.65     | 1.00    | No Water |         | F    |
|                | NIC Nanded      | 0.35   | 0.33     | 0.70     | 1.00    | 0.01     |         | M    |
|                | CADA Jalgaon    | 0.35   | 1.00     | 1.00     | 1.00    | 0.01     |         | VG   |
| Normal         | CADA Abad       | 0.01   | No Water | No Water | 0.25    | 0.01     | 0.71    | ---  |
|                | YIC Yavatmal    | 0.31   | No Water | 0.30     | 0.47    | 0.12     |         | ---  |
|                | CADA Nagpur     | 0.27   | 1.00     | 0.31     | 1.00    | 0.01     |         | BA   |
|                | CIPC Chandrapur | 0.94   | 0.66     | 0.49     | 1.00    | 0.29     |         | BA   |
|                | NIC Nanded      | 0.39   | 0.27     | 0.65     | 0.68    | 0.30     |         | F    |
|                | AIC Akola       | 0.46   | No Water | 0.66     | 1.00    | 0.07     |         | F    |
|                | CADA Jalgaon    | 0.40   | 0.65     | 1.00     | 1.00    | 0.03     |         | VG   |
|                | CADA Beed       | 0.22   | 0.37     | 1.00     | 1.00    | No Water |         | VG   |
|                | PIC Pune        | 0.43   | 0.60     | 1.00     | 1.00    | No Water |         | VG   |
|                | CADA Nashik     | 0.36   | 0.46     | 1.00     | 1.00    | No Water |         | VG   |
| Surplus        | CIPC Chandrapur | 0.98   | 0.86     | 0.62     | 1.00    | 0.42     | 0.73    | F    |
|                | CADA Nagpur     | 0.73   | 1.00     | 0.83     | 1.00    | 0.02     |         | M    |
| Abundant       | KIC Ratnagiri   | 0.08   | 0.09     | 0.01     | 0.09    | 0.01     | 0.80    | BA   |
|                | TIC Thane       | 0.37   | 0.39     | 0.39     | 0.39    | 0.36     |         | BA   |
|                | SIC Sangli      | 0.44   | 0.60     | 0.59     | 1.00    | 0.14     |         | F    |
|                | CIPC Chandrapur | 1.00   | 1.00     | 0.80     | 1.00    | 0.52     |         | M    |

Note:1) Figures in blue excluded for Avg Per

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

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

#### **Highly Deficit Plan group**

PIC Pune: Output per unit irrigated area of three medium projects in this circle is Rs. 11617/ha. It is decreased by 58 percent over last year's value. It is lower than five years' average value.

CADA Solapur: Average output per unit irrigated area of five medium projects in this circle is Rs. 16559 /ha. It is reduced by 40 percent over last year's value. It is lower than five years' average value.

CADA Beed: In Turori project, the output is high due to crops like HW Groundnut and Vegetables. However, in Kurnoor project, the yield per ha is low compared to other projects.

#### **Deficit Plan group**

NIC Nanded: In Mahalingi project, water was not available for irrigation during 2004-05. Therefore, the area under Sugarcane & Groundnut was reduced resulting in lower output.

CADA Jalgaon: In Manyad project, cotton on 40 percent area has contributed to increase output.

CADA Aurangabad: In Masoli project, increase in area under Sugarcane has resulted in increase in output. In Jivrekha project, Wheat and Rabi Jowar are the major crops. Therefore the output is less.

AIC Akola: Though average output per unit area irrigated (Rs.34009) appears to be good, output in Morna, Nirguna, Uma individually is less than Rs. 20000 due to hailstorm struck the crops in March-2006. Output in Shahanoor project if considered individually is exorbitant (Rs.1.27 lakh/ha) compared to State norm & last year performance. (Rs. 23.309/ha)

CADA Nashik: In Kelzar project, fruit crops, Sugarcane and Vegetables have contributed to higher output.

CADA Beed: In Terna, Tawarja, Masalga, Gharni and Devarjan projects, the area irrigated was mainly under Sugarcane crop (49 to 89 percent) resulting in high output.

#### **Normal Plan group**

AIC Akola & CIPC Chandrapur: Output per unit area irrigated (Rs. 26201& 21587) is good in projects taken together.

YIC Yeotmal & CADA Nagpur: Low output is observed per unit irrigated area.

PIC Pune: Output per unit irrigated area of four projects in this circle is 34122 Rs/ha. It is increased by 22 percent than last year's performance. It is higher than five years' average value.

CADA Jalgaon: More area under Vegetables and Onion in Panzara, Sugarcane and Banana in Suki and Banana and fruit crops in Abhora has resulted in higher output.

CADA Nashik: In Alandi project, 42 percent area was under fruit crops, mainly Grapes. Therefore, the output is very high.

**Surplus Plan group**

Output in projects under CADA Nagpur & CIPC Chandrapur is Rs. 20162/ha & Rs. 20667/ha respectively which is low compared to the State norm (Rs.31000/ha)

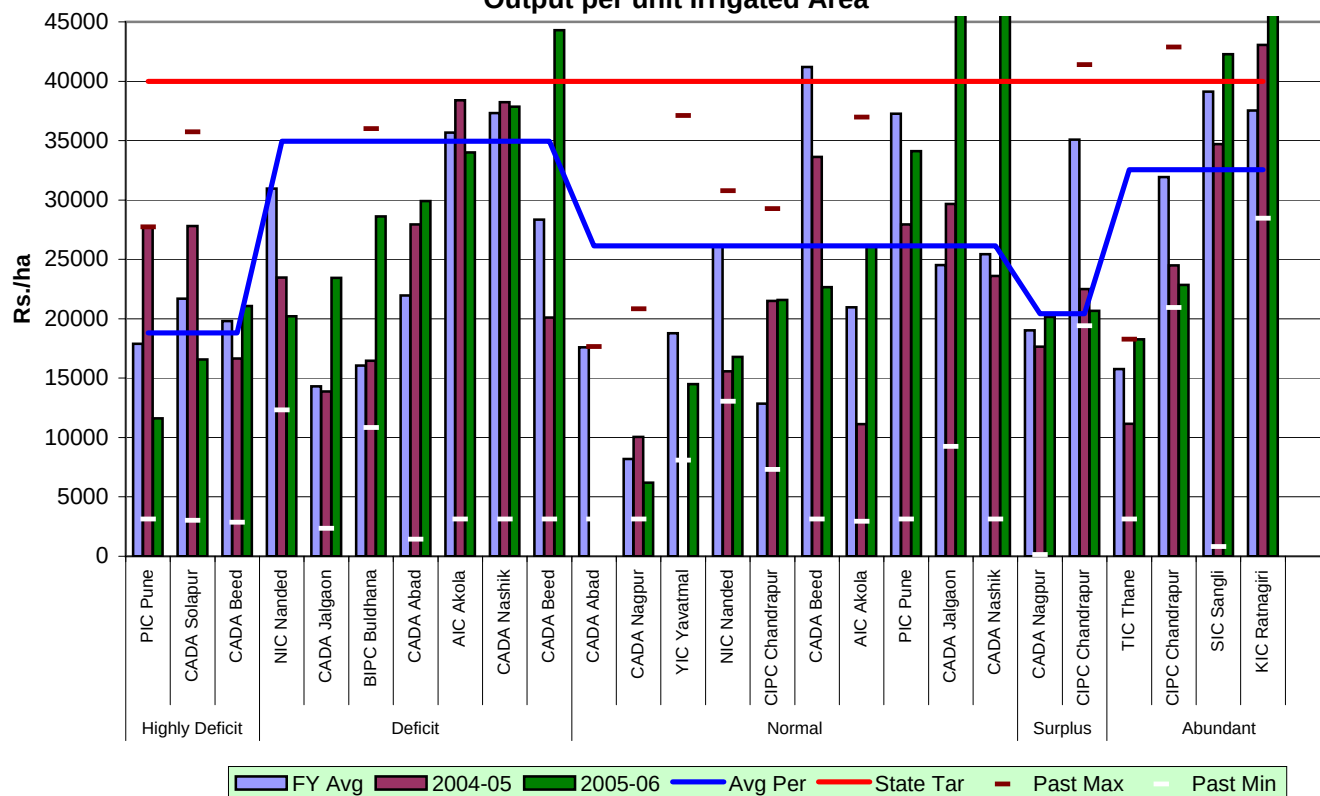
**Abundant Plan group**

TIC Thane: Average output per unit irrigated area of Wandri project is Rs. 18268 /ha. It is 64 percent higher than last year's performance. It is higher than five years' average value.

CIPC Chandrapur: Ghorazari & Naleshwar are the paddy growing projects. Naturally the output is Rs.23659/ha which is low compared to State norm of Rs. 40000/ha.

SIC Sangli: Average output per unit irrigated area of five medium projects in this circle is Rs. 42286 /ha. It is increased by 21 percent than last year's value. It is higher than five years' average value.

**Indicator III  
Medium Projects  
Output per unit Irrigated Area**



| Plangroup      | Circle          | FY Avg | 2004-05  | 2005-06  | Past Max | Past Min | Avg Per | St. Tar | Rank |
|----------------|-----------------|--------|----------|----------|----------|----------|---------|---------|------|
| Highly Deficit | PIC Pune        | 17900  | 27739    | 11617    | 27739    | 3125     | 18813   | 23000   | M    |
|                | CADA Solapur    | 21696  | 27815    | 16559    | 35727    | 3021     |         | 23000   | VG   |
|                | CADA Beed       | 19810  | 16661    | 21068    | 58908    | 2859     |         | 23000   | VG   |
| Deficit        | NIC Nanded      | 30965  | 23458    | 20205    | 77408    | 12315    | 34939   | 25000   | F    |
|                | CADA Jalgaon    | 14305  | 13885    | 23452    | 818545   | 2352     |         | 25000   | F    |
|                | BIPC Buldhana   | 16056  | 16460    | 28611    | 36000    | 10830    |         | 25000   | M    |
|                | CADA Abad       | 21966  | 27956    | 29914    | 67083    | 1436     |         | 25000   | G    |
|                | AIC Akola       | 35687  | 38409    | 34009    | 127040   | 3125     |         | 25000   | VG   |
|                | CADA Nashik     | 37314  | 38234    | 37862    | 59287    | 3125     |         | 25000   | VG   |
|                | CADA Beed       | 28355  | 20093    | 44303    | 451906   | 3125     |         | 25000   | VG   |
| Normal         | CADA Abad       | 17597  | No Water | No Water | 17647    | 3125     | 26140   | 25000   | ---  |
|                | CADA Nagpur     | 8188   | 10043    | 6208     | 20818    | 3125     |         | 25000   | ---  |
|                | YIC Yavatmal    | 18776  | No Water | 14509    | 37110    | 8090     |         | 25000   | BA   |
|                | NIC Nanded      | 26089  | 15575    | 16786    | 30774    | 13035    |         | 25000   | BA   |
|                | CIPC Chandrapur | 12841  | 21507    | 21587    | 29270    | 7291     |         | 25000   | F    |
|                | CADA Beed       | 41192  | 33636    | 22650    | 47901    | 3125     |         | 25000   | G    |
|                | AIC Akola       | 20967  | 11128    | 26201    | 36979    | 2929     |         | 25000   | G    |
|                | PIC Pune        | 37261  | 27952    | 34122    | 57324    | 3125     |         | 25000   | VG   |
|                | CADA Jalgaon    | 24519  | 29672    | 59500    | 111412   | 9255     |         | 25000   | VG   |
|                | CADA Nashik     | 25431  | 23604    | 214165   | 375972   | 3125     |         | 25000   | VG   |
| Surplus        | CADA Nagpur     | 19033  | 17659    | 20162    | 139391   | 129      | 20414   | 31000   | F    |
|                | CIPC Chandrapur | 35080  | 22487    | 20667    | 41386    | 19389    |         | 31000   | M    |
| Abundant       | TIC Thane       | 15770  | 11153    | 18267    | 18267    | 3125     | 32564   | 40000   | BA   |
|                | CIPC Chandrapur | 31944  | 24500    | 22842    | 42860    | 20946    |         | 40000   | F    |
|                | SIC Sangli      | 39114  | 34700    | 42286    | 94776    | 797      |         | 40000   | G    |
|                | KIC Ratnagiri   | 37523  | 43050    | 98571    | 98571    | 28466    |         | 40000   | VG   |

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**

PIC Pune: Output per unit irrigation water supplied of three medium projects in this circle is Rs. 2.04/cum. It is decreased by 60 percent than last year's performance. It is lower than five years' average value.

CADA Solapur: Average output per unit irrigation water supplied of five medium projects in this circle is Rs. 3.80/cum. It is lowered by 60 percent than last year's output.

##### **Deficit Plan group**

CADA Aurangabad: In Gadadgad project, the water use per ha is more or less same during 2004-05 and 2005-06. However, the output per unit water supply has increased from Rs. 4.87 to Rs. 6.05. It indicates reduction in area under water intensive crops.

CADA Beed: In Vati project, though there is reduction in output per unit area from Rs. 50405 (2004-05) to Rs. 40944 (2005-06), the output per unit water use has fallen considerably from Rs. 19.42 to Rs. 2.90 due to more water use.

AIC Akola: Output (Rs.5.24/cum) is quite high compared to State norm (Rs. 3.15/cum) in Shahanoor project due to exorbitantly high output.

CADA Jalgaon: In Rangawali project, though there is reduction in output per unit area over last year, the output per unit water supply has increased indicating efficient use of water. In Hiwara and Bori projects, there is increase in both, output per unit area and per unit water supplied (Rs. 3.09 and 2.32 respectively). The increase in output per unit water supplied is quite high (19.31 and 23.16 times respectively). It is due to increase in area under irrigation.

CADA Nashik: In Nagya Sakya project, the increase in the value of output per unit water supply indicates efficient use of water.

##### **Normal Plan group**

AIC Akola: Output observed in the project is more than State norm & last year performance.

There is low output per unit irrigated area in projects under YIC Yeotmal & CADA Nagpur compared to State norm & last year performance.

PIC Pune: Output per unit irrigation water supplied of four projects in this circle is Rs. 6.27/cum. It is increased by 23 percent than last year's performance. It is higher than five years' average value.

CADA Nashik: In Bhojapur project, the output per unit water supply has increased from Rs. 1.76 in 2004-05 to Rs. 6.22 in 2005-06, as the main crops are Wheat, Rabi Jowar and Gram. In Alandi project, the ratio is very high due fruit crop on 42 percent of irrigated area.



**Surplus Plan group**

CADA Nagpur: Due to low water utilisation output per unit irrigation water supply (Rs.5.38/cum) is more than the State norm (Rs.4.05 cum) as well as last year performance.

CIPC Chandrapur: Output is low compared to State norm.

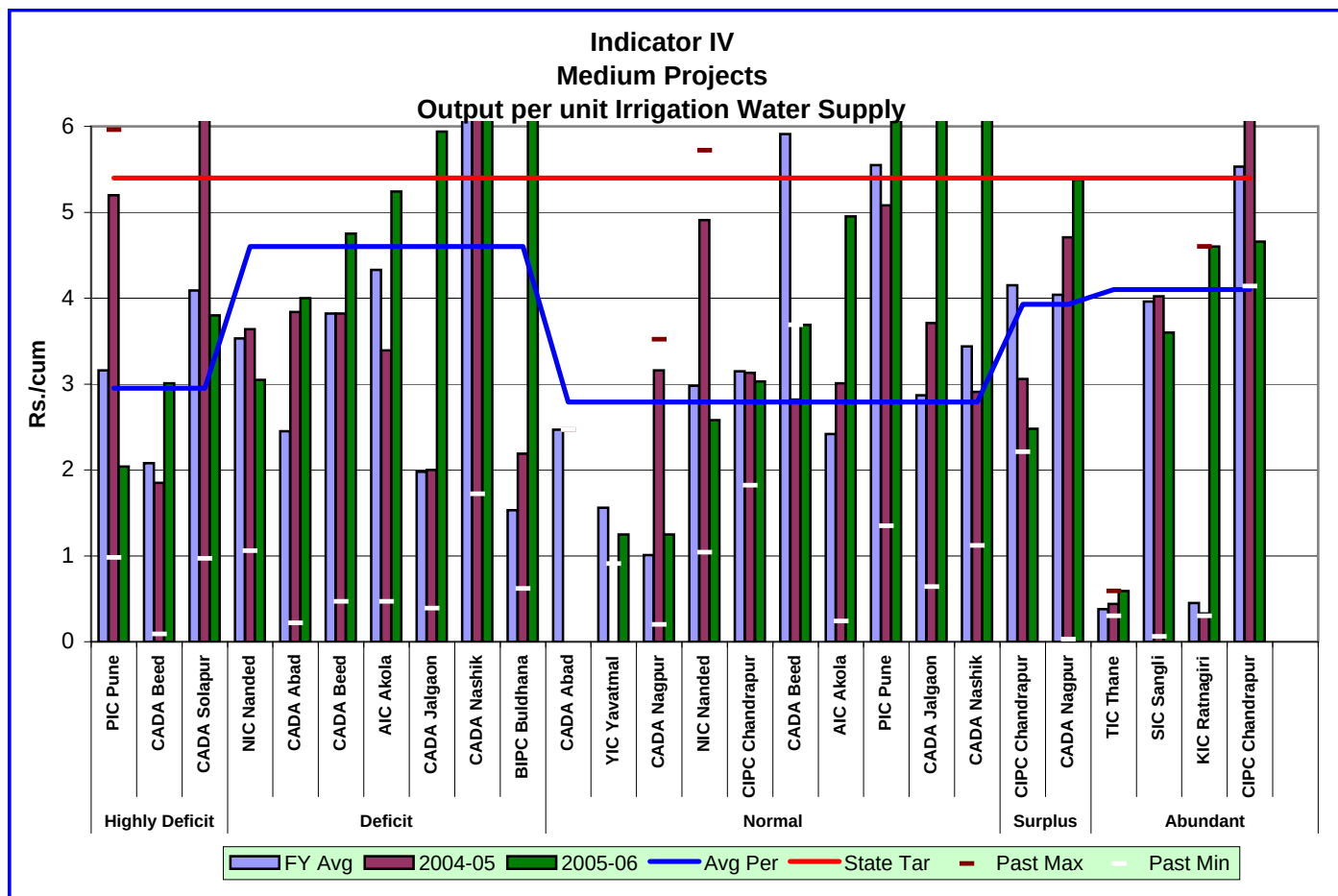
**Abundant Plan group**

TIC Thane: Output per unit irrigation water supplied of Wandri project is 0.59. It is 34 percent higher than last year's performance. It is higher than five years' average value.

SIC Sangli: Average output per unit irrigation water supplied of five medium projects in this circle is Rs. 3.60/cum. It is decreased by 10 percent than last year's performance. It is lower than five years' average value.

KIC Ratnagiri: Output per unit irrigation water supplied of Natuwadi project is 4.60. It is increased than last year's performance. It is higher than five years' average value.

CIPC Chandrapur: Output per unit water supply in Ghorazari & Naleshwar project combined together has low value compared to State norm & last year performance.



| Plangroup      | Circle          | FY Avg | 2004-05  | 2005-06  | Past Max | Past Min | Avg Per | St. Tar | Rank |
|----------------|-----------------|--------|----------|----------|----------|----------|---------|---------|------|
| Highly Deficit | PIC Pune        | 3.16   | 5.20     | 2.04     | 5.96     | 0.98     | 2.95    | 5.4     | F    |
|                | CADA Beed       | 2.08   | 1.85     | 3.01     | 11.15    | 0.09     |         | 5.4     | VG   |
|                | CADA Solapur    | 4.09   | 9.63     | 3.80     | 108.47   | 0.97     |         | 5.4     | VG   |
| Deficit        | NIC Nanded      | 3.53   | 3.64     | 3.05     | 7.76     | 1.06     | 4.6     | 5.4     | F    |
|                | CADA Abad       | 2.45   | 3.84     | 4.00     | 6.79     | 0.22     |         | 5.4     | F    |
|                | CADA Beed       | 3.82   | 3.82     | 4.75     | 52.74    | 0.47     |         | 5.4     | VG   |
|                | AIC Akola       | 4.33   | 3.39     | 5.24     | 21.75    | 0.47     |         | 5.4     | VG   |
|                | CADA Jalgaon    | 1.98   | 2.00     | 5.94     | 549.90   | 0.39     |         | 5.4     | VG   |
|                | CADA Nashik     | 9.05   | 6.43     | 7.84     | 70.58    | 1.72     |         | 5.4     | VG   |
|                | BIPC Buldhana   | 1.53   | 2.19     | 17.17    | 42.50    | 0.62     |         | 5.4     | VG   |
| Normal         | CADA Abad       | 2.47   | No Water | No Water | 2.47     | 2.47     | 2.79    | 5.4     | -    |
|                | YIC Yavatmal    | 1.56   | No Water | 1.25     | 6.47     | 0.91     |         | 5.4     | -    |
|                | CADA Nagpur     | 1.01   | 3.16     | 1.25     | 3.52     | 0.20     |         | 5.4     | G    |
|                | NIC Nanded      | 2.98   | 4.91     | 2.58     | 5.72     | 1.04     |         | 5.4     | G    |
|                | CIPC Chandrapur | 3.15   | 3.13     | 3.03     | 6.89     | 1.82     |         | 5.4     | G    |
|                | CADA Beed       | 5.91   | 2.82     | 3.69     | 13.44    | 3.69     |         | 5.4     | G    |
|                | AIC Akola       | 2.42   | 3.01     | 4.95     | 6.35     | 0.24     |         | 5.4     | VG   |
|                | PIC Pune        | 5.55   | 5.08     | 6.27     | 10.76    | 1.35     |         | 5.4     | VG   |
|                | CADA Jalgaon    | 2.87   | 3.71     | 15.85    | 48.03    | 0.64     |         | 5.4     | G    |
|                | CADA Nashik     | 3.44   | 2.91     | 44.13    | 153.59   | 1.12     |         | 5.4     | VG   |
| Surplus        | CIPC Chandrapur | 4.15   | 3.06     | 2.48     | 7.30     | 2.21     | 3.93    | 5.4     | M    |
|                | CADA Nagpur     | 4.04   | 4.71     | 5.38     | 50.66    | 0.03     |         | 5.4     | VG   |
| Abundant       | TIC Thane       | 0.38   | 0.44     | 0.59     | 0.59     | 0.30     | 4.1     | 5.4     | BA   |
|                | SIC Sangli      | 3.96   | 4.02     | 3.60     | 13.45    | 0.06     |         | 5.40    | BA   |
|                | KIC Ratnagiri   | 0.45   | 0.33     | 4.60     | 4.60     | 0.30     |         | 5.40    | M    |
|                | CIPC Chandrapur | 5.53   | 6.26     | 4.66     | 6.26     | 4.14     |         | 5.40    | VG   |

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 Solapur: Average ratio for five medium projects in this circle is 0.25.

CADA Beed: In all the projects except Kurnoor, the cost recovery ratio is very less (less than 0.21). The field officers are required to take efforts for improvement in performance.

PIC Pune: Average cost recovery ratio of three medium projects in this circle is 0.65. It is increased by 712 percent over last year. It is higher than five years' average value.

### **Deficit Plan group**

AIC Akola: Ratio has low value in case of projects on account of very low realisation of irrigation recovery in all projects except Shahanoor. Weak financial condition of farmers is the main cause for low realisation of irrigation recovery.

CADA Jalgaon & NIC Nanded: No project has achieved the State target of one.

CADA Aurangabad: The ratio is 1.87 and 7.12 in Kalyan and Ajantha Andhari projects respectively. In remaining projects, the value is less than one.

CADA Beed: The ratio is less than one in all the projects except Wan, Terna, Sakol and Gharni.

CADA Nashik: The performance of Nagya Sakya, Kelzar and Haranbari projects is very good.

### **Normal Plan group**

Cost recovery ratio in projects under CIPC Chandrapur is quite good (1.60). It is extraordinarily high (14.86) in projects under CADA Nagpur & comparatively low in projects under AIC Akola (0.53). It has very low value in projects under YIC Yeotmal.

CADA Nashik and NIC Nanded: No project could achieve the State target.

CADA Jalgaon: The ratio in Aner project is 1.32, whereas it is less than one in remaining projects under the circle.

PIC Pune: Average ratio of four projects in this circle is 0.78. It is decreased by 64 percent than last year. It is lower than five years' average value.

### **Surplus Plan group**

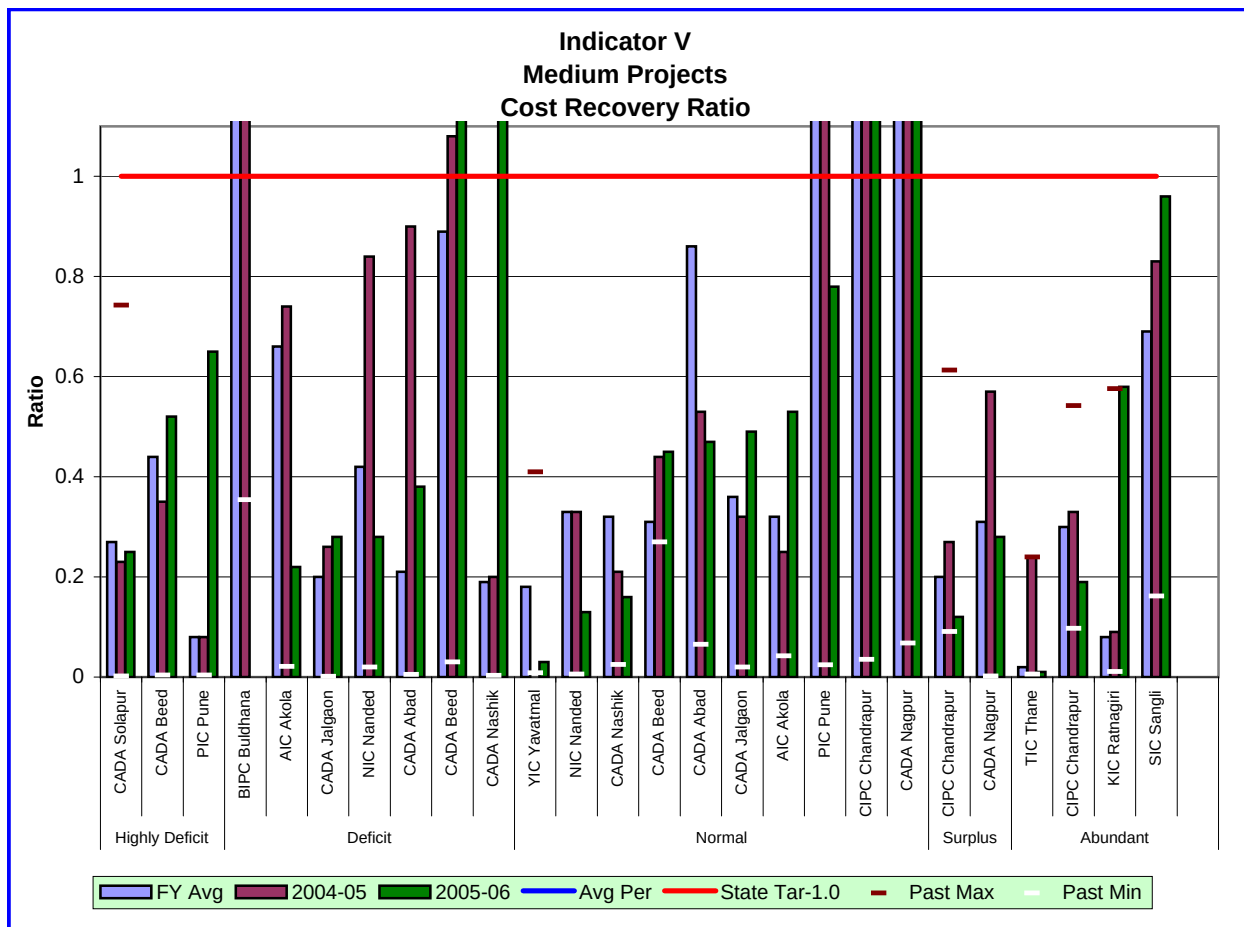
Decrease in value of ratio (0.82) compared to last year (0.57) in case projects in CADA Nagpur suggests low rate of irrigation revenue recovery. Same is the case with projects under CIPC Chandrapur.

### **Abundant Plan group**

TIC Thane: cost recovery ratio of Wandri project in this circle is 0.01. It is 95 percent lower than last year. It is lower than five years' average value.

CIPC Chandrapur: Cost recovery on Naleshwar project (0.15) is declined compared to last year performance (0.33).

SIC Sangli: Average cost recovery ratio of five medium projects in this circle is 0.96. It is increased by 15.66 percent than last year's performance. It is higher than five years' average value.



| Plangroup      | Circle          | FY Avg | 2004-05  | 2005-06  | Past Max | Past Min | Avg Per | Rank |
|----------------|-----------------|--------|----------|----------|----------|----------|---------|------|
| Highly Deficit | CADA Solapur    | 0.27   | 0.23     | 0.25     | 0.743    | 0.002    | 0.39    | BA   |
|                | CADA Beed       | 0.44   | 0.35     | 0.52     | 4.945    | 0.004    |         | F    |
|                | PIC Pune        | 0.08   | 0.08     | 0.65     | 10.263   | 0.004    |         | F    |
| Deficit        | BIPC Buldhana   | 2.09   | 3.29     | No Water | 5.645    | 0.354    | 0.29    | BA   |
|                | AIC Akola       | 0.66   | 0.74     | 0.22     | 7.356    | 0.021    |         | BA   |
|                | CADA Jalgaon    | 0.2    | 0.26     | 0.28     | 8.692    | 0.001    |         | BA   |
|                | NIC Nanded      | 0.42   | 0.84     | 0.28     | 3.752    | 0.020    |         | BA   |
|                | CADA Abad       | 0.21   | 0.9      | 0.38     | 7.123    | 0.005    |         | BA   |
|                | CADA Beed       | 0.89   | 1.08     | 1.32     | 17.917   | 0.030    |         | VG   |
|                | CADA Nashik     | 0.19   | 0.2      | 7.38     | 13.425   | 0.003    |         | VG   |
| Normal         | YIC Yavatmal    | 0.18   | No Water | 0.03     | 0.41     | 0.008    | 0.43    | BA   |
|                | NIC Nanded      | 0.33   | 0.33     | 0.13     | 1.455    | 0.006    |         | BA   |
|                | CADA Nashik     | 0.32   | 0.21     | 0.16     | 2.045    | 0.025    |         | BA   |
|                | CADA Beed       | 0.31   | 0.44     | 0.45     | 1.171    | 0.270    |         | BA   |
|                | CADA Abad       | 0.86   | 0.53     | 0.47     | 1.964    | 0.065    |         | BA   |
|                | CADA Jalgaon    | 0.36   | 0.32     | 0.49     | 43.5     | 0.020    |         | BA   |
|                | AIC Akola       | 0.32   | 0.25     | 0.53     | 3.5      | 0.042    |         | F    |
|                | PIC Pune        | 1.63   | 2.2      | 0.78     | 2.696    | 0.024    |         | M    |
|                | CIPC Chandrapur | 1.34   | 1.98     | 1.60     | 8.647    | 0.035    |         | VG   |
|                | CADA Nagpur     | 3.78   | 25.38    | 14.86    | 1059.5   | 0.068    |         | VG   |
| Surplus        | CIPC Chandrapur | 0.2    | 0.27     | 0.12     | 0.613    | 0.091    | 0.2     | BA   |
|                | CADA Nagpur     | 0.31   | 0.57     | 0.28     | 3.087    | 0.002    |         | BA   |
| Abundant       | TIC Thane       | 0.02   | 0.24     | 0.01     | 0.24     | 0.006    | 0.58    | BA   |
|                | CIPC Chandrapur | 0.3    | 0.33     | 0.19     | 0.542    | 0.097    |         | BA   |
|                | KIC Ratnagiri   | 0.08   | 0.09     | 0.58     | 0.576    | 0.011    |         | F    |
|                | SIC Sangli      | 0.69   | 0.83     | 0.96     | 4.309    | 0.162    |         | G    |

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

### **Highly Deficit plan group**

CADA Beed: In Talwar project, the O&M cost per unit irrigated area is very high (Rs. 12333) as water was not available for irrigation. Similarly in Kada project, the cost is Rs. 8688 per ha.

CADA Solapur: Average cost in five medium projects in this circle is 1911/ha.

PIC Pune: Average O&M cost per unit area of three medium projects in this circle is Rs. 6207. It has increased by 176 percent than last year.

### **Deficit Plan group**

CADA Nashik: Except Ghatshil Pargaon (Rs. 7159/ha), the O&M cost per ha is within limit in all projects.

NIC Nanded: In Karadkhed project, the value is high (Rs. 2556/ha). In remaining projects, it is within State norms. Rehabilitation works were taken for handing over the system to WUA.

CADA Aurangabad: In Masoli (Rs.1931/ha), Lahuki (Rs. 14622/ha), Girja (Rs. 3821/ha), Galati (Rs. 2859/ha) and Ajantha Andhari (6051/ha) projects the values are high.

AIC Akola: O&M cost per unit area irrigated in projects is quite high (Rs.4024) compared to State norm, due to low potential utilisation.

### **Normal Plan group**

There was low maintenance expenditure in Shahanoor, Nirguna & Uma under AIC Akola & YIC Yeotmal, therefore, O&M cost per unit area irrigated is well below the State norm. In case of projects under CADA Nagpur, the value (1403) is close to the State norm. In case of projects under CIPC Chandrapur, it is slightly more than the State norm.

CADA Jalgaon: Except in Karwand (Rs. 5406/ha) & Abhora (Rs. 1975/ha) the O&M cost per unit irrigated area is within State limits.

PIC Pune: Average O&M cost per unit area of four projects in this circle is 1082.

CADA Nashik: In Bhojapur project the O&M cost is more than double (Rs. 2965/ha) of State norms.

NIC Nanded: In Dongargaon project the cost is very high (Rs. 3160/ha) as rehabilitation of distribution network was under taken for handing over it to WUA.

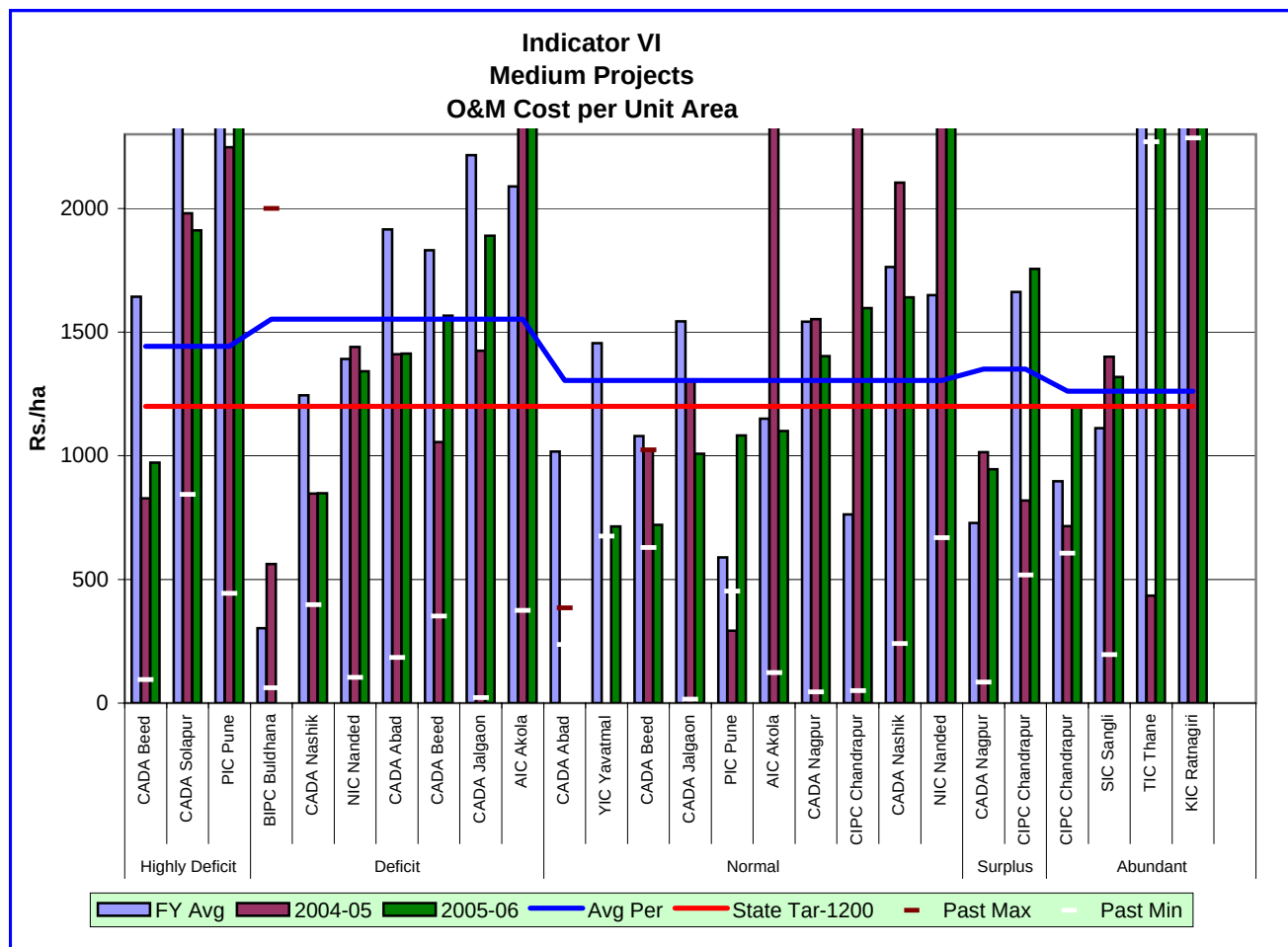
### **Surplus Plan group**

CADA Nagpur: O&M cost per unit area irrigated on projects is well below (Rs.809/ha) the State norm, on account of appreciable potential utilisation.

### **Abundant Plan group**

SIC Sangli: O&M cost per unit area of projects is decreased by 5.85 percent than last year. It is higher than five years' average value.

TIC Thane: O&M cost per unit area of Wandri project is 13375. It is 2974 percent higher than last year's performance. It is higher than five years' average value. O&M cost per unit area is higher side due to Rs. 47 lakh expenditure on maintenance & repairs of canal system.



| Plangroup      | Circle          | FY Avg | 2004-05  | 2005-06  | Past Max | Past Min | Avg Per | Rank |
|----------------|-----------------|--------|----------|----------|----------|----------|---------|------|
| Highly Deficit | CADA Beed       | 1643   | 828      | 973      | 12333    | 95       | 1442    | M    |
|                | CADA Solapur    | 2999   | 1981     | 1911     | 9582     | 843      |         | BA   |
|                | PIC Pune        | 3337   | 2248     | 6207     | 13955    | 443      |         | BA   |
| Deficit        | BIPC Buldhana   | 303    | 562      | No Water | 2000     | 61       | 1553    | BA   |
|                | CADA Nashik     | 1245   | 847      | 849      | 7159     | 397      |         | M    |
|                | NIC Nanded      | 1391   | 1440     | 1342     | 7804     | 104      |         | BA   |
|                | CADA Abad       | 1916   | 1411     | 1413     | 18566    | 184      |         | BA   |
|                | CADA Beed       | 1831   | 1055     | 1567     | 15143    | 351      |         | BA   |
|                | CADA Jalgaon    | 2216   | 1425     | 1890     | 522667   | 22       |         | BA   |
|                | AIC Akola       | 2089   | 43825    | 2556     | 43825    | 375      |         | BA   |
| Normal         | CADA Abad       | 1017   | No Water | No Water | 384      | 236      | 1305    | ---  |
|                | YIC Yavatmal    | 1455   | No Water | 714      | 3983     | 675      |         | ---  |
|                | CADA Beed       | 1080   | 1023     | 721      | 1023     | 629      |         | F    |
|                | CADA Jalgaon    | 1543   | 1302     | 1008     | 16276    | 15       |         | M    |
|                | PIC Pune        | 589    | 293      | 1082     | 8911     | 452      |         | G    |
|                | AIC Akola       | 1150   | 16319    | 1100     | 65364    | 123      |         | G    |
|                | CADA Nagpur     | 1542   | 1552     | 1403     | 3949     | 45       |         | BA   |
|                | CIPC Chandrapur | 763    | 3614     | 1597     | 5741     | 50       |         | BA   |
|                | CADA Nashik     | 1763   | 2105     | 1641     | 10571    | 240      |         | BA   |
|                | NIC Nanded      | 1649   | 5475     | 2608     | 5475     | 668      |         | BA   |
| Surplus        | CADA Nagpur     | 728    | 1015     | 945      | 49525    | 84       | 1350    | M    |
|                | CIPC Chandrapur | 1662   | 819      | 1756     | 3437     | 518      |         | BA   |
| Abundant       | CIPC Chandrapur | 897    | 715      | 1204     | 3465     | 606      | 1261    | BA   |
|                | SIC Sangli      | 1112   | 1401     | 1319     | 3074     | 195      |         | BA   |
|                | TIC Thane       | 4895   | 435      | 13375    | 13606    | 2269     |         | BA   |
|                | KIC Ratnagiri   | 11305  | 32528    | 154500   | 109071   | 2285     |         | BA   |

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 water supply (Rs./cum)**

### **Highly Deficit Plan group**

CADA Beed: In Talwar & Kada projects the O&M cost per unit water supply seems more than the norms, as there was no sufficient storage for flow irrigation & only 24 & 109 ha were irrigated through reservoir lifts in these projects respectively.

CADA Solapur: Average O&M Cost per unit Water supplied of five medium projects in this circle is 0.44. It decreased by 36.23 percent than last year's performance. It is lower than five years' average value.

PIC Pune: Average O&M Cost per unit Water supplied of three medium projects in this circle is 1.09. It increased by 159.52 percent than last year's performance.

### **Deficit Plan group**

CADA Nashik: The ratio in Nagyasakya, Kelzar & Haranbari is well within the norms. However, the higher value in Ghatshil pargaon (Rs. 1.53 per cum) has affected the overall ranking of the circle.

CADA Aurangabad: The cost per unit water supply in Lahuki project is very high (Rs. 2.51 per cum) as there was no water available for flow irrigation. Only 36 ha irrigation was possible through lift irrigation using 0.26 cum of water.

CADA Jalgaon: In Hivara & Bhokarbari projects the ratios are very high (Rs. 0.64 per cum & Rs. 1.00 per cum respectively).

AIC Akola: O&M cost per unit water supply on projects is more due to no irrigation in Mus, Puldhag & Nalganga project. Indispensable O&M expenditure in these projects taken together with other projects under the plan group might be responsible for increasing O&M cost per unit water supplied.

### **Normal Plan group**

Project under CIPC Chandrapur & CADA Nagpur has reduced O&M cost per unit water supplied during irrigation year 2005-06 as compared to last year. But it is high compared to State target.

PIC Pune: Average O&M Cost per unit Water supplied of four projects in this circle is 0.20. It is increased by 300 percent over last year.

CADA Jalgaon: In Suki, Karwand & Abhora projects the higher O&M cost during 2005-06 has caused increase in O&M cost per unit water supplied.

CADA Nashik: In Mandohol project, the O&M cost per unit water supplied is well within limit (Rs. 0.08 per cum) However, the higher values in Bhojapur (Rs. 0.38 per cum), Alandi (Rs. 0.66 per cum) & Adhala (Rs. 0.28 per cum) have affected the overall performance of circle.

### **Surplus Plan group**

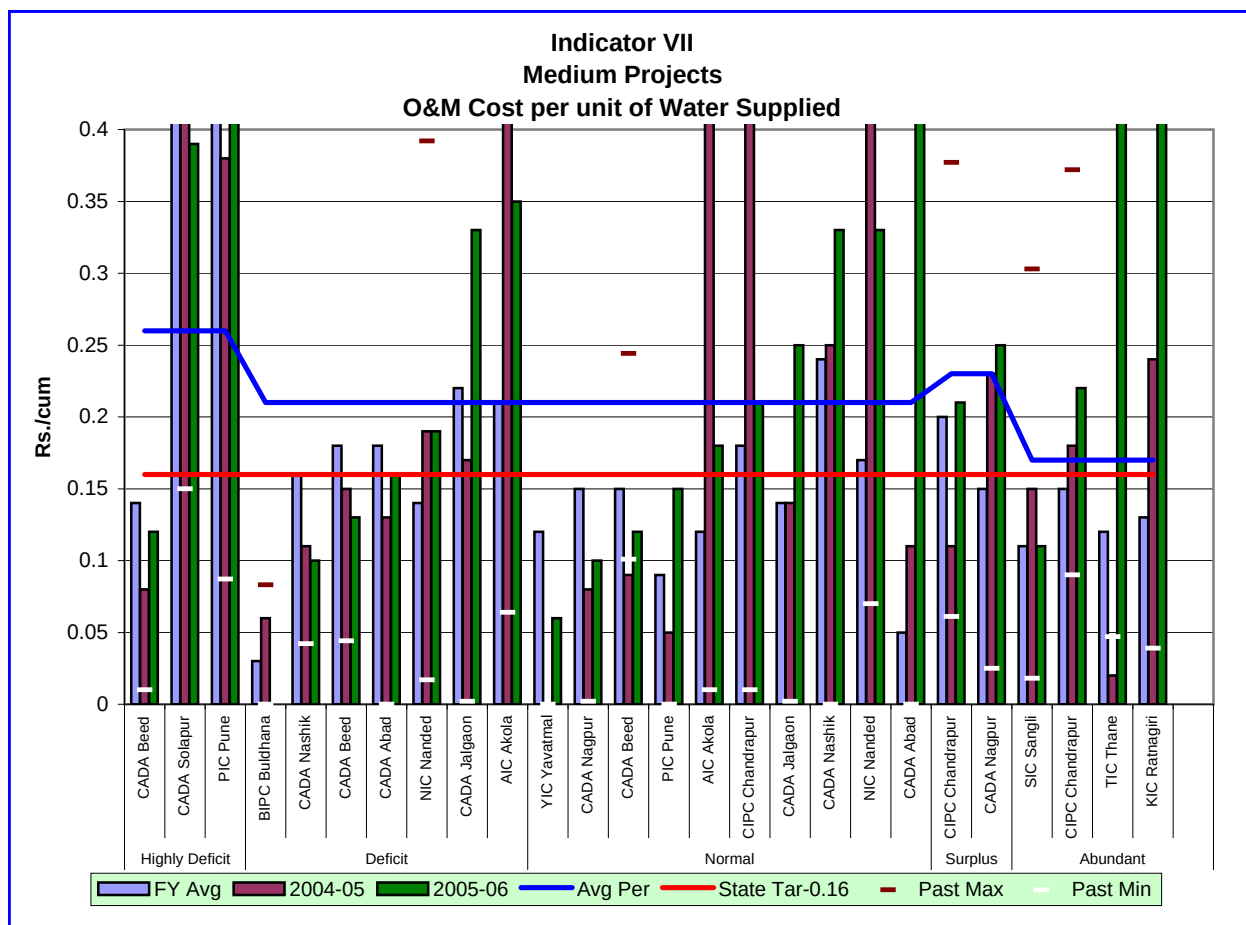
CADA Nagpur & CIPC Chandrapur: O&M cost per unit water supplied observed is high compared to State norm.

**Abundant Plan group**

SIC Sangli: Average O&M Cost per unit Water supplied of five medium projects in this circle is 0.11 It lowered by 31 percent than last year's performance.

TIC Thane: O&M Cost per unit Water supplied of Wandri project in this circle is 0.43. It is 2050 percent higher than last year's performance due to 47 Rs. lakh expenditure on canal repairs.

KIC Ratnagiri: O&M Cost per unit Water supplied of Natuwadi project in this circle is 7.21. It increased by 27 times than last year's performance. It is higher than five years' average value. This is increased due to less utilisation of water.



| Plangroup      | Circle          | FY Avg | 2004-05  | 2005-06  | Past Max | Past Min | Avg Per | Rank |
|----------------|-----------------|--------|----------|----------|----------|----------|---------|------|
| Highly Deficit | CADA Beed       | 0.14   | 0.08     | 0.12     | 3.73     | 0.01     | 0.26    | M    |
|                | CADA Solapur    | 0.47   | 0.62     | 0.39     | 60.30    | 0.15     |         | BA   |
|                | PIC Pune        | 0.57   | 0.38     | 1.07     | 1.59     | 0.09     |         | BA   |
| Deficit        | BIPC Buldhana   | 0.03   | 0.06     | No Water | 0.08     | 0.01     | 0.21    | BA   |
|                | CADA Nashik     | 0.16   | 0.11     | 0.10     | 5.15     | 0.04     |         | F    |
|                | CADA Beed       | 0.18   | 0.15     | 0.13     | 2.33     | 0.01     |         | M    |
|                | CADA Abad       | 0.18   | 0.13     | 0.16     | 4.67     | No Water |         | G    |
|                | NIC Nanded      | 0.14   | 0.19     | 0.19     | 0.39     | 0.01     |         | BA   |
|                | CADA Jalgaon    | 0.22   | 0.17     | 0.33     | 96.23    | 0.00     |         | BA   |
|                | AIC Akola       | 0.21   | 1.03     | 0.35     | 55.40    | 0.06     |         | BA   |
| Normal         | YIC Yavatmal    | 0.12   | No Water | 0.06     | 0.70     | No Water | 0.21    | ---  |
|                | CADA Nagpur     | 0.15   | 0.08     | 0.10     | 0.85     | 0.01     |         | F    |
|                | CADA Beed       | 0.15   | 0.09     | 0.12     | 0.24     | 0.10     |         | M    |
|                | PIC Pune        | 0.09   | 0.05     | 0.15     | 1.70     | No Water |         | G    |
|                | AIC Akola       | 0.12   | 0.64     | 0.18     | 0.71     | 0.01     |         | BA   |
|                | CIPC Chandrapur | 0.18   | 0.44     | 0.21     | 0.83     | 0.01     |         | BA   |
|                | CADA Jalgaon    | 0.14   | 0.14     | 0.25     | 1.83     | 0.01     |         | BA   |
|                | CADA Nashik     | 0.24   | 0.25     | 0.33     | 1.46     | No Water |         | BA   |
|                | NIC Nanded      | 0.17   | 0.92     | 0.33     | 0.92     | 0.07     |         | BA   |
|                | CADA Abad       | 0.05   | 0.11     | 1.73     | 8.74     | No Water |         | BA   |
| Surplus        | CIPC Chandrapur | 0.20   | 0.11     | 0.21     | 0.38     | 0.06     | 0.23    | BA   |
|                | CADA Nagpur     | 0.15   | 0.23     | 0.25     | 1.29     | 0.03     |         | BA   |
| Abundant       | SIC Sangli      | 0.11   | 0.15     | 0.11     | 0.30     | 0.02     | 0.17    | F    |
|                | CIPC Chandrapur | 0.15   | 0.18     | 0.22     | 0.37     | 0.09     |         | BA   |
|                | TIC Thane       | 0.12   | 0.02     | 0.43     | 0.44     | 0.05     |         | BA   |
|                | KIC Ratnagiri   | 0.13   | 0.24     | 0.80     | 0.80     | 0.04     |         | BA   |

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.

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

#### **Highly Deficit Plan group**

CADA Beed: In majority of projects, water availability in the reservoirs was very less for last 3 years successively affecting the revenue per unit water supplied.

CADA Solapur: Average Revenue per unit water supplied of five medium projects in this circle is 0.10. It is lower by 33.33 percent than last year's performance.

PIC Pune: Average Revenue per unit water supplied of three medium projects in this circle is 0.70.

#### **Deficit Plan group**

CADA Jalgaon & NIC Nanded: The main reason for lower ratio is lesser recovery of water charges. The field officers should take a note of this & improve the performance in future.

Revenue recovery per unit water supplied in projects under AIC Akola (Deficit & Normal), CIPC Chandrapur (Normal), CADA Nagpur (Surplus), CIPC Chandrapur (Surplus & Abundant) is quite low mainly due to low revenue realisation.

#### **Normal Plan group**

PIC Pune: Average Revenue per unit water supplied of four projects in this circle is 0.12. It increased by 9.09 percent than last year's performance. It is lowered than five years' average value.

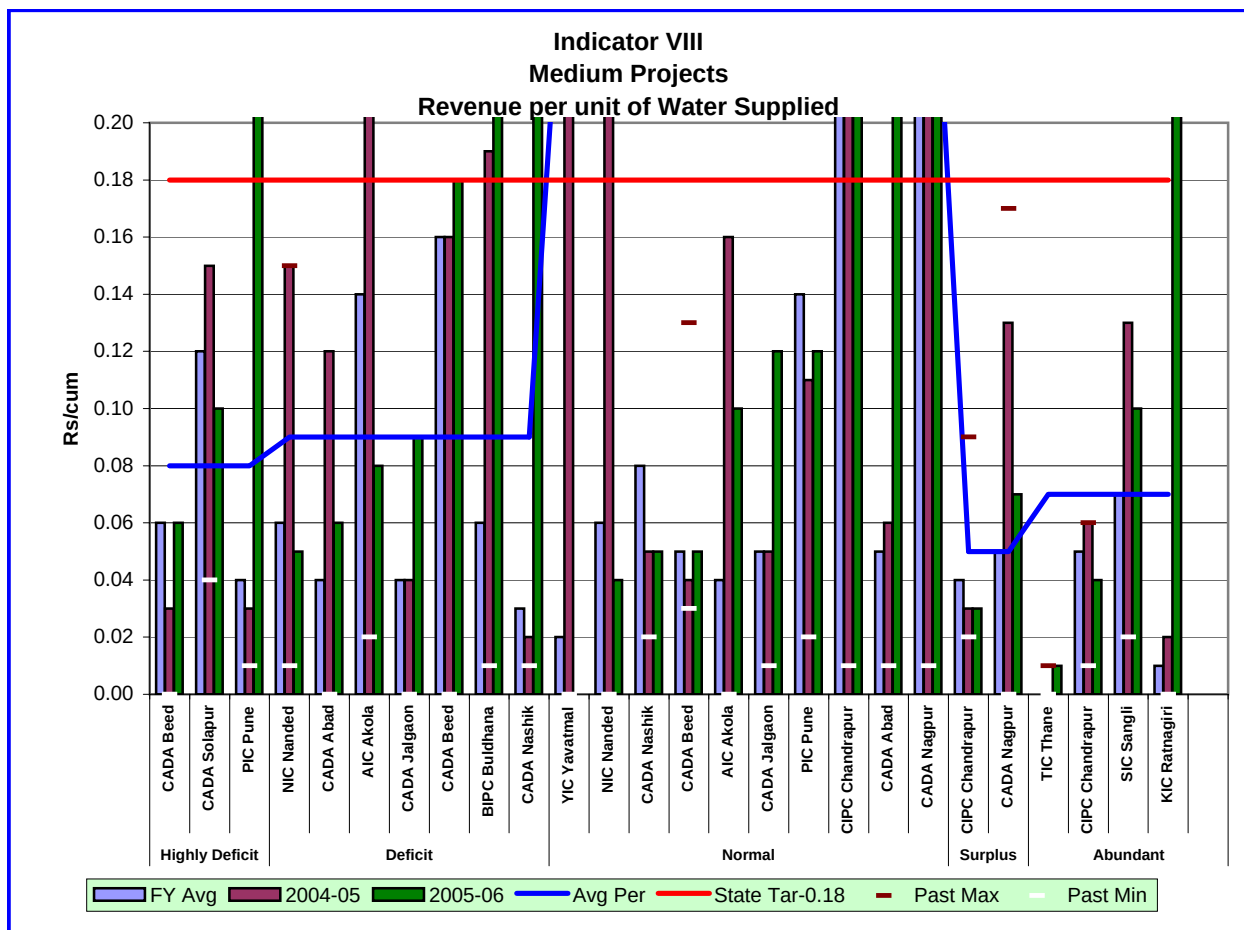
CADA Nagpur: The ratio is appreciable (1.52) on account of realisation of large amount (Rs.211 lakh) of arrears of NI recovery in Wanna project.

#### **Abundant plan group**

TIC Thane: Revenue per unit water supplied of Wandri project in this circle is 0.01.

SIC Sangli: Average Revenue per unit water supplied of five medium projects in this circle is 0.10. It is decreased by 23 percent than last year's performance.

KIC Ratnagiri: Revenue per unit water supplied of Natuwadi project in this circle is 0.46. It is increased by 22 times percent than last year's performance. This is due to less utilisation of water. Major water supplied for non irrigation.



| Plangroup      | Circle          | FY Avg   | 2004-05  | 2005-06  | Past Max | Past Min | Avg Per | Rank |
|----------------|-----------------|----------|----------|----------|----------|----------|---------|------|
| Highly Deficit | CADA Beed       | 0.06     | 0.03     | 0.06     | 0.64     | No Water | 0.08    | BA   |
|                | CADA Solapur    | 0.12     | 0.15     | 0.10     | 0.59     | 0.04     |         | F    |
|                | PIC Pune        | 0.04     | 0.03     | 0.70     | 3.27     | 0.01     |         | VG   |
| Deficit        | NIC Nanded      | 0.06     | 0.15     | 0.05     | 0.15     | 0.01     | 0.09    | BA   |
|                | CADA Abad       | 0.04     | 0.12     | 0.06     | 1.77     | No Water |         | BA   |
|                | AIC Akola       | 0.14     | 0.76     | 0.08     | 1.27     | 0.02     |         | BA   |
|                | CADA Jalgaon    | 0.04     | 0.04     | 0.09     | 0.27     | No Water |         | F    |
|                | CADA Beed       | 0.16     | 0.16     | 0.18     | 3.42     | No Water |         | G    |
|                | BIPC Buldhana   | 0.06     | 0.19     | 0.40     | 0.68     | 0.01     |         | VG   |
|                | CADA Nashik     | 0.03     | 0.02     | 0.77     | 1.46     | 0.01     |         | VG   |
|                | YIC Yavatmal    | 0.02     | 0.35     | No Water | 0.35     | No Water |         | ---  |
| Normal         | NIC Nanded      | 0.06     | 0.31     | 0.04     | 0.31     | No Water | 0.30    | BA   |
|                | CADA Nashik     | 0.08     | 0.05     | 0.05     | 0.29     | 0.02     |         | BA   |
|                | CADA Beed       | 0.05     | 0.04     | 0.05     | 0.13     | 0.03     |         | BA   |
|                | AIC Akola       | 0.04     | 0.16     | 0.10     | 0.55     | No Water |         | F    |
|                | CADA Jalgaon    | 0.05     | 0.05     | 0.12     | 0.29     | 0.01     |         | F    |
|                | PIC Pune        | 0.14     | 0.11     | 0.12     | 0.35     | 0.02     |         | F    |
|                | CIPC Chandrapur | 0.24     | 0.88     | 0.34     | 1.32     | 0.01     |         | VG   |
|                | CADA Abad       | 0.05     | 0.06     | 0.82     | 9.24     | 0.01     |         | VG   |
|                | CADA Nagpur     | 0.57     | 2.10     | 1.52     | 2.34     | 0.01     |         | VG   |
|                | CIPC Chandrapur | 0.04     | 0.03     | 0.03     | 0.09     | 0.02     | 0.05    | BA   |
| Surplus        | CADA Nagpur     | 0.05     | 0.13     | 0.07     | 0.17     | No Water |         | BA   |
| Abundant       | TIC Thane       | No Water | No Water | 0.01     | 0.01     | No Water | 0.07    | ---  |
|                | CIPC Chandrapur | 0.05     | 0.06     | 0.04     | 0.06     | 0.01     |         | BA   |
|                | SIC Sangli      | 0.07     | 0.13     | 0.10     | 0.36     | 0.02     |         | F    |
|                | KIC Ratnagiri   | 0.01     | 0.02     | 0.46     | 0.46     | No Water |         | VG   |

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.

## **Indicator IX: Mandays for O&M per unit Area**

### **Highly Deficit Plan group**

CADA Solapur: Average Mandays per unit irrigated area of five medium projects in this circle is 1.73. It is below than five years' average value.

PIC Pune: Average Mandays per unit irrigated area of three medium projects in this circle is 9.73. It is decreased by 25.15 percent than last year. It is lower than five years' average value.

### **Deficit Plan group**

AIC Akola: Mandays utilisation per unit area irrigated on projects is more than State target.

### **Normal Plan group**

Projects grouped together under AIC Akola, CIPC Chandrapur, CADA Nagpur has mandays utilisation well within the State norm.

PIC Pune: Average Mandays per unit irrigated area of four projects in this circle is 2.64.

CADA Nagpur: Mandays utilisation per unit area irrigated on projects is more than State target.

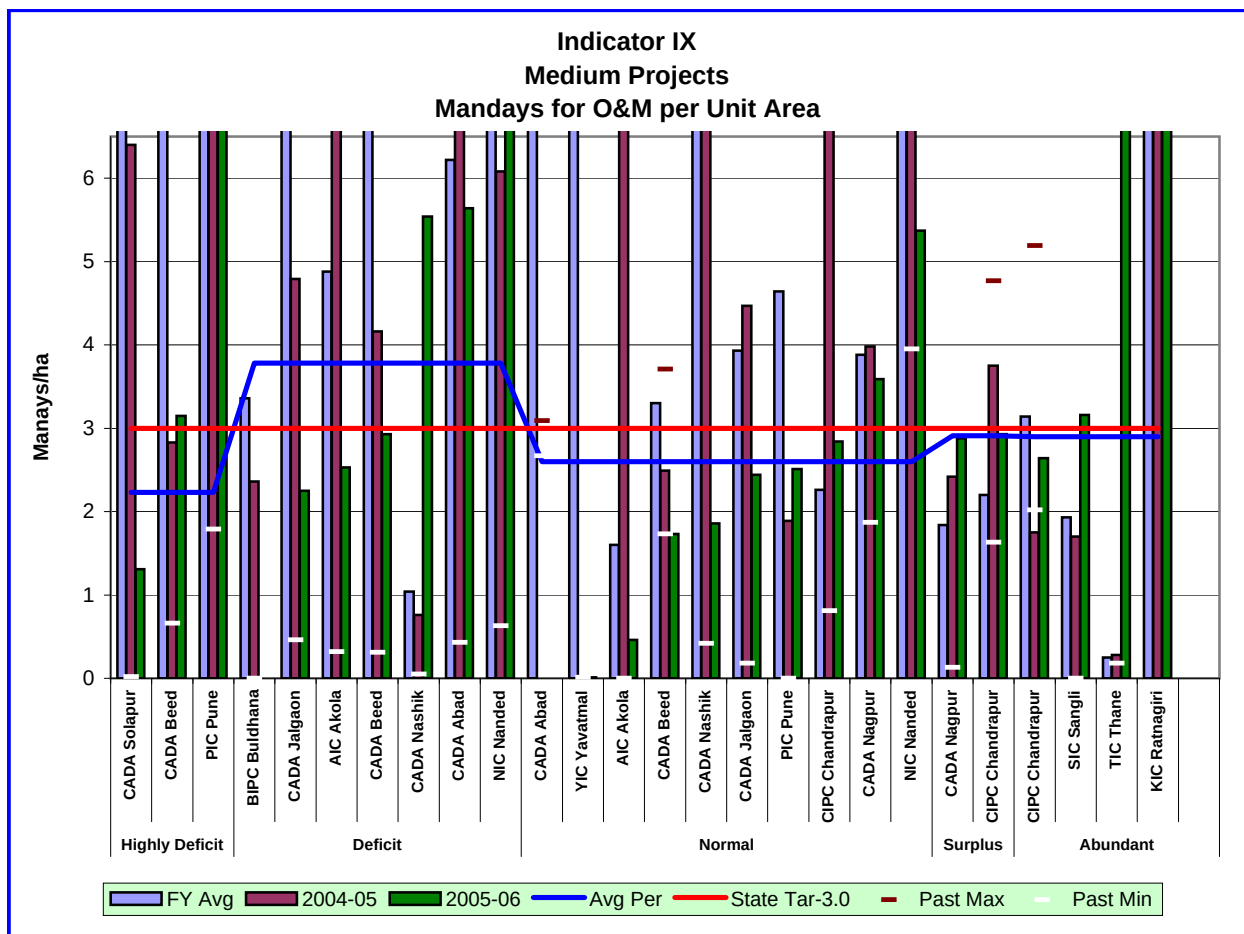
### **Surplus Plan group**

CIPC Chandrapur: Projects have mandays utilisation well within the State norm.

### **Abundant Plan group**

CIPC Chandrapur: Projects have mandays utilisation well within the State norm.

SIC Sangli: Average Mandays per unit irrigated area of five medium projects in this circle is 3.25.



| Plangroup      | Circle          | FY Avg | 2004-05 | 2005-06 | Past Max | Past Min | Avg Per | Rank |
|----------------|-----------------|--------|---------|---------|----------|----------|---------|------|
| Highly Deficit | CADA Solapur    | 12.43  | 6.40    | 1.31    | 30.41    | 0.02     | 2.23    | VG   |
|                | CADA Beed       | 8.71   | 2.83    | 3.15    | 66.67    | 0.66     |         | G    |
|                | PIC Pune        | 10.67  | 13.00   | 9.57    | 36.50    | 1.79     |         | BA   |
| Deficit        | BIPC Buldhana   | 3.36   | 2.36    | No Irr  | 24.80    | 0.00     | 3.78    | VG   |
|                | CADA Jalgaon    | 8.39   | 4.79    | 2.25    | 1825.00  | 0.46     |         | VG   |
|                | AIC Akola       | 4.88   | 53.91   | 2.53    | 82.25    | 0.32     |         | VG   |
|                | CADA Beed       | 7.94   | 4.16    | 2.93    | 57.09    | 0.31     |         | VG   |
|                | CADA Nashik     | 1.04   | 0.76    | 5.54    | 25.03    | 0.05     |         | BA   |
|                | CADA Abad       | 6.22   | 11.37   | 5.64    | 64.62    | 0.43     |         | BA   |
|                | NIC Nanded      | 10.42  | 6.08    | 6.97    | 80.69    | 0.63     |         | BA   |
| Normal         | CADA Abad       | 34.42  | No Irr  | No Irr  | 3.09     | 2.67     | 2.60    | ---  |
|                | YIC Yavatmal    | 28.96  | No Irr  | 0.01    | 79.00    | 0.01     |         | ---  |
|                | AIC Akola       | 1.60   | 31.24   | 0.46    | 31.24    | 0.00     |         | VG   |
|                | CADA Beed       | 3.30   | 2.49    | 1.73    | 3.71     | 1.73     |         | VG   |
|                | CADA Nashik     | 7.82   | 8.08    | 1.86    | 75.31    | 0.42     |         | VG   |
|                | CADA Jalgaon    | 3.93   | 4.47    | 2.44    | 16.07    | 0.18     |         | VG   |
|                | PIC Pune        | 4.64   | 1.89    | 2.51    | 17.49    | 0.00     |         | VG   |
|                | CIPC Chandrapur | 2.26   | 10.55   | 2.84    | 10.55    | 0.81     |         | VG   |
|                | CADA Nagpur     | 3.88   | 3.98    | 3.59    | 13.83    | 1.87     |         | M    |
|                | NIC Nanded      | 9.96   | 11.94   | 5.37    | 47.60    | 3.95     |         | BA   |
| Surplus        | CADA Nagpur     | 1.84   | 2.42    | 2.88    | 91.25    | 0.13     | 2.91    | VG   |
|                | CIPC Chandrapur | 2.20   | 3.75    | 2.93    | 4.77     | 1.63     |         | VG   |
| Abundant       | CIPC Chandrapur | 3.14   | 1.75    | 2.64    | 5.19     | 2.02     | 2.90    | VG   |
|                | SIC Sangli      | 1.93   | 1.70    | 3.16    | 8.52     | 0.00     |         | G    |
|                | TIC Thane       | 0.25   | 0.28    | 10.24   | 10.24    | 0.18     |         | BA   |
|                | KIC Ratnagiri   | 24.47  | 21.67   | 990.71  | 990.71   | 24.38    |         | BA   |

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

2) Figures in red & blue excluded for Avg Per. 3) "No Irr." indicates no irrigation in that year.

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

#### **Deficit Plan group**

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

#### **Normal Plan group**

CADA Nagpur (&) CIPC Chandrapur: Potential utilisation is more or less equal in all the reaches.

#### **Normal Plan Group**

AIC Akola & YIC Yeotmal: It is either more in head or head and middle reaches.

#### **Surplus Plan group**

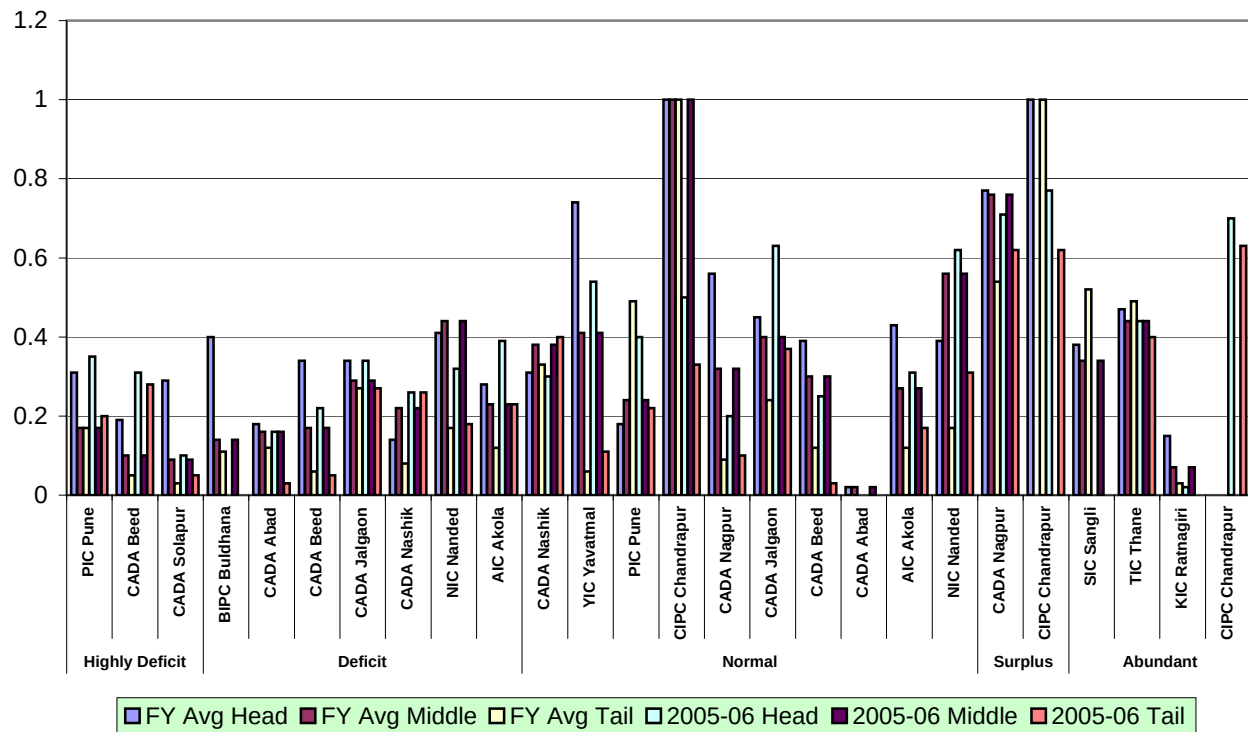
CADA Nagpur & CIPC Chandrapur: Potential utilisation is more or less equal in all the reaches in projects.

#### **Abundant Plan group**

CIPC Chandrapur: Potential utilisation is more or less equal in all the reaches in projects.



**Indicator XI  
Medium projects  
Equity Performance**



| Plangroup      | Circle          | FY Avg |        |      | 2005-06 |        |      |
|----------------|-----------------|--------|--------|------|---------|--------|------|
|                |                 | Head   | Middle | Tail | Head    | Middle | Tail |
| Highly Deficit | PIC Pune        | 0.31   | 0.17   | 0.17 | 0.35    | 0.17   | 0.20 |
|                | CADA Beed       | 0.19   | 0.10   | 0.05 | 0.31    | 0.10   | 0.28 |
|                | CADA Solapur    | 0.29   | 0.09   | 0.03 | 0.10    | 0.09   | 0.05 |
| Deficit        | BIPC Buldhana   | 0.40   | 0.14   | 0.11 | 0.00    | 0.14   | 0.00 |
|                | CADA Abad       | 0.18   | 0.16   | 0.12 | 0.16    | 0.16   | 0.03 |
|                | CADA Beed       | 0.34   | 0.17   | 0.06 | 0.22    | 0.17   | 0.05 |
|                | CADA Jalgaon    | 0.34   | 0.29   | 0.27 | 0.34    | 0.29   | 0.27 |
|                | CADA Nashik     | 0.14   | 0.22   | 0.08 | 0.26    | 0.22   | 0.26 |
|                | NIC Nanded      | 0.41   | 0.44   | 0.17 | 0.32    | 0.44   | 0.18 |
|                | AIC Akola       | 0.28   | 0.23   | 0.12 | 0.39    | 0.23   | 0.23 |
|                | CADA Nashik     | 0.31   | 0.38   | 0.33 | 0.30    | 0.38   | 0.40 |
| Normal         | YIC Yavatmal    | 0.74   | 0.41   | 0.06 | 0.54    | 0.41   | 0.11 |
|                | PIC Pune        | 0.18   | 0.24   | 0.49 | 0.40    | 0.24   | 0.22 |
|                | CIPC Chandrapur | 1.00   | 1.00   | 1.00 | 0.50    | 1.00   | 0.33 |
|                | CADA Nagpur     | 0.56   | 0.32   | 0.09 | 0.20    | 0.32   | 0.10 |
|                | CADA Jalgaon    | 0.45   | 0.40   | 0.24 | 0.63    | 0.40   | 0.37 |
|                | CADA Beed       | 0.39   | 0.30   | 0.12 | 0.25    | 0.30   | 0.03 |
|                | CADA Abad       | 0.02   | 0.02   | 0.00 | 0.00    | 0.02   | 0.00 |
|                | AIC Akola       | 0.43   | 0.27   | 0.12 | 0.31    | 0.27   | 0.17 |
|                | NIC Nanded      | 0.39   | 0.56   | 0.17 | 0.62    | 0.56   | 0.31 |
|                | CADA Nagpur     | 0.77   | 0.76   | 0.54 | 0.71    | 0.76   | 0.62 |
| Surplus        | CIPC Chandrapur | 1.00   | 0.00   | 1.00 | 0.77    | 0.00   | 0.62 |
|                | SIC Sangli      | 0.38   | 0.34   | 0.52 | 0.00    | 0.34   | 0.00 |
| Abundant       | TIC Thane       | 0.47   | 0.44   | 0.49 | 0.44    | 0.44   | 0.40 |
|                | KIC Ratnagiri   | 0.15   | 0.07   | 0.03 | 0.02    | 0.07   | 0.00 |
|                | CIPC Chandrapur | 0.00   | 0.00   | 0.00 | 0.70    | 0.00   | 0.63 |
|                |                 |        |        |      |         |        |      |

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

### **Highly Deficit Plan group**

CADA Solapur: Average ratio of five medium projects in this circle is 0.33. It is much below the State target.

CADA Beed: Only in Talwar project, 100 percent recovery was affected. The field officers are required to take efforts for recovery of other projects to fullest extent.

PIC Pune: Average ratio of three medium projects in this circle is 0.48. It is decreased by 17.24 percent over last year. It is lower than five years' average value.

### **Deficit Plan group**

NIC Nanded: In Mahalingi & Karadkhed projects, the State target was achieved. In Loni, Kundrala & Kudala efforts are required for improving the recovery.

Recovery against assessment sanctioned during the year 2005-06 in group of projects under AIC Akola (Deficit), CADA Nagpur (Surplus), CIPC Chandrapur (Abundant) is more than 40 percent where as in remaining projects under CADA Nagpur (Normal), AIC Akola (Normal), CIPC Chandrapur (Normal & Surplus) it is less than 40 percent of sanctioned assessment.

CADA Jalgaon: Manyad, Karwand, Burai, Bori, Agnawati & Bhokarbari have achieved the State target.

CADA Nashik: The performance of Nagyasakya (1.0), Kelzar (1.0) & Haranbari (0.92) is appreciable. In Ghatshil Pargaon, however, the recovery is only 20 percent of assessment, affecting the overall performance of circle.

### **Normal Plan group**

CADA Nashik: No project could achieve the State target.

PIC Pune: Average ratio of four projects in this circle is 0.58. It is increased by 107 percent over last year.

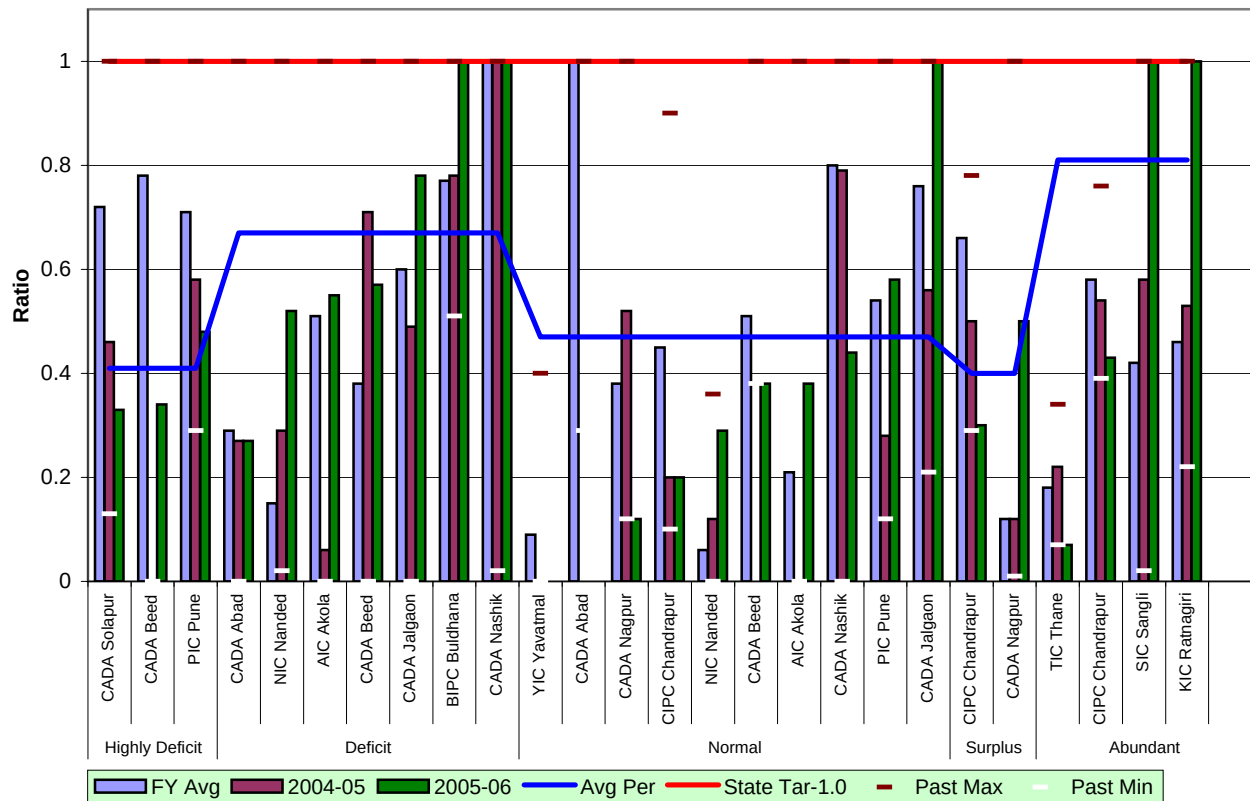
### **Abundant Plan group**

TIC Thane: ratio of Wandri project in this circle is 0.07. It is 68.18 percent lower than last year. It is below than five years' average value.

SIC Sangli: Average ratio of five medium projects in this circle is 1. It is increased by 72.41 percent than last year's performance.

KIC Ratnagiri: ratio of Natuwadi project in this circle is 1. It is improved by 88.68 percent over last year.

**Indicator XII-I  
Medium Projects  
Assessment Recovery Ratio (Irrigation)**



| Plangroup      | Circle          | FY Avg | 2004-05 | 2005-06 | Past Max | Past Min | Avg Per | Rank |
|----------------|-----------------|--------|---------|---------|----------|----------|---------|------|
| Highly Deficit | CADA Solapur    | 0.72   | 0.46    | 0.33    | 1.00     | 0.01     | 0.41    | ---  |
|                | CADA Beed       | 0.78   | No Irr  | 0.34    | 1.00     | 0.01     |         | BA   |
|                | PIC Pune        | 0.71   | 0.58    | 0.48    | 1.00     | 0.01     |         | BA   |
| Deficit        | CADA Abad       | 0.29   | 0.27    | 0.27    | 1.00     | 0.01     | 0.67    | BA   |
|                | NIC Nanded      | 0.15   | 0.29    | 0.52    | 1.00     | 0.01     |         | F    |
|                | AIC Akola       | 0.51   | 0.06    | 0.55    | 1.00     | No Irr   |         | F    |
|                | CADA Beed       | 0.38   | 0.71    | 0.57    | 1.00     | No Irr   |         | F    |
|                | CADA Jalgaon    | 0.60   | 0.49    | 0.78    | 1.00     | 0.01     |         | M    |
|                | BIPC Buldhana   | 0.77   | 0.78    | 1.00    | 1.00     | 0.01     |         | VG   |
|                | CADA Nashik     | 1.00   | 1.00    | 1.00    | 1.00     | 0.01     |         | VG   |
|                | YIC Yavatmal    | 0.09   | No Irr  | No Irr  | 0.40     | 0.01     |         | ---  |
| Normal         | CADA Abad       | 1.00   | No Irr  | No Irr  | 1.00     | 0.01     | 0.47    | ---  |
|                | CADA Nagpur     | 0.38   | 0.52    | 0.12    | 1.00     | 0.01     |         | ---  |
|                | CIPC Chandrapur | 0.45   | 0.20    | 0.20    | 0.90     | 0.01     |         | BA   |
|                | NIC Nanded      | 0.06   | 0.12    | 0.29    | 0.36     | 0.01     |         | BA   |
|                | CADA Beed       | 0.51   | No Irr  | 0.38    | 1.00     | 0.01     |         | BA   |
|                | AIC Akola       | 0.21   | No Irr  | 0.38    | 1.00     | 0.01     |         | BA   |
|                | CADA Nashik     | 0.80   | 0.79    | 0.44    | 1.00     | 0.01     |         | BA   |
|                | PIC Pune        | 0.54   | 0.28    | 0.58    | 1.00     | 0.12     |         | F    |
|                | CADA Jalgaon    | 0.76   | 0.56    | 1.00    | 1.00     | 0.01     |         | VG   |
|                | CIPC Chandrapur | 0.66   | 0.50    | 0.30    | 0.78     | 0.01     | 0.4     | BA   |
|                | CADA Nagpur     | 0.12   | 0.12    | 0.50    | 1.00     | 0.01     |         | F    |
| Abundant       | TIC Thane       | 0.18   | 0.22    | 0.07    | 0.34     | 0.07     | 0.81    | BA   |
|                | CIPC Chandrapur | 0.58   | 0.54    | 0.43    | 0.76     | 0.39     |         | BA   |
|                | SIC Sangli      | 0.42   | 0.58    | 1.00    | 1.00     | 0.01     |         | VG   |
|                | KIC Ratnagiri   | 0.46   | 0.53    | 1.00    | 1.00     | 0.22     |         | VG   |

Note:1) 'No irr' indicates no irrigation in that year.

## **Indicator XII (B): Assessment Recovery Ratio (Non-irrigation)**

### **Highly Deficit Plan group**

CADA Solapur: Average ratio of five medium projects in this circle is 0.72. It is decreased by 28 percent over last year.

CADA Beed: In Kurnoor project State target was achieved.

PIC Pune: Average ratio of three medium projects in this circle is 1.

### **Deficit Plan group**

CADA Beed: No project could achieve the State target.

Revenue recovery percentage on account of non irrigation of water supply to the assessment on project under AIC Akola (Normal) (3 percent), YIC Yeotmal (29 percent), CADA Nagpur (50 percent) is low compared to State norm. It is 100 percent on group of projects under CIPC Chandrapur (Abundant), CADA Nagpur (Normal), BIPC Buldhana (Deficit) and AIC Akola (Deficit).

CADA Nashik: Except Nagyasakya all the three projects have achieved the State target of one.

### **Normal Plan group**

CADA Nashik: The recovery for water charges for NI use was effected fully only in Adhala project.

CADA Jalgaon: In Suki & Karwand projects, full recovery for NI use was effected.

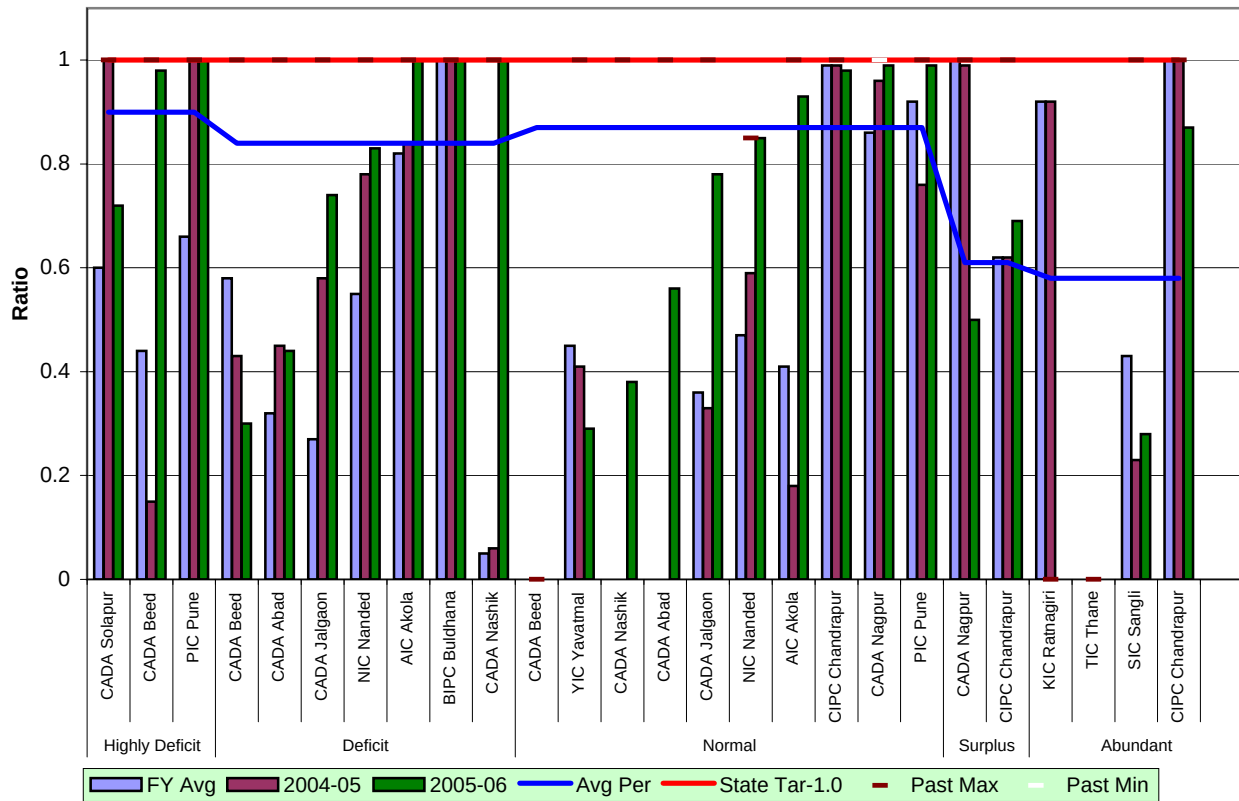
NIC Nanded: In Nagzari project the performance is improved over past.

PIC Pune: Average ratio of four projects in this circle is 0.99. It is improved by 30.26 percent over last year.

### **Abundant Plan group**

SIC Sangli: Average ratio of five medium projects in this circle is 0.28. It is lower than five years' average value.

**Indicator XII-NI  
Medium Projects  
Assessment Recovery Ratio (Non -Irrigation)**



| Plangroup      | Circle          | FY Avg | 2004-05 | 2005-06 | Past Max | Past Min | Avg Per | Rank |
|----------------|-----------------|--------|---------|---------|----------|----------|---------|------|
| Highly Deficit | CADA Solapur    | 0.60   | 1.00    | 0.72    | 1.00     | 0.01     | 0.90    | M    |
|                | CADA Beed       | 0.44   | 0.15    | 0.98    | 1.00     | 0.01     |         | G    |
|                | PIC Pune        | 0.66   | 1.00    | 1.00    | 1.00     | 0.01     |         | VG   |
| Deficit        | CADA Beed       | 0.58   | 0.43    | 0.30    | 1.00     | 0.01     | 0.84    | BA   |
|                | CADA Abad       | 0.32   | 0.45    | 0.44    | 1.00     | 0.01     |         | BA   |
|                | CADA Jalgaon    | 0.27   | 0.58    | 0.74    | 1.00     | 0.00     |         | M    |
|                | NIC Nanded      | 0.55   | 0.78    | 0.83    | 1.00     | 0.01     |         | M    |
|                | AIC Akola       | 0.82   | 0.84    | 1.00    | 1.00     | 0.01     |         | VG   |
|                | BIPC Buldhana   | 1.00   | 1.00    | 1.00    | 1.00     | 0.01     |         | VG   |
|                | CADA Nashik     | 0.05   | 0.06    | 1.00    | 1.00     | 0.01     |         | VG   |
|                | CADA Beed       | No Irr | No Irr  | No Irr  | 0.01     | 0.01     |         | ---  |
| Normal         | YIC Yavatmal    | 0.45   | 0.41    | 0.29    | 1.00     | 0.01     | 0.87    | ---  |
|                | CADA Nashik     | No Irr | No Irr  | 0.38    | 1.00     | 0.01     |         | ---  |
|                | CADA Abad       | No Irr | No Irr  | 0.56    | 0.01     | 0.01     |         | F    |
|                | CADA Jalgaon    | 0.36   | 0.33    | 0.78    | 1.00     | 0.01     |         | M    |
|                | NIC Nanded      | 0.47   | 0.59    | 0.85    | 0.85     | 0.01     |         | G    |
|                | AIC Akola       | 0.41   | 0.18    | 0.93    | 1.00     | 0.01     |         | G    |
|                | CIPC Chandrapur | 0.99   | 0.99    | 0.98    | 1.00     | 0.01     |         | G    |
|                | CADA Nagpur     | 0.86   | 0.96    | 0.99    | 1.00     | 1.00     |         | G    |
|                | PIC Pune        | 0.92   | 0.76    | 0.99    | 1.00     | 0.01     |         | G    |
|                | CADA Nagpur     | 1.00   | 0.99    | 0.50    | 1.00     | 0.01     | 0.61    | F    |
|                | CIPC Chandrapur | 0.62   | 0.62    | 0.69    | 1.00     | 0.01     |         | F    |
| Abundant       | KIC Ratnagiri   | 0.92   | 0.92    | No Irr  | No Irr   | 0.01     | 0.58    | ---  |
|                | TIC Thane       | No Irr | No Irr  | No Irr  | 0.01     | 0.01     |         | BA   |
|                | SIC Sangli      | 0.43   | 0.23    | 0.28    | 1.00     | 0.01     |         | G    |
|                | CIPC Chandrapur | 1.00   | 1.00    | 0.87    | 1.00     | 0.01     |         | G    |

Note: 1) Figures in blue excluded for Avg Per 2) 'No irr' indicates no irrigation in that year.

## **Minor Projects**

### **Indicator I: Annual Irrigation Water Supply per unit Irrigated Area (cum/ha)**

#### **Highly Deficit Plan group**

CADA Solapur: Average Annual Water Supplied for irrigation in two projects is 6684 cum/ha, which is nearly equal to State target.

CADA Beed: There are four minor projects, viz. Bagalwadi, Tintraj, Kini and Incharna. More water use per hectare in Tintraj (10635 cum/ha) and Incharna (8103 cum/ha) has affected the performance of the circle as a whole.

#### **Deficit Plan group**

AIC Akola & BIPC Buldhana: Annual irrigation water use in all projects is less than State norm due to low water intensive crops grown in the command.

CADA Beed: Increase in availability of water in all the three projects has improved the water use.

CADA Jalgaon: There is improvement in the performance in spite of no availability in three and lesser availability in one out of eight projects.

NIC Nanded: Water use per unit area is very high (more than 1.5 times the State norms) in four out of six projects.

#### **Normal Plan group**

CADA Nagpur: Annual irrigation water use is less than State norm due to low water intensive crops grown in the command.

YIC Yeotmal: Rate of water use per unit area irrigated on Majra project is 14713 cum. Reasons for more water use are required to be explored at field level.

CADA Pune: Annual water supplied for irrigation in Thoseghar project is 3125 cum/ha, which is lowered by 83.71 percent from last year. It is lower than five years average value and much below the State target.

NIC Nanded: There is improvement in performance over 2004-05. Though the water use seems to be less than the State norms, it is justified as most of the water use is by reservoir lifts.

PIC Pune: Average annual water supplied for irrigation is 6059 cum/ha which is slightly lowered by 3.57 percent from last year. It is nearer to State target value.

#### **Surplus Plan group**

CADA Nagpur: Annual irrigation water use is less than State norm due to low water intensive crops grown in the command.

#### **Abundant Plan group**

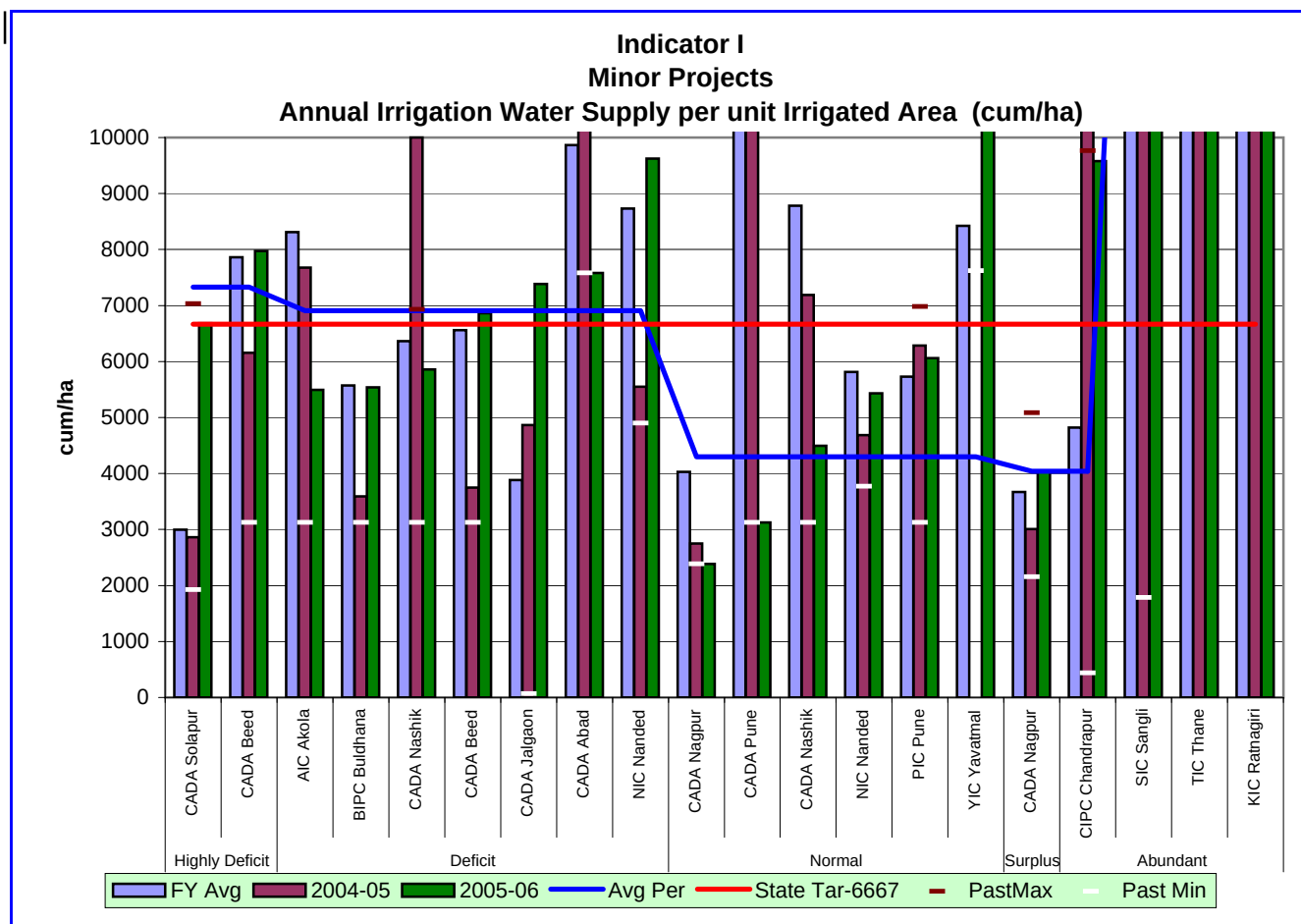
CIPC Chandrapur: Annual irrigation water use in Lagan project 9581 cum. Reasons for more water use are required to be explored at field level.

SIC Sangli: Annual water supplied for irrigation is 17778 cum/ha which is lowered by 7.18 percent from last year. It is higher than five years average and State target also.

TIC Thane: Average annual water supplied for irrigation for six projects is 19276 cum/ha which is lowered by 18.65 percent than last years value. It is lower than five years average but much higher than the State target due to paddy crop and hilly command area.

KIC Ratnagiri: Annual water supplied for Shirwal project is 24844 cum/ha which increased by 3.61 percent from last year. It is more than five years average value and also State target.

NKIPC Thane: Average water use for two projects is 32807 cum/ha which is lower by 13.20 percent over last year. It is at very higher side than five years average value and State target because of paddy crop and hilly terrains.



| Plangroup      | Circle          | FY Avg | 2004-05  | 2005-06 | PastMax | Past Min | Avg Per | Rank |
|----------------|-----------------|--------|----------|---------|---------|----------|---------|------|
| Highly Deficit | CADA Solapur    | 2999   | 2864     | 6684    | 7030    | 1922     | 7330    | VG   |
|                | CADA Beed       | 7863   | 6157     | 7975    | 14210   | 3125     |         | M    |
| Deficit        | AIC Akola       | 8313   | 7676     | 5496    | 14521   | 3125     | 6907    | M    |
|                | BIPC Buldhana   | 5574   | 3589     | 5540    | 640000  | 3125     |         | M    |
|                | CADA Nashik     | 6362   | 10000    | 5859    | 6932    | 3125     |         | G    |
|                | CADA Beed       | 6561   | 3751     | 6861    | 10274   | 3125     |         | G    |
|                | CADA Jalgaon    | 3884   | 4866     | 7387    | 18718   | 65       |         | G    |
|                | CADA Abad       | 9867   | 10130    | 7582    | 13885   | 7582     |         | G    |
|                | NIC Nanded      | 8733   | 5549     | 9623    | 26194   | 4898     |         | F    |
| Normal         | CADA Nagpur     | 4029   | 2749     | 2385    | 27368   | 2385     | 4300    | BA   |
|                | CADA Pune       | 13636  | 19180    | 3125    | 16897   | 3125     |         | BA   |
|                | CADA Nashik     | 8784   | 7190     | 4497    | 12308   | 3125     |         | F    |
|                | NIC Nanded      | 5814   | 4686     | 5434    | 10827   | 3769     |         | M    |
|                | PIC Pune        | 5730   | 6283     | 6059    | 6982    | 3125     |         | G    |
|                | YIC Yavatmal    | 8424   | No Water | 14713   | 22000   | 7618     |         | BA   |
| Surplus        | CADA Nagpur     | 3669   | 3006     | 4040    | 5085    | 2156     | 4040    | F    |
| Abundant       | CIPC Chandrapur | 4818   | 10335    | 9581    | 9766    | 440      | 23676   | F    |
|                | SIC Sangli      | 15607  | 19153    | 17778   | 19476   | 1786     |         | BA   |
|                | TIC Thane       | 24590  | 23696    | 19276   | 61900   | 13226    |         | BA   |
|                | KIC Ratnagiri   | 18544  | 23978    | 24844   | 24844   | 15111    |         | BA   |
|                | NKIPC Thane     | 28557  | 37798    | 32807   | 58750   | 22702    |         | BA   |

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



## **Indicator II: Potential Created and Utilised**

### **Highly Deficit Plan group**

CADA Beed: There is improvement in performance over the past year.

CADA Solapur: Created and utilised irrigation potential ratio is one, which is upto State target.

### **Deficit Plan group**

NIC Nanded: The performance in five out of six projects is below 35 percent, whereas in the remaining project, it is 93 percent.

Actual potential utilisation compared to created is between 60 to 100 percent in projects under AIC Akola (Deficit), CADA Nagpur (Normal, Surplus) and CIPC Chandrapur (Abundant). Potential utilisation is too low (below 30 percent) on Bhramanwada and Mohigavan projects (BIPC Buldhana-Deficit), Mozari (AIC Akola-Deficit) and Singdoh project (AIC Akola-Normal).

CADA Aurangabad & CADA Beed: There is improvement in performance over past. However, there is still scope for achieving the State target.

### **Normal Plan group**

CADA Pune: Utilised potential ratio is 0.24, which is for below State target.

NIC Nanded: The performance is improved over past due to availability of water in all the six projects in 2005-06. There was no water available in three projects during 2004-05.

PIC Pune: Utilised potential ratio is one, which is upto State target in all the three projects.

### **Abundant Plan group**

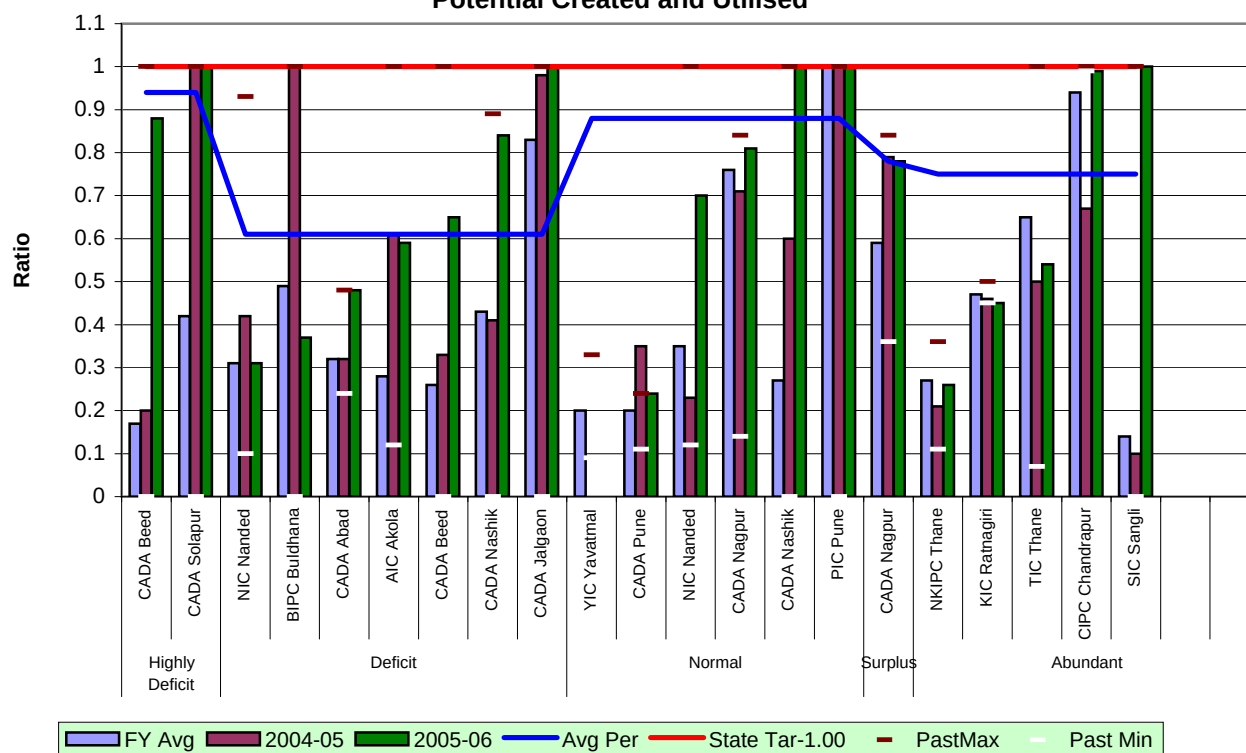
NKIPC Thane: Average utilised potential ratio is 0.26, which is much below the State norms.

KIC Ratnagiri: Utilised potential ratio of Shirwal project is 0.45 which is below State norms.

TIC Thane: Average utilised potential ratio is 0.54 which is below the State norms in six projects of this circle.

SIC Sangli: Utilised potential ratio is one, indicating area being irrigated to the fullest possible extent.

**Indicator II  
Minor Projects  
Potential Created and Utilised**



| Plangroup      | Circle          | FY Avg | 2004-05 | 2005-06 | PastMax | Past Min | Avg Per | Rank |
|----------------|-----------------|--------|---------|---------|---------|----------|---------|------|
| Highly Deficit | CADA Beed       | 0.17   | 0.20    | 0.88    | 1.00    | 0.01     | 0.94    | VG   |
|                | CADA Solapur    | 0.42   | 1.00    | 1.00    | 1.00    | 0.03     |         | VG   |
| Deficit        | NIC Nanded      | 0.31   | 0.42    | 0.31    | 0.93    | 0.10     | 0.61    | BA   |
|                | BIPC Buldhana   | 0.49   | 1.00    | 0.37    | 1.00    | 0.04     |         | BA   |
|                | CADA Abad       | 0.32   | 0.32    | 0.48    | 0.48    | 0.02     |         | BA   |
|                | AIC Akola       | 0.28   | 0.61    | 0.59    | 1.00    | 0.12     |         | F    |
|                | CADA Beed       | 0.26   | 0.33    | 0.65    | 1.00    | No Irr   |         | F    |
|                | CADA Nashik     | 0.43   | 0.41    | 0.84    | 0.89    | 0.03     |         | M    |
|                | CADA Jalgaon    | 0.83   | 0.98    | 1.00    | 1.00    | 0.04     |         | VG   |
|                |                 |        |         |         |         |          |         |      |
| Normal         | YIC Yavatmal    | 0.20   | No Irr  | No Irr  | 0.33    | 0.09     | 0.88    | ---  |
|                | CADA Pune       | 0.20   | 0.35    | 0.24    | 0.24    | 0.05     |         | ---  |
|                | NIC Nanded      | 0.35   | 0.23    | 0.70    | 1.00    | 0.12     |         | M    |
|                | CADA Nagpur     | 0.76   | 0.71    | 0.81    | 0.84    | 0.14     |         | M    |
|                | CADA Nashik     | 0.27   | 0.60    | 1.00    | 1.00    | No Irr   |         | VG   |
|                | PIC Pune        | 1.00   | 1.00    | 1.00    | 1.00    | 0.02     |         | VG   |
| Surplus        | CADA Nagpur     | 0.59   | 0.79    | 0.78    | 0.84    | 0.36     | 0.78    | M    |
| Abundant       | NKIPC Thane     | 0.27   | 0.21    | 0.26    | 0.36    | 0.06     | 0.75    | BA   |
|                | KIC Ratnagiri   | 0.47   | 0.46    | 0.45    | 0.50    | 0.45     |         | BA   |
|                | TIC Thane       | 0.65   | 0.50    | 0.54    | 1.00    | 0.05     |         | F    |
|                | CIPC Chandrapur | 0.94   | 0.67    | 0.99    | 1.00    | 0.99     |         | G    |
|                | SIC Sangli      | 0.14   | 0.10    | 1.00    | 1.00    | No Irr   |         | VG   |

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

2) Figures in red & blue excluded for Avg Per

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

#### **Highly Deficit Plan group**

CADA Beed: The output per unit area is nearly doubled over last year due to increase in output in two out of four projects.

CADA Solapur: Average agricultural output per unit area is Rs. 16380/ha which is lowered by 29.30 percent from last year. It is lower than five years overage value and slightly above the State norms.

#### **Deficit Plan group**

Output per unit irrigated area in all projects considered together under BIPC Buldhana (Except Bhramanwada & Vidrupa) is excellent (Rs.26810) compared to State target due to cash crops grown in the command. But the rate of output in group of projects under AIC Akola (Deficit), CADA Nagpur (Surplus) is low. Output observed in Shekdari project under AIC Akola (Normal), where Orange is the principle crop, is outstanding i.e.Rs.2.89 lakh/ha irrigated area.

CADA Jalgaon: Due to non availability of water in three out of eight projects, the output has decreased over last year's values.

CADA Beed: The output is doubled over last year in three out of four projects.

NIC Nanded: Out of six, increase in output was observed on four projects, resulting in to overall improvement in performance.

#### **Normal Plan group**

CADA Nashik: The output is decreased to less than half over last year due to crops like Paddy, Wheat and fodder grown in the command area during the year 2005-06.

CADA Pune: Agricultural output of Thoseghar project is Rs. 16875/ha. There is increase by 7.22 percent over last year.

PIC Pune: Average agricultural output of three projects in this circle is Rs. 49468/ha which is 2.76 times higher than the last year.

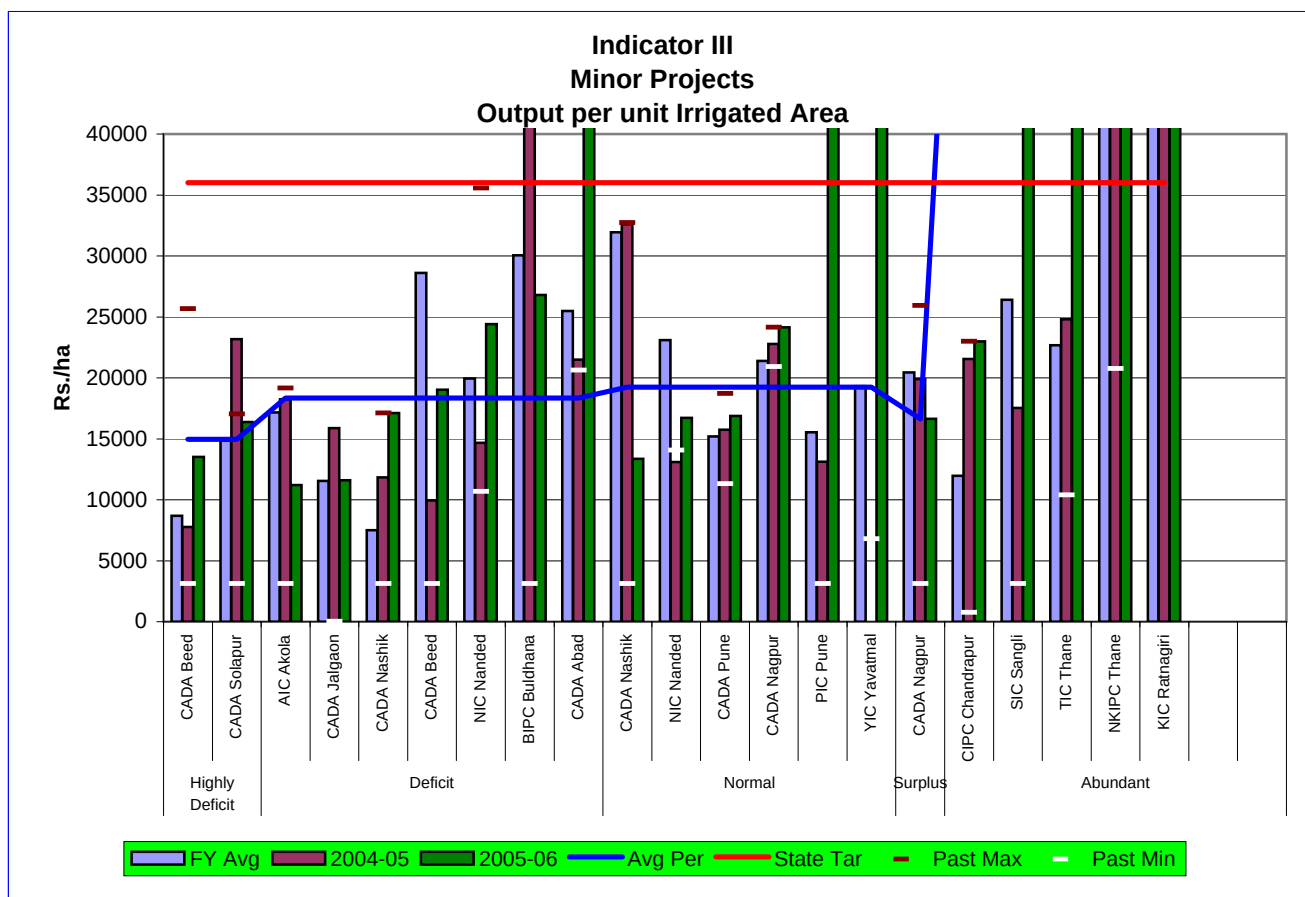
#### **Abundant Plan group**

SIC Sangli: Agricultural output is Rs.50130/ha in Benikre project, which is 1.86 times that of last year. It is more than five years average value and State norms.

TIC Thane: Average agricultural output of six minor projects under the circle is Rs. 59317/ha, which increased by 1.39 percent from last year.

NKIPC Thane: Average agricultural output is Rs. 96649/ha of two minor projects which is more by 28.96 percent from last year.

KIC Ratnagiri: Average agricultural output is Rs.137789/ha. It has increased by 2.28 percent from last year.



| Plangroup      | Circle          | FY Avg | 2004-05 | 2005-06 | Past Max | Past Min | Avg Per | Rank |
|----------------|-----------------|--------|---------|---------|----------|----------|---------|------|
| Highly Deficit | CADA Beed       | 8689   | 7763    | 13518   | 25667    | ---      | 14949   | M    |
|                | CADA Solapur    | 14848  | 23168   | 16380   | 17042    | ---      |         | VG   |
| Deficit        | AIC Akola       | 17176  | 18249   | 11219   | 19171    | ---      | 18336   | F    |
|                | CADA Jalgaon    | 11560  | 15884   | 11598   | 102059   | ---      |         | F    |
|                | CADA Nashik     | 7503   | 11836   | 17111   | 17111    | 3125     |         | M    |
|                | CADA Beed       | 28622  | 9946    | 19038   | 76912    | 3125     |         | G    |
|                | NIC Nanded      | 19941  | 14684   | 24421   | 35572    | 10672    |         | VG   |
|                | BIPC Buldhana   | 30043  | 48695   | 26810   | 2753600  | 3125     |         | VG   |
|                | CADA Abad       | 25488  | 21494   | 55310   | 55310    | ---      |         | VG   |
| Normal         | CADA Nashik     | 31952  | 32586   | 13358   | 32724    | 3125     | 19248   | F    |
|                | NIC Nanded      | 23087  | 13099   | 16721   | 46660    | ---      |         | M    |
|                | CADA Pune       | 15198  | 15738   | 16875   | 18724    | 11312    |         | M    |
|                | CADA Nagpur     | 21381  | 22770   | 24150   | 24150    | ---      |         | VG   |
|                | PIC Pune        | 15525  | 13135   | 49468   | 56810    | 3125     |         | VG   |
|                | YIC Yavatmal    | 19327  | No Irri | 100000  | 100000   | 6792     |         | VG   |
| Surplus        | CADA Nagpur     | 20440  | 19894   | 16639   | 25928    | 3125     | 16639   | F    |
| Abundant       | CIPC Chandrapur | 11960  | 21553   | 23000   | 23000    | ---      | 85395   | F    |
|                | SIC Sangli      | 26414  | 17525   | 50130   | 50130    | ---      |         | VG   |
|                | TIC Thane       | 22677  | 24803   | 59317   | 132711   | ---      |         | VG   |
|                | NKIPC Thane     | 61263  | 74944   | 96649   | 117191   | 20750    |         | VG   |
|                | KIC Ratnagiri   | 103887 | 134720  | 137789  | 137789   | 90200    |         | VG   |

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: There is slight improvement in the performance over last year's value, as there is increase in output on three out of four projects.

CADA Solapur: Average output per unit water of two minor projects is Rs. 4.04/cum which lowered by 29.30 percent from last year. It is lower than five years average performance and higher than State norm.

##### **Deficit Plan group**

AIC Akola & BIPC Buldhana: Output per unit water supply observed in projects is low due to seasonal crops grown in the command.

##### **Normal Plan group**

NIC Nanded: The output per unit irrigation water supply is increased over last year due to increase in output in all the six projects.

CADA Pune: Output per unit water of Thoseghar project is Rs.5.40/cum which increased by 5.58 times from last year. It is above the five years average and State norms.

PIC Pune: Output per unit water of three projects is Rs. 8.51/cum, which increased by 3 times from last year. It is above the five years performance and State norms.

AIC Akola & BIPC Buldhana: Output is better due to low water use per unit irrigated area.

##### **Abundant Plan group**

CIPC Chandrapur: Output per unit water supply observed is low due to seasonal crops grown in the command.

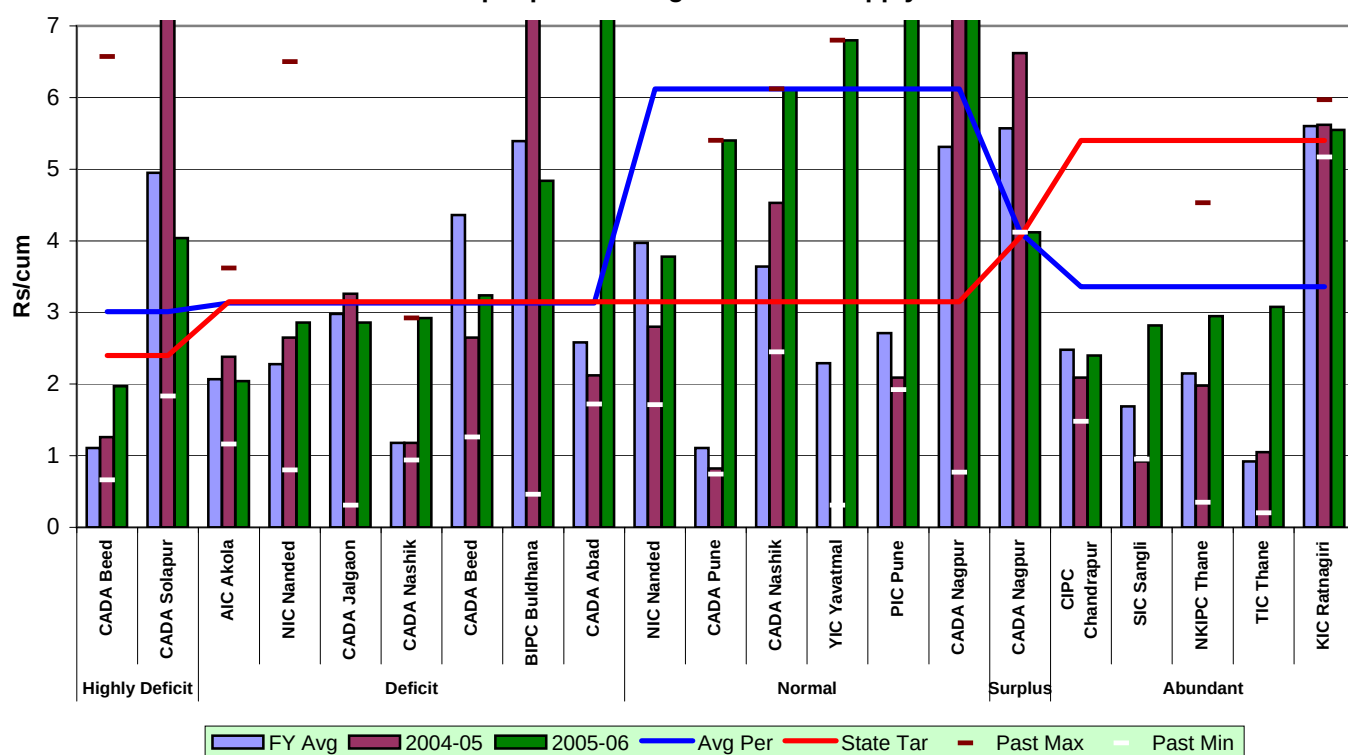
SIC Sangli: Output per unit water of Benikre project is Rs. 2.82/cum. It is increased by 2.06 times from last year. It is above the five years performance and below State norms.

NKIPC Thane: Average output per unit water is Rs. 2.95/cum which increased by 48.99 percent from last year. It is more than five years average performance but lower than State norms.

TIC Thane: Average output of six minor projects is Rs 3.08/cum. There is increase by 1.93 times from last year. It is above the five years performance but below State norms.

KIC Ratnagiri: Output in Shirwal project is Rs. 5.55/cum which is lowered by 1.25 percent from last year. It is slightly below five years performance and above State norms.

**Indicator IV  
Minor Projects  
Output per unit Irrigation Water supply**



| Plangroup      | Circle          | FY Avg | 2004-05 | 2005-06 | Past Max | Past Min | Avg Per | State Tar | Rank |
|----------------|-----------------|--------|---------|---------|----------|----------|---------|-----------|------|
| Highly Deficit | CADA Beed       | 1.11   | 1.26    | 1.97    | 6.57     | 0.66     | 3.01    | 2.40      | M    |
|                | CADA Solapur    | 4.95   | 8.09    | 4.04    | 7.06     | 1.83     |         |           | VG   |
| Deficit        | AIC Akola       | 2.07   | 2.38    | 2.04    | 3.62     | 1.16     | 3.13    | 3.15      | F    |
|                | NIC Nanded      | 2.28   | 2.65    | 2.86    | 6.50     | 0.80     |         |           | G    |
|                | CADA Jalgaon    | 2.98   | 3.26    | 2.86    | 51.55    | 0.31     |         |           | G    |
|                | CADA Nashik     | 1.18   | 1.18    | 2.92    | 2.92     | 0.94     |         |           | G    |
|                | CADA Beed       | 4.36   | 2.65    | 3.24    | 16.01    | 1.26     |         |           | VG   |
|                | BIPC Buldhana   | 5.39   | 13.57   | 4.84    | 8.75     | 0.46     |         |           | VG   |
|                | CADA Abad       | 2.58   | 2.12    | 9.06    | 9.06     | 1.72     |         |           | VG   |
|                | NIC Nanded      | 3.97   | 2.80    | 3.78    | 10.34    | 1.71     |         |           | VG   |
| Normal         | CADA Pune       | 1.11   | 0.82    | 5.40    | 5.40     | 0.74     | 6.12    | 3.15      | VG   |
|                | CADA Nashik     | 3.64   | 4.53    | 6.12    | 6.12     | 2.45     |         |           | VG   |
|                | YIC Yavatmal    | 2.29   | 0.00    | 6.80    | 6.80     | 0.31     |         |           | VG   |
|                | PIC Pune        | 2.71   | 2.09    | 8.51    | 9.06     | 1.92     |         |           | VG   |
|                | CADA Nagpur     | 5.31   | 8.28    | 10.12   | 10.12    | 0.77     |         |           | VG   |
|                | CADA Nagpur     | 5.57   | 6.62    | 4.12    | 12.02    | 4.12     | 4.12    | 4.05      | VG   |
| Abundant       | CIPC Chandrapur | 2.48   | 2.09    | 2.40    | 7.04     | 1.48     | 3.36    | 5.40      | BA   |
|                | SIC Sangli      | 1.69   | 0.92    | 2.82    | 19.77    | 0.95     |         |           | F    |
|                | NKIPC Thane     | 2.15   | 1.98    | 2.95    | 4.53     | 0.35     |         |           | F    |
|                | TIC Thane       | 0.92   | 1.05    | 3.08    | 8.02     | 0.20     |         |           | F    |
|                | KIC Ratnagiri   | 5.60   | 5.62    | 5.55    | 5.97     | 5.17     |         |           | VG   |
|                |                 |        |         |         |          |          |         |           |      |

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

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

### **Highly Deficit Plan group**

CADA Beed: The ratio is very low. The field officers are required to take more efforts for recovery of water charges to its full extent.

CADA Solapur: Average cost recovery ratio is 0.31 which increased by 1.81 times from last year. It is more than five years average performance and below State norms.

### **Deficit Plan group**

NIC Nanded: The performance is reduced by 33 percent over last year. The reduction in revenue by 50 percent and increase in O&M cost by one and half times that of last year have contributed to the reduction.

Ratio is some what better in projects under BIPC Buldhana (Deficit) (0.50) & CIPC Chandrapur (Abundant) (0.43) probably due to cash crops grown in command. In remaining projects, the ratio has poor value on account of increased O&M cost, seasonal crops grown in command and low realisation of revenue recovery.

CADA Aurangabad & CADA Beed: There is improvement over last year's performance. However, there is scope for improvement to achieve the State target.

### **Normal Plan group**

CADA Pune: Cost recovery ratio of Thoseghar project is 0.33 which decreased by 21.43 percent from last year. It is more than five years average and below State norms.

PIC Pune: Average ratio of three projects is 0.63, decreased by 72.49 percent from last year. It is below the five years average and State norms.

### **Abundant Plan group**

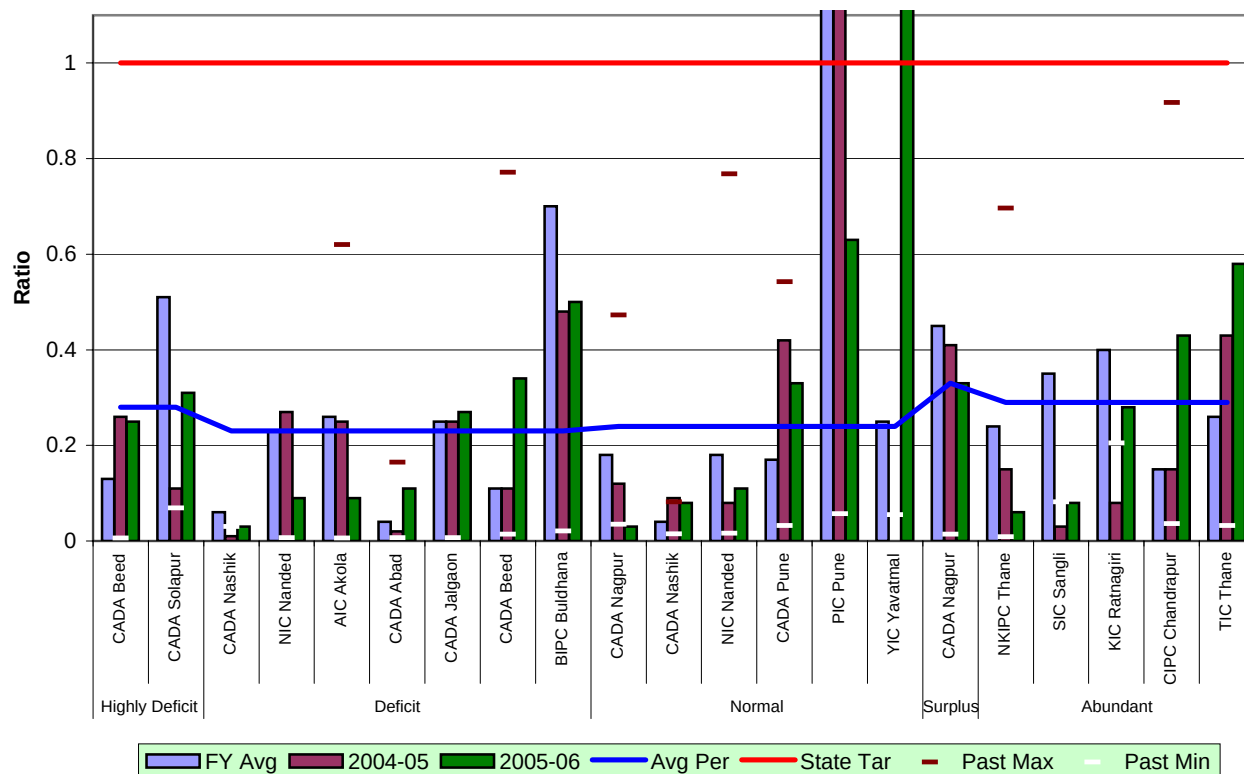
NKIPC Thane: Average cost recovery ratio of two projects is 0.06 which is far below the State norms.

SIC Sangli: Cost recovery ratio of Benikre project is very low i.e. 0.08.

KIC Ratnagiri: Cost recovery ratio of Shirwal project is only 0.28 which is below State norms. It is due to higher maintenance expenditure and less irrigated area.

TIC Thane: Average cost recovery ratio of six minor projects is 0.58, increased by 34.58 percent from last year.

**Indicator V  
Minor Projects  
Cost Recovery Ratio**



| Plangroup      | Circle          | FY Avg | 2004-05  | 2005-06 | Past Max | Past Min | Avg Per | Rank |
|----------------|-----------------|--------|----------|---------|----------|----------|---------|------|
| Highly Deficit | CADA Beed       | 0.13   | 0.26     | 0.25    | 3.00     | 0.01     | 0.28    | BA   |
|                | CADA Solapur    | 0.51   | 0.11     | 0.31    | 3.09     | 0.07     |         | BA   |
| Deficit        | CADA Nashik     | 0.06   | 0.01     | 0.03    | 1.58     | 0.03     | 0.23    | BA   |
|                | NIC Nanded      | 0.23   | 0.27     | 0.09    | 1.66     | 0.01     |         | BA   |
|                | AIC Akola       | 0.26   | 0.25     | 0.09    | 0.62     | 0.01     |         | BA   |
|                | CADA Abad       | 0.04   | 0.02     | 0.11    | 0.17     | 0.01     |         | BA   |
|                | CADA Jalgaon    | 0.25   | 0.25     | 0.27    | 2.97     | 0.01     |         | BA   |
|                | CADA Beed       | 0.11   | 0.11     | 0.34    | 0.77     | 0.01     |         | BA   |
|                | BIPC Buldhana   | 0.70   | 0.48     | 0.50    | 24.50    | 0.02     |         | F    |
| Normal         | CADA Nagpur     | 0.18   | 0.12     | 0.03    | 0.47     | 0.04     | 0.24    | BA   |
|                | CADA Nashik     | 0.04   | 0.09     | 0.08    | 0.08     | 0.02     |         | BA   |
|                | NIC Nanded      | 0.18   | 0.08     | 0.11    | 0.77     | 0.02     |         | BA   |
|                | CADA Pune       | 0.17   | 0.42     | 0.33    | 0.54     | 0.03     |         | BA   |
|                | PIC Pune        | 1.14   | 2.29     | 0.63    | 1.64     | 0.06     |         | F    |
|                | YIC Yavatmal    | 0.25   | No recov | 0.00    | ---      | 0.06     |         | BA   |
| Surplus        | CADA Nagpur     | 0.45   | 0.41     | 0.33    | 18.29    | 0.01     | 0.33    | BA   |
| Abundant       | NKIPC Thane     | 0.24   | 0.15     | 0.06    | 0.70     | 0.01     | 0.29    | BA   |
|                | SIC Sangli      | 0.35   | 0.03     | 0.08    | 1.60     | 0.08     |         | BA   |
|                | KIC Ratnagiri   | 0.40   | 0.08     | 0.28    | 6.11     | 0.21     |         | BA   |
|                | CIPC Chandrapur | 0.15   | 0.15     | 0.43    | 0.92     | 0.04     |         | BA   |
|                | TIC Thane       | 0.26   | 0.43     | 0.58    | 160.00   | 0.03     |         | F    |

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

2) Figures in blue excluded for Avg Per 3) No recov indicates no recovery in the year



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

### **Highly Deficit Plan group**

CADA Beed: There is overall reduction in O&M cost per unit area by 40 percent over last year. The reduction is mainly due to lowering the O&M cost substantially in four projects.

CADA Solapur: Average O &M cost per unit area of two minor projects is Rs.1205/ha which decreased by 32.46 percent from last year. It is above five years performance and slightly above State norms.

### **Deficit Plan group**

CADA Beed: The reduced O&M cost in two projects out of three have contributed to lowering the value to nearly 50 percent over last year.

CADA Jalgaon: The increase in O&M cost in Dudhkheda, Hatgaon-1, Kunzar-2, Waghala-1 and Wakadi have contributed to increase the overall cost by 65 percent over last year.

NIC Nanded: The increase in O&M cost of all the six projects, especially in Daryapur project (Rs. 725 per ha in 2004-05 to Rs. 10789 per ha in 2005-06) have contributed for increase in O&M cost of the circle as a whole over last year. The field officers are required to take a review of the establishment.

### **Normal Plan group**

CADA Nashik: Increase in irrigated area during 2005-06, O&M cost remaining constant for the consecutive years have an effect in lowering the value over last year.

PIC Pune: The average O&M cost per unit area of three projects is Rs. 460/ha, increased by 1.3 times from last year.

CADA Pune: O&M cost per unit area of Thoseghar project is Rs. 938/ha, which is decreased by 3 percent from last year. It is below five years average.

O&M cost per unit area irrigated on all project under all plan groups is well within State norm except on Wahi project (Rs.2012 /ha) under CADA Nagpur (Normal).

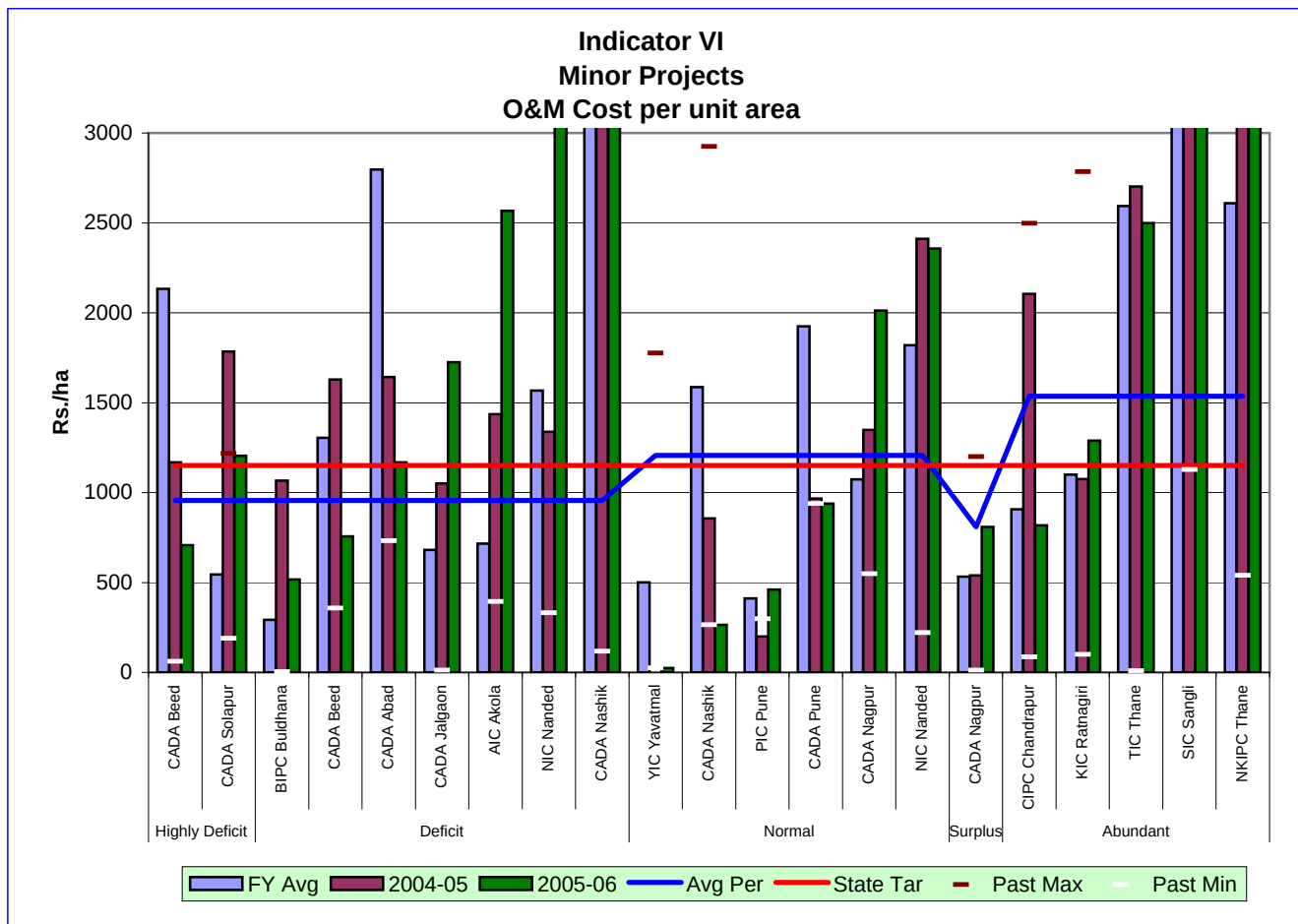
### **Abundant Plan group**

KIC Ratnagiri: O&M cost per unit area of Shirwal project is Rs. 1289/ha, which is increased by 19.91 percent over last year.

TIC Thane: Average O&M cost per unit area is Rs. 2500/ha, lowered by 7.51 percent from last year.

SIC Sangli: O&M cost per unit area of Benikre project is very high i.e. Rs.9444/ha, which is increased by 20.60 percent from last year.

NKIPC Thane: Average O&M cost per unit area is Rs. 10167/ha which is much higher than State norms. It is due to increased expenditure on maintenance.



| Plangroup      | Circle          | FY Avg | 2004-05 | 2005-06 | Past Max | Past Min | Avg Per | Rank |
|----------------|-----------------|--------|---------|---------|----------|----------|---------|------|
| Highly Deficit | CADA Beed       | 2133   | 1169    | 707     | 3558     | 62       | 956     | VG   |
|                | CADA Solapur    | 544    | 1784    | 1205    | 1217     | 190      |         | VG   |
| Deficit        | BIPC Buldhana   | 292    | 1066    | 516     | 36267    | 3        | 2362    | VG   |
|                | CADA Beed       | 1305   | 1629    | 756     | 4556     | 358      |         | VG   |
|                | CADA Abad       | 2796   | 1643    | 1168    | 7219     | 732      |         | VG   |
|                | CADA Jalgaon    | 682    | 1050    | 1725    | 15235    | 13       |         | F    |
|                | AIC Akola       | 716    | 1436    | 2568    | 5874     | 394      |         | BA   |
|                | NIC Nanded      | 1567   | 1338    | 3144    | 10789    | 331      |         | BA   |
|                | CADA Nashik     | 4102   | 4754    | 3207    | 11063    | 117      |         | BA   |
| Normal         | YIC Yavatmal    | 501    | No Irr  | 25      | 1775     | 25       | 1206    | VG   |
|                | CADA Nashik     | 1587   | 857     | 264     | 2924     | 264      |         | VG   |
|                | PIC Pune        | 411    | 200     | 460     | 5639     | 297      |         | VG   |
|                | CADA Pune       | 1925   | 967     | 938     | 4812     | 938      |         | VG   |
|                | CADA Nagpur     | 1074   | 1348    | 2012    | 5018     | 548      |         | BA   |
|                | NIC Nanded      | 1820   | 2411    | 2357    | 5800     | 220      |         | BA   |
|                | CADA Nagpur     | 532    | 540     | 809     | 1200     | 12       |         | VG   |
| Surplus        | CADA Nagpur     | 532    | 540     | 809     | 1200     | 12       | 809     | VG   |
|                | CADA Nagpur     | 532    | 540     | 809     | 1200     | 12       |         | VG   |
|                | CADA Nagpur     | 532    | 540     | 809     | 1200     | 12       |         | VG   |
|                | CADA Nagpur     | 532    | 540     | 809     | 1200     | 12       |         | VG   |
|                | CADA Nagpur     | 532    | 540     | 809     | 1200     | 12       |         | VG   |
| Abundant       | CIPC Chandrapur | 907    | 2105    | 818     | 2497     | 85       | 1536    | VG   |
|                | KIC Ratnagiri   | 1099   | 1075    | 1289    | 2785     | 100      |         | G    |
|                | TIC Thane       | 2593   | 2703    | 2500    | 16164    | 9        |         | BA   |
|                | SIC Sangli      | 6211   | 7831    | 9444    | 15571    | 1128     |         | BA   |
|                | NKIPC Thane     | 2609   | 4483    | 10167   | 38938    | 540      |         | BA   |

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

2) Figures in red & blue excluded Avg Per

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

### **Highly Deficit Plan group**

CADA Beed: There is reduction in O&M cost per unit water supply by 50 percent over last years value, due to reduction in O&M cost in two (Incharna and Tintraj) out of four projects.

CADA Solapur: Average O&M cost per unit water supplied of two minor projects is Rs. 0.30/cum, decreased by 51.61 percent from last year.

### **Deficit Plan group**

Due to moderate O&M expenditure and economic water use, the ratio has high value compared to State norm in projects under AIC Akola (Deficit), CADA Nagpur (Normal & Surplus). Reverse is the case in projects in Amrawati and Nagpur regions under other plan groups.

CADA Jalgaon: Increase in O&M cost per unit water supply in six out of eight projects, particularly in Hatgaon-1 have contributed to overall increase in the value of ratio over last year.

### **Normal Plan group**

PIC Pune: The average O&M cost per unit water supplied of three projects is Rs. 0.08 per cum, which is within State norms.

CADA Pune: O&M cost per unit area water supplied of Thoseghar project is Rs. 0.30 per cum, which is more than the State norms.

NIC Nanded: Increase in O&M cost per unit water supply in Pota and Sawana projects by nearly three times the value over 2004-05 had an effect in overall increase in 2005-06.

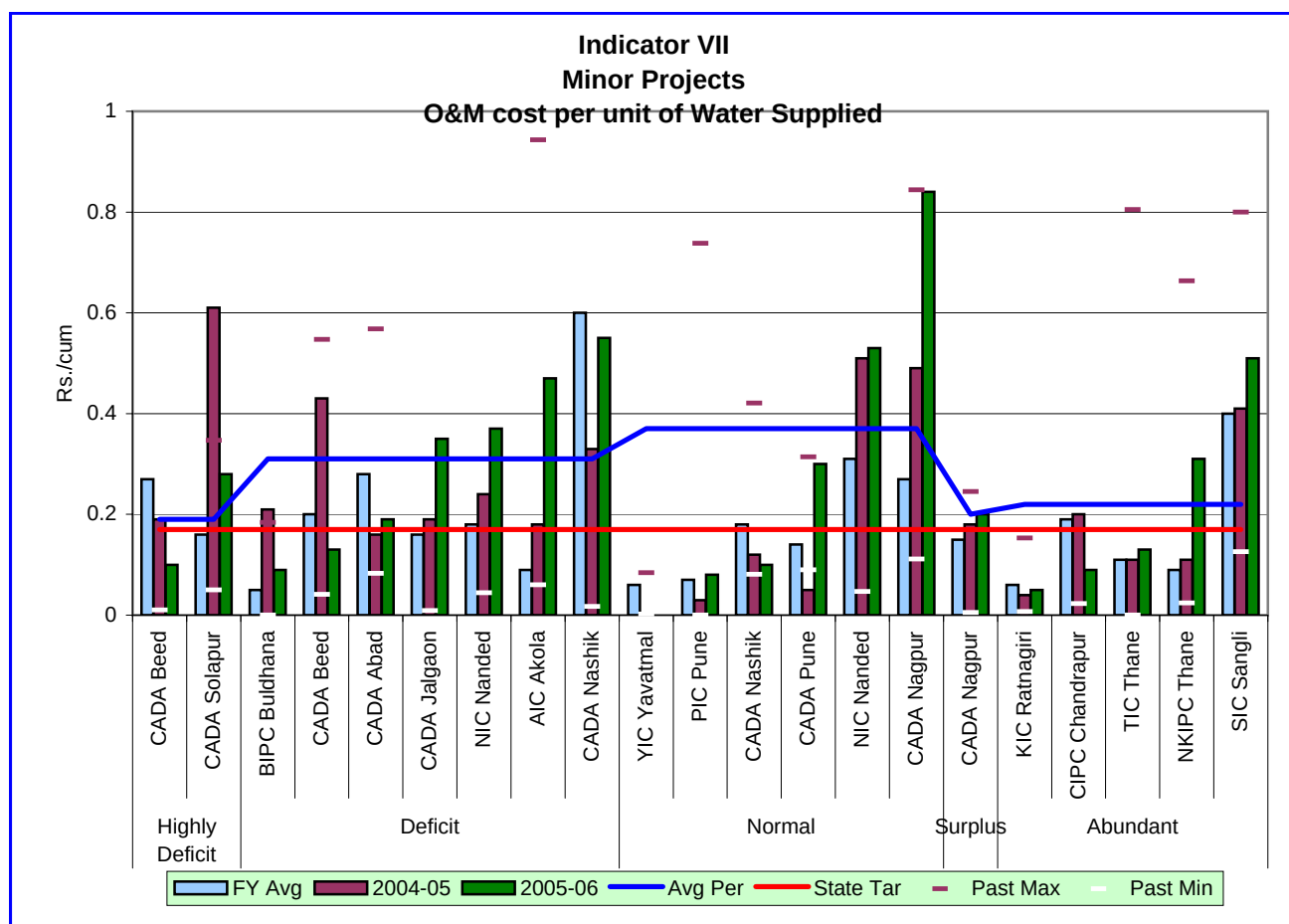
### **Abundant Plan group**

KIC Ratnagiri: O&M cost per unit water supplied in Shirwal project is Rs. 0.05/cum, which is within State norms.

TIC Thane: Average O&M cost per unit water supplied of six minor projects is Rs. 0.13 per cum, which is within State norms.

NKIPC Thane: Average O&M cost per unit water supplied for two minor projects is Rs.0.3/cum which is higher than State norms.

SIC Sangli: O&M cost per unit water supplied of Benikre project is Rs.0.53/cum which is higher than State norms.



| Plangroup      | Circle          | FY Avg | 2004-05 | 2005-06 | Past Max | Past Min | Avg Per | Rank |
|----------------|-----------------|--------|---------|---------|----------|----------|---------|------|
| Highly Deficit | CADA Beed       | 0.27   | 0.19    | 0.10    | 1.09     | 0.01     | 0.19    | VG   |
|                | CADA Solapur    | 0.16   | 0.61    | 0.28    | 0.35     | 0.05     |         | BA   |
| Deficit        | BIPC Buldhana   | 0.05   | 0.21    | 0.09    | 0.18     | 0.00     | 0.31    | VG   |
|                | CADA Beed       | 0.20   | 0.43    | 0.13    | 0.55     | 0.04     |         | VG   |
|                | CADA Abad       | 0.28   | 0.16    | 0.19    | 0.57     | 0.08     |         | G    |
|                | CADA Jalgaon    | 0.16   | 0.19    | 0.35    | 6.50     | 0.01     |         | BA   |
|                | NIC Nanded      | 0.18   | 0.24    | 0.37    | 1.08     | 0.04     |         | BA   |
|                | AIC Akola       | 0.09   | 0.18    | 0.47    | 0.94     | 0.06     |         | BA   |
|                | CADA Nashik     | 0.60   | 0.33    | 0.55    | 2.44     | 0.02     |         | BA   |
| Normal         | YIC Yavatmal    | 0.06   | No Irri | No Irri | 0.08     | 0.00     | 0.37    | -    |
|                | PIC Pune        | 0.07   | 0.03    | 0.08    | 0.74     | 0.00     |         | VG   |
|                | CADA Nashik     | 0.18   | 0.12    | 0.10    | 0.42     | 0.08     |         | VG   |
|                | CADA Pune       | 0.14   | 0.05    | 0.30    | 0.31     | 0.09     |         | BA   |
|                | NIC Nanded      | 0.31   | 0.51    | 0.53    | 1.13     | 0.05     |         | BA   |
|                | CADA Nagpur     | 0.27   | 0.49    | 0.84    | 0.84     | 0.11     |         | BA   |
| Surplus        | CADA Nagpur     | 0.15   | 0.18    | 0.20    | 0.25     | 0.01     | 0.20    | G    |
| Abundant       | KIC Ratnagiri   | 0.06   | 0.04    | 0.05    | 0.15     | 0.01     | 0.22    | VG   |
|                | CIPC Chandrapur | 0.19   | 0.20    | 0.09    | 1.89     | 0.02     |         | VG   |
|                | TIC Thane       | 0.11   | 0.11    | 0.13    | 0.81     | 0.00     |         | VG   |
|                | NKIPC Thane     | 0.09   | 0.11    | 0.31    | 0.66     | 0.02     |         | BA   |
|                | SIC Sangli      | 0.40   | 0.41    | 0.51    | 0.80     | 0.13     |         | BA   |

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 Water Supply**

### **Highly Deficit Plan group**

CADA Solapur: Average revenue per unit water supplied of two minor projects is Rs.0.09/cum, which increased by 28.57 percent over last year.

### **Deficit Plan group**

NIC Nanded: The values are decreased over last years values, due to substantial reduction in revenue in two (Daryapur & Wasur) out of six projects. Revenue collected per unit water supplied in all projects is less than Rs.0.01/cum against State norm of Rs.0.18.

CADA Jalgaon: There is overall increase in revenue per unit of water supplied over last year performance due to increase in recovery in 3 out of 8 projects.

### **Normal Plan group**

PIC Pune: Average revenue per unit water supplied of three minor projects is Rs. 0.05/cum which is decreased by 28.57 percent from last year. It is below the State norms

CADA Pune: Revenue per unit water supplied of Thoseghar project is Rs.0.10/cum which is below State norms.

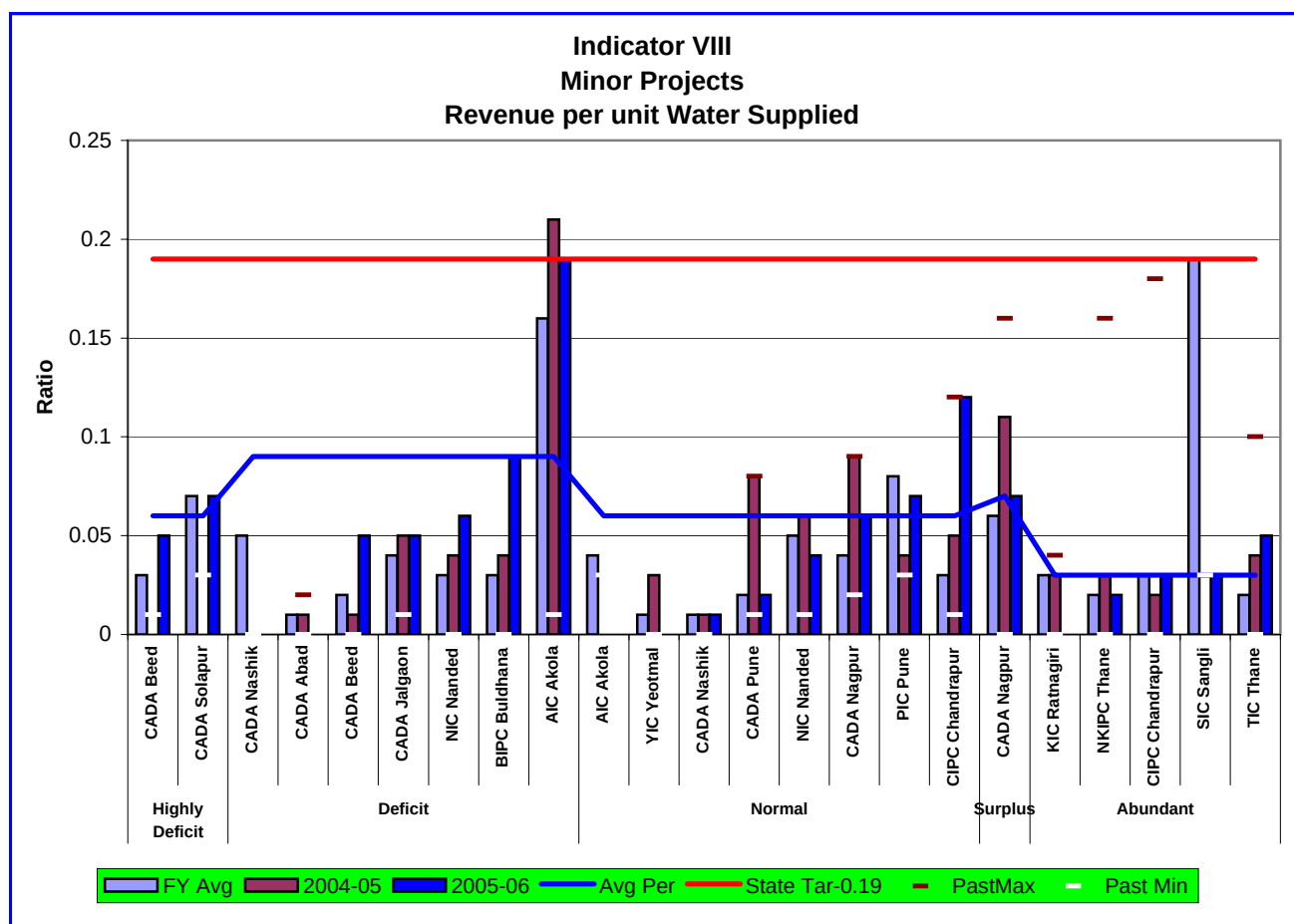
### **Abundant Plan group**

KIC Ratnagiri: Revenue per unit water supplied is only Rs. 0.01/cum, which is for below the State norms.

NKIPC Thane: Average revenue per unit water supplied of two minor projects is Rs. 0.02/cum which is below State norms.

SIC Sangli: Revenue per unit water supplied is Rs 0.04/cum which is below State norms.

TIC Thane: Average revenue per unit water supplied of six minor projects is Rs 0.08/cum which is below State norms.



| Plangroup      | Circle          | FY Avg | 2004-05  | 2005-06  | PastMax | Past Min | Avg Per | Rank |
|----------------|-----------------|--------|----------|----------|---------|----------|---------|------|
| Highly Deficit | CADA Beed       | 0.03   | No recov | 0.05     | 0.56    | 0.01     | 0.06    | BA   |
|                | CADA Solapur    | 0.07   | No recov | 0.07     | 0.56    | 0.03     |         | BA   |
| Deficit        | CADA Nashik     | 0.05   | No recov | No recov | 0.56    | 0.01     | 0.09    | NR   |
|                | CADA Abad       | 0.01   | 0.01     | No recov | 0.02    | 0.01     |         | NR   |
|                | CADA Beed       | 0.02   | 0.01     | 0.05     | 0.56    | 0.01     |         | BA   |
|                | CADA Jalgaon    | 0.04   | 0.05     | 0.05     | 1.38    | 0.01     |         | BA   |
|                | NIC Nanded      | 0.03   | 0.04     | 0.06     | 0.56    | 0.01     |         | BA   |
|                | BIPC Buldhana   | 0.03   | 0.04     | 0.09     | 2.10    | 0.01     |         | BA   |
|                | AIC Akola       | 0.16   | 0.21     | 0.19     | 0.56    | 0.01     |         | BA   |
|                | AIC Akola       | 0.04   | No recov | No recov | 0.56    | 0.03     | 0.06    | NR   |
| Normal         | YIC Yeotmal     | 0.01   | 0.03     | No recov | 0.56    | 0.01     |         | NR   |
|                | CADA Nashik     | 0.01   | 0.01     | 0.01     | 0.56    | 0.01     |         | BA   |
|                | CADA Pune       | 0.02   | 0.08     | 0.02     | 0.08    | 0.01     |         | BA   |
|                | NIC Nanded      | 0.05   | 0.06     | 0.04     | 0.56    | 0.01     |         | BA   |
|                | CADA Nagpur     | 0.04   | 0.09     | 0.06     | 0.09    | 0.02     |         | BA   |
|                | PIC Pune        | 0.08   | 0.04     | 0.07     | 0.56    | 0.03     |         | BA   |
|                | CIPC Chandrapur | 0.03   | 0.05     | 0.12     | 0.12    | 0.01     |         | BA   |
| Surplus        | CADA Nagpur     | 0.06   | 0.11     | 0.07     | 0.16    | 0.01     | 0.07    | BA   |
| Abundant       | KIC Ratnagiri   | 0.03   | 0.03     | No recov | 0.04    | 0.01     | 0.03    | NR   |
|                | NKIPC Thane     | 0.02   | 0.03     | 0.02     | 0.16    | 0.01     |         | BA   |
|                | CIPC Chandrapur | 0.03   | 0.02     | 0.03     | 0.18    | 0.01     |         | BA   |
|                | SIC Sangli      | 0.19   | No recov | 0.03     | 1.26    | 0.03     |         | BA   |
|                | TIC Thane       | 0.02   | 0.04     | 0.05     | 0.10    | 0.01     |         | BA   |

Note: Figures in blue excluded for Avg Per.

## **Indicator IX: Mandays for O&M per unit Area (Mandays/ha)**

### **Highly Deficit Plan group**

CADA Solapur: Average mandays per unit area of two minor projects is 2.02 which is lowered by 63 percent over last year.

CADA Beed: There is a reduction in the value, particularly in Tintraj and Bagalwadi projects.

### **Deficit Plan group**

CADA Aurangabad & CADA Beed: There is improvement in mandays per unit irrigated area over past values. This could be possible by bringing more area under irrigation during 2005-06.

CADA Nashik: The values of mandays for O&M per unit irrigated area are reduced by 60 percent, due to increased irrigation.

### **Normal Plan group**

CADA Nashik: Increase in irrigated area and reduction in O&M cost have contributed for substantial reduction in mandays for the year 2005-06.

PIC Pune: Average mandays per unit area of three minor projects is 0.90 which is below State norms.

Utilisation of mandays per unit area irrigated in all projects except Wahi (5.60) under CADA Nagpur (Normal) and Lagam (3.50) under CIPC Chandrapur (Abundant) is less than three.

CADA Pune: Mandays per unit area of Thoseghar project is 5.70 which is higher than State norms.

### **Abundant Plan group**

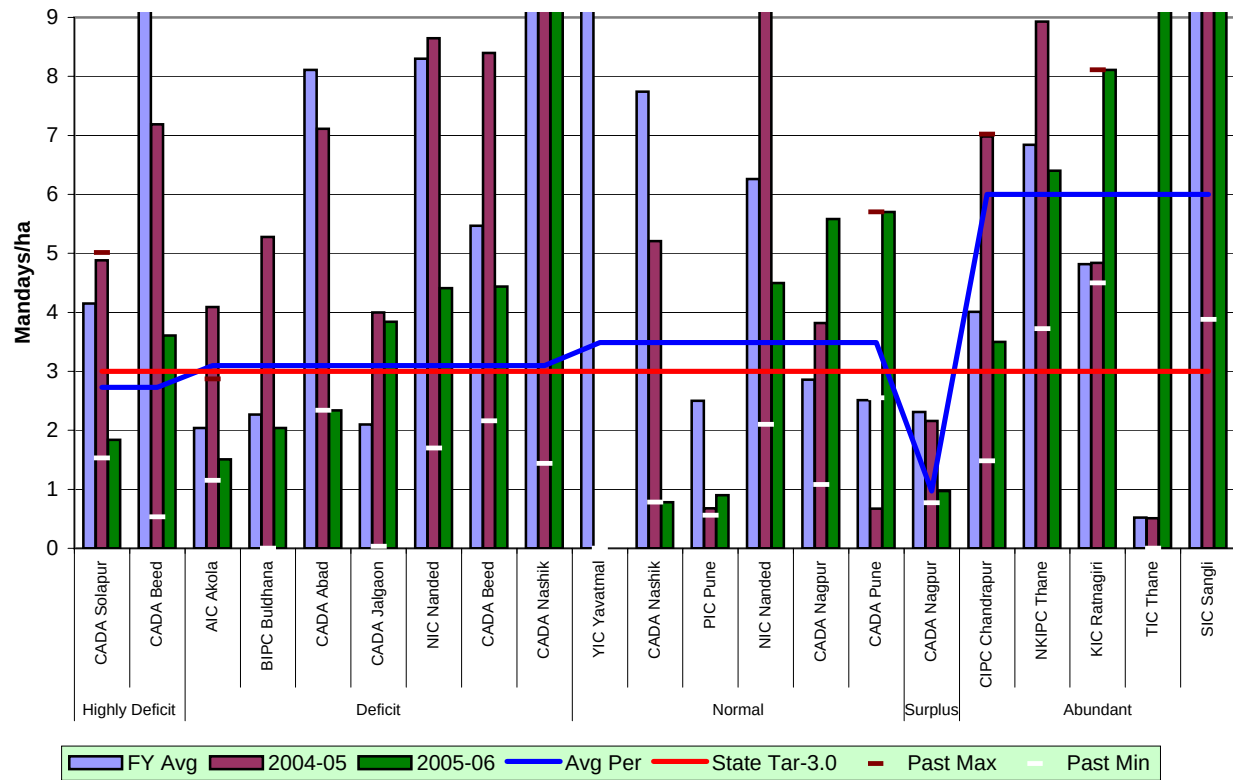
NKIPC Thane: Average mandays per unit area of two minor projects is 6.40 which is higher than State norms.

KIC Ratnagiri: Mandays per unit area of Shirwal project is 8.11 which is more than State norms.

TIC Thane: Average mandays per unit area of six minor projects is 12.70 which is higher than State norms.

SIC Sangli: Mandays per unit area of Benikre project is 13.52 which higher than the State norms.

**Indicator IX**  
**Minor Projects**  
**Mandays for O&M per unit area**



| Plangroup      | Circle          | FY Avg | 2004-05 | 2005-06 | Past Max | Past Min | Avg Per | Rank |
|----------------|-----------------|--------|---------|---------|----------|----------|---------|------|
| Highly Deficit | CADA Solapur    | 4.15   | 4.88    | 1.84    | 5.01     | 1.53     | 2.73    | VG   |
|                | CADA Beed       | 10.44  | 7.19    | 3.61    | 9.12     | 0.53     |         | M    |
| Deficit        | AIC Akola       | 2.04   | 4.09    | 1.51    | 2.87     | 1.15     | 3.10    | VG   |
|                | BIPC Buldhana   | 2.27   | 5.28    | 2.04    | 226.13   | 0.00     |         | VG   |
|                | CADA Abad       | 8.11   | 7.11    | 2.34    | 26.54    | 2.34     |         | VG   |
|                | CADA Jalgaon    | 2.10   | 4.00    | 3.84    | 37.35    | 0.03     |         | M    |
|                | NIC Nanded      | 8.30   | 8.65    | 4.41    | 27.73    | 1.70     |         | F    |
|                | CADA Beed       | 5.47   | 8.40    | 4.44    | 20.28    | 2.16     |         | F    |
|                | CADA Nashik     | 69.89  | 21.80   | 9.22    | 150.43   | 1.44     |         | BA   |
| Normal         | YIC Yavatmal    | 10.00  | No Irr  | No Irr  | 36.00    | 0.00     | 3.49    | ---  |
|                | CADA Nashik     | 7.74   | 5.21    | 0.78    | 9.36     | 0.78     |         | ---  |
|                | PIC Pune        | 2.50   | 0.68    | 0.90    | 65.49    | 0.56     |         | VG   |
|                | NIC Nanded      | 6.26   | 10.05   | 4.50    | 18.57    | 2.10     |         | BA   |
|                | CADA Nagpur     | 2.86   | 3.82    | 5.58    | 32.02    | 1.08     |         | BA   |
|                | CADA Pune       | 2.51   | 0.67    | 5.70    | 5.70     | 2.55     |         | BA   |
| Surplus        | CADA Nagpur     | 2.31   | 2.16    | 0.97    | 12.37    | 0.77     | 0.97    | VG   |
| Abundant       | CIPC Chandrapur | 4.01   | 6.98    | 3.50    | 7.02     | 1.48     | 6.00    | M    |
|                | NKIPC Thane     | 6.84   | 8.93    | 6.40    | 32.27    | 3.72     |         | BA   |
|                | KIC Ratnagiri   | 4.82   | 4.84    | 8.11    | 8.11     | 4.50     |         | BA   |
|                | TIC Thane       | 0.52   | 0.51    | 12.70   | 38.57    | 0.00     |         | BA   |
|                | SIC Sangli      | 15.37  | 24.75   | 13.52   | 17.38    | 3.88     |         | BA   |

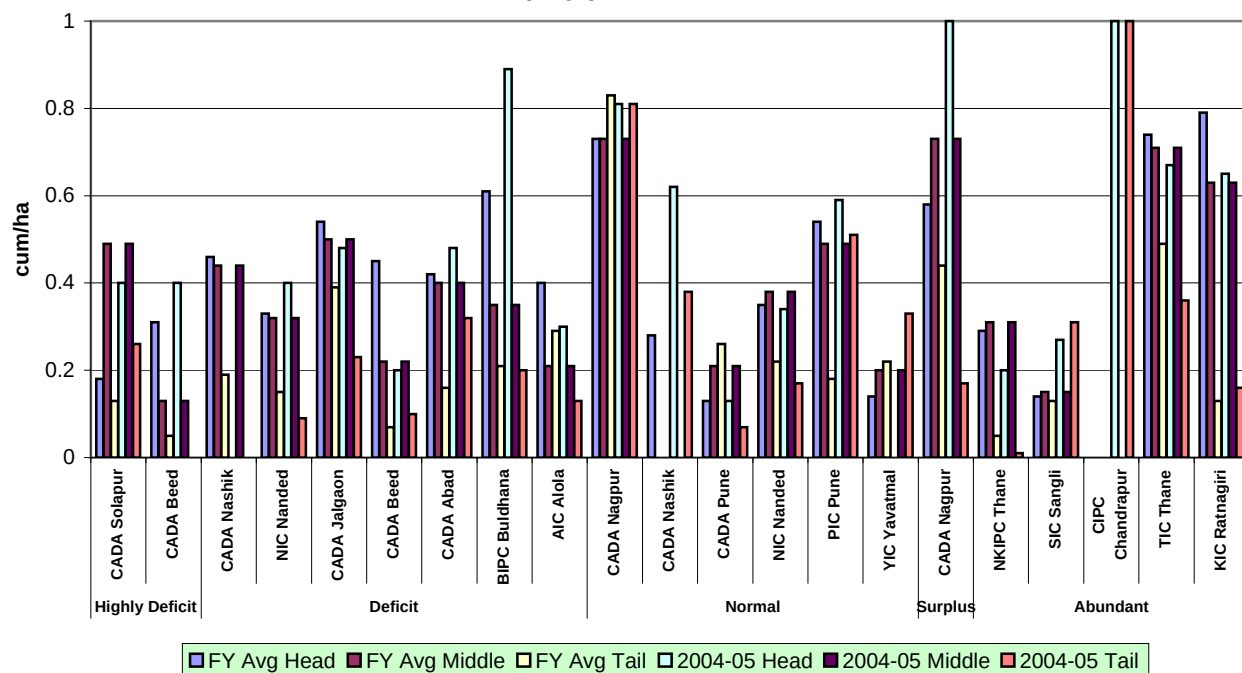
Note: Figures in red indicate values exceeding range of graph.



**Indicator XI: Equity performance:**

In most of the projects in Amrawati and Nagpur regions, irrigation is more or less equal in all the reaches. Where as in some projects it is concentrated in head & middle reach on account of constraint in availability of O&M funds.

**Indicator XI  
Minor Project  
Equity performance**



| Plangroup      | Circle          | Five years Average |        |      | 2005-06 |        |      |
|----------------|-----------------|--------------------|--------|------|---------|--------|------|
|                |                 | Head               | Middle | Tail | Head    | Middle | Tail |
| Highly Deficit | CADA Solapur    | 0.18               | 0.49   | 0.13 | 0.40    | 0.49   | 0.26 |
|                | CADA Beed       | 0.31               | 0.13   | 0.05 | 0.40    | 0.13   | 0.00 |
| Deficit        | CADA Nashik     | 0.46               | 0.44   | 0.19 | 0.00    | 0.44   | 0.00 |
|                | NIC Nanded      | 0.33               | 0.32   | 0.15 | 0.40    | 0.32   | 0.09 |
|                | CADA Jalgaon    | 0.54               | 0.50   | 0.39 | 0.48    | 0.50   | 0.23 |
|                | CADA Beed       | 0.45               | 0.22   | 0.07 | 0.20    | 0.22   | 0.10 |
|                | CADA Abad       | 0.42               | 0.40   | 0.16 | 0.48    | 0.40   | 0.32 |
|                | BIPC Buldhana   | 0.61               | 0.35   | 0.21 | 0.89    | 0.35   | 0.20 |
|                | AIC Alola       | 0.40               | 0.21   | 0.29 | 0.30    | 0.21   | 0.13 |
|                | CADA Nagpur     | 0.73               | 0.73   | 0.83 | 0.81    | 0.73   | 0.81 |
| Normal         | CADA Nashik     | 0.28               | 0.00   | 0.00 | 0.62    | 0.00   | 0.38 |
|                | CADA Pune       | 0.13               | 0.21   | 0.26 | 0.13    | 0.21   | 0.07 |
|                | NIC Nanded      | 0.35               | 0.38   | 0.22 | 0.34    | 0.38   | 0.17 |
|                | PIC Pune        | 0.54               | 0.49   | 0.18 | 0.59    | 0.49   | 0.51 |
|                | YIC Yavatmal    | 0.14               | 0.20   | 0.22 | 0.00    | 0.20   | 0.33 |
|                | CADA Nagpur     | 0.58               | 0.73   | 0.44 | 1.00    | 0.73   | 0.17 |
| Surplus        | CADA Nagpur     | 0.58               | 0.73   | 0.44 | 1.00    | 0.73   | 0.17 |
| Abundant       | NKIPC Thane     | 0.29               | 0.31   | 0.05 | 0.20    | 0.31   | 0.01 |
|                | SIC Sangli      | 0.14               | 0.15   | 0.13 | 0.27    | 0.15   | 0.31 |
|                | CIPC Chandrapur | 0.00               | 0.00   | 0.00 | 1.00    | 0.00   | 1.00 |
|                | TIC Thane       | 0.74               | 0.71   | 0.49 | 0.67    | 0.71   | 0.36 |
|                | KIC Ratnagiri   | 0.79               | 0.63   | 0.13 | 0.65    | 0.63   | 0.16 |

## **Indicator XII- Assessment Recovery Ratio (Irrigation)**

### **Highly Deficit Plan group**

CADA Solapur: Average assessment recovery ratio of two minor projects is 0.25 which is lower than State norms.

### **Deficit Plan group**

Recovery of irrigation revenue against assessment in all groups of projects under AIC Akola (Deficit & Normal), CADA Nagpur (Normal), CIPC Chandrapur (Abundant) etc. is more than 64 percent.

CADA Jalgaon: No recovery in four out of eight projects had an overall effect in reduction in value over last year.

### **Normal Plan group**

CADA Pune: Assessment recovery ratio of Thoseghar minor project is 0.65 which is below State norms.

PIC Pune: Average assessment recovery ratio of three minor projects is 0.66 which is below State norms.

### **Abundant Plan group**

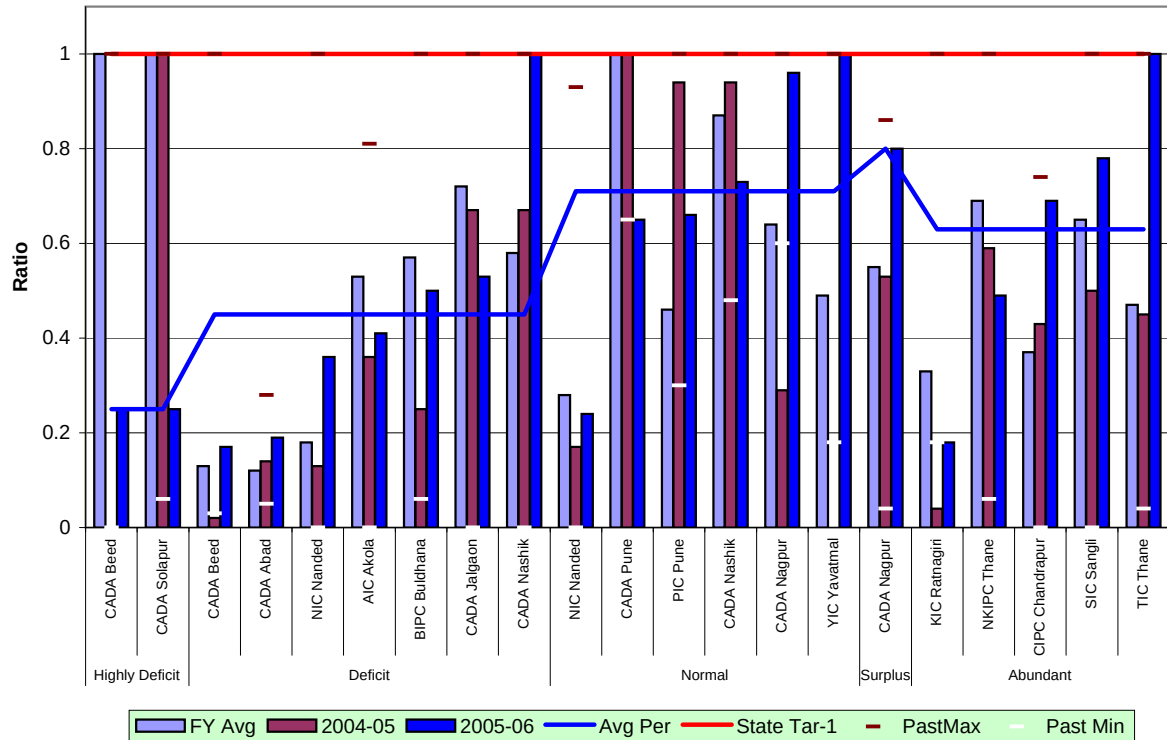
SIC Sangli: Assessment recovery ratio of Benikre project is 0.78 which is below State norms.

TIC Thane: Six minor projects could achieve the State target of one.

KIC Ratnagiri: Assessment recovery ratio of Shirwal project is 0.18 which is below State norms.

NKIPC Thane: Average assessment recovery ratio of two projects is 0.49 which is below State norms.

**Indicator XII A  
Minor Projects  
Assessment Recovery Ratio (Irrigation)**



| Plangroup      | Circle          | FY Avg | 2004-05  | 2005-06 | PastMax | Past Min | Avg Per | Rank |
|----------------|-----------------|--------|----------|---------|---------|----------|---------|------|
| Highly Deficit | CADA Beed       | 1.00   | No Recov | 0.25    | 1.00    | 0.00     | 0.25    | ---  |
|                | CADA Solapur    | 1.00   | 1.00     | 0.25    | 1.00    | 0.06     |         | BA   |
| Deficit        | CADA Beed       | 0.13   | 0.02     | 0.17    | 1.00    | 0.03     | 0.45    | BA   |
|                | CADA Abad       | 0.12   | 0.14     | 0.19    | 0.28    | 0.05     |         | BA   |
|                | NIC Nanded      | 0.18   | 0.13     | 0.36    | 1.00    | 0.00     |         | BA   |
|                | AIC Akola       | 0.53   | 0.36     | 0.41    | 0.81    | 0.00     |         | BA   |
|                | BIPC Buldhana   | 0.57   | 0.25     | 0.50    | 1.00    | 0.06     |         | F    |
|                | CADA Jalgaon    | 0.72   | 0.67     | 0.53    | 1.00    | 0.00     |         | F    |
|                | CADA Nashik     | 0.58   | 0.67     | 1.00    | 1.00    | 0.00     |         | VG   |
| Normal         | NIC Nanded      | 0.28   | 0.17     | 0.24    | 0.93    | 0.00     | 0.71    | ---  |
|                | CADA Pune       | 1.00   | 1.00     | 0.65    | 0.65    | 0.65     |         | ---  |
|                | PIC Pune        | 0.46   | 0.94     | 0.66    | 1.00    | 0.30     |         | F    |
|                | CADA Nashik     | 0.87   | 0.94     | 0.73    | 1.00    | 0.48     |         | M    |
|                | CADA Nagpur     | 0.64   | 0.29     | 0.96    | 1.00    | 0.60     |         | G    |
|                | YIC Yavatmal    | 0.49   | No Recov | 1.00    | 1.00    | 0.18     |         | VG   |
| Surplus        | CADA Nagpur     | 0.55   | 0.53     | 0.80    | 0.86    | 0.04     | 0.80    | M    |
| Abundant       | KIC Ratnagiri   | 0.33   | 0.04     | 0.18    | 1.00    | ---      | 0.63    | BA   |
|                | NKIPC Thane     | 0.69   | 0.59     | 0.49    | 1.00    | 0.06     |         | BA   |
|                | CIPC Chandrapur | 0.37   | 0.43     | 0.69    | 0.74    | 0.00     |         | F    |
|                | SIC Sangli      | 0.65   | 0.50     | 0.78    | 1.00    | 0.00     |         | M    |
|                | TIC Thane       | 0.47   | 0.45     | 1.00    | 1.00    | 0.04     |         | VG   |

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

#### **4.2.0 Conclusions:**

- 1) Overall improvement is observed in performance of projects, particularly in water use and recovery of water charges.
- 2) Area under water intensive crops is increasing. The field officers are required to advocate modern irrigation methods to avoid land damages.
- 3) In some projects, the increase or decrease in output per unit irrigated area is more than 50 percent. The concerned field officers are advised to recheck the output values.
- 4) Non-irrigation recovery in some circles is very poor.
- 5) Utilisation of effective potential is low in some projects, particularly in Konkan and Marathwada

## Chapter - 5

### Actions Taken for Improvement of Performance

The process of benchmarking of irrigation projects in the State was initiated with six major projects in 2000-01 & by now almost all major & medium projects are covered under it. In the initial years, there was more thrust on trainings & workshops to percolate the subject up to grass root level of field staff. The 262 projects included in the report of 2003-04 are also considered for State report for 2005-06 for comparison of their performance with preceding year.

The State wide report underwent various stages of reforms viz. project wise presentation in 2001-02, circle wise analysis in 2002-03 & plan group wise analysis in 2003-04. During 2004-05, State targets were decided plan group wise for the two indicators of agricultural output. Also the targets for O&M cost per unit water supplied & revenue per unit water supplied were decided during the year 2004-05. The same targets are considered for the year 2005-06. Up to last year i.e. 2004-05 the analysis of major projects was carried out considering circle as a unit. As an innovative action in case of major projects, project wise, indicator wise performance analysis along with details of performance during the year 2005-06. 2004-05 & average of five years performance are included in this report.

In order to improve the performance of irrigation projects GoM has initiated following steps/ administrative and policy reforms in the irrigation sector.

#### 5.1.0 Participatory Irrigation Management

Policy decision to handover the management of the entire command area of irrigation potential created to the Water Users' Associations was taken in July 2001. According to this policy, water will be supplied to WUAs only on volumetric basis. No individual will be supplied water in future. To create awareness for formation of WUAs amongst the beneficiaries in the command of the project, special campaign has been under taken during 2<sup>nd</sup> October to 16<sup>th</sup> October every year since 2002. An appreciable increase in area covered under WUA has taken place in last five years. This is evident from following table:

| Year    | No. of operative WUAs | Area covered under operative WUAs (lakh ha) |
|---------|-----------------------|---------------------------------------------|
| 2000-01 | 258                   | 0.93                                        |
| 2001-02 | 283                   | 1.01                                        |
| 2002-03 | 357                   | 1.17                                        |
| 2003-04 | 564                   | 1.65                                        |
| 2004-05 | 774                   | 2.51                                        |
| 2005-06 | 1100                  | 3.55                                        |

Recently Waghad, a major project under CADA Nashik is totally handed over to the Federation of Water Users' Associations under Maharashtra Management of Irrigation Systems by Farmers Act, 2005 as Water Users' Associations are formed in

most of the command area of the project. Water will be supplied to the Federation at canal head on volumetric basis.

### **5.2.0 Participation of Users in Irrigation Water Planning**

The participation of water users in formulation of Preliminary Irrigation Programme of projects has been made mandatory. Accordingly instructions are issued vide letter dated 26.10.2004.

### **5.3.0 Participation of Beneficiaries In Canal Maintenance**

For improving the performance of the existing irrigation schemes it has been decided from the year 2002-03 to carry out annual maintenance of canals/ distributaries etc. through active involvement of local beneficiaries & villagers (*Shramdan*), CRT & work charged establishment. Employment Guarantee Schemes, School/College students and machinery of local sugar factories in the command area. A campaign named as *Vishweshwaria kalwa Swachchata Abhiyan* for canal cleaning is undertaken every year. Overwhelming response has been received from all above organisations.

The works started on 2<sup>nd</sup> October 2002. Works to the tune of Rs.11.40 crores have been carried out in the State during the year 2005-06.

### **5.4.0 Water Auditing**

One of the reasons for under utilisation of created irrigation potential is unaccounted water use. To have proper account of water in totality and its use in various sectors, for assuring assessment of irrigated area fully & to increase the revenue of Government, water auditing for all irrigation projects in the State has been made mandatory as per the commitments made in State Water Policy. The process of water auditing involves checking the sector wise water use against planning, irrigation system performance, actual releases and extent of evaporation and conveyance losses.

The first report of water auditing for the year 2003-04 was published in March 2005 which contained abstract of water accounts of 50 major, 131 medium and 1048 minor projects in the State. During 2004-05 annual office inspection of 34 Divisions was carried out by the officers from three units in MWRDC, Aurangabad. Records relevant with irrigation management were critically examined during the inspections. The water audit report-2005-06 is for 55 major, 193 medium and 1709 minor totalling 1957 projects.

Training courses are conducted regularly by WALMI, Aurangabad for senior & middle level officers & staff working in irrigation management. During 2005-06 a State level workshop on this subject was held at WALMI, Aurangabad during 27<sup>th</sup> to 29<sup>th</sup> June 2006 for middle level officers. It was meant for inducing the importance of water audit and its importance, transparency and responsibility of service providers in respect of increased accountability & improved level of service to customers.

Cadre wise break-up of trainees is as follows.

| Year    | Period of Training   | Cadre                                                                                                          | No of trainees |
|---------|----------------------|----------------------------------------------------------------------------------------------------------------|----------------|
| 2006-07 | 27-06-06 to 29-6-06  | Deputy Executive Engineers/ Sub divisional Engineers/ Sub divisional Officers/ Deputy Superintending Engineers | 6              |
|         |                      | Assistant Engineers II/ Sectional Engineers                                                                    | 32             |
|         |                      |                                                                                                                |                |
|         |                      | Superintending Engineers                                                                                       | 3              |
|         |                      | Executive Engineers                                                                                            | 11             |
| 2006-07 | 23-11-06 to 24-11-06 | Deputy Executive Engineers/ Sub divisional Engineers/ Sub divisional Officers                                  | 7              |
|         |                      | Assistant Engineers II/ Sectional Engineers                                                                    | 8              |
|         |                      |                                                                                                                |                |

A special training programme on MS Excel/Access was conducted from 21-08-06 to 25-08-06 for Executive Engineers, Deputy Executive Engineers/ Sub divisional Engineers/ Deputy Superintending Engineers and Assistant Engineers, working in irrigation management and officers from MWRDC, to enable use of computers in water Auditing and Benchmarking.

#### **5.5.0 Conference of Officers of Irrigation management:**

A State level conference of Executive Engineers and Superintending Engineers working in irrigation management was held in WALMI Aurangabad on 6<sup>th</sup> January 2007. Regional Chief Engineers and Secretary (CAD) were also present in the conference. The issues pertaining to and field difficulties in irrigation management were discussed in detail in the conference. Recommendations based on discussions are submitted to Government for consideration which will help the Government also to take policy decisions in future.

#### **5.6.0 Recovery of water charges:**

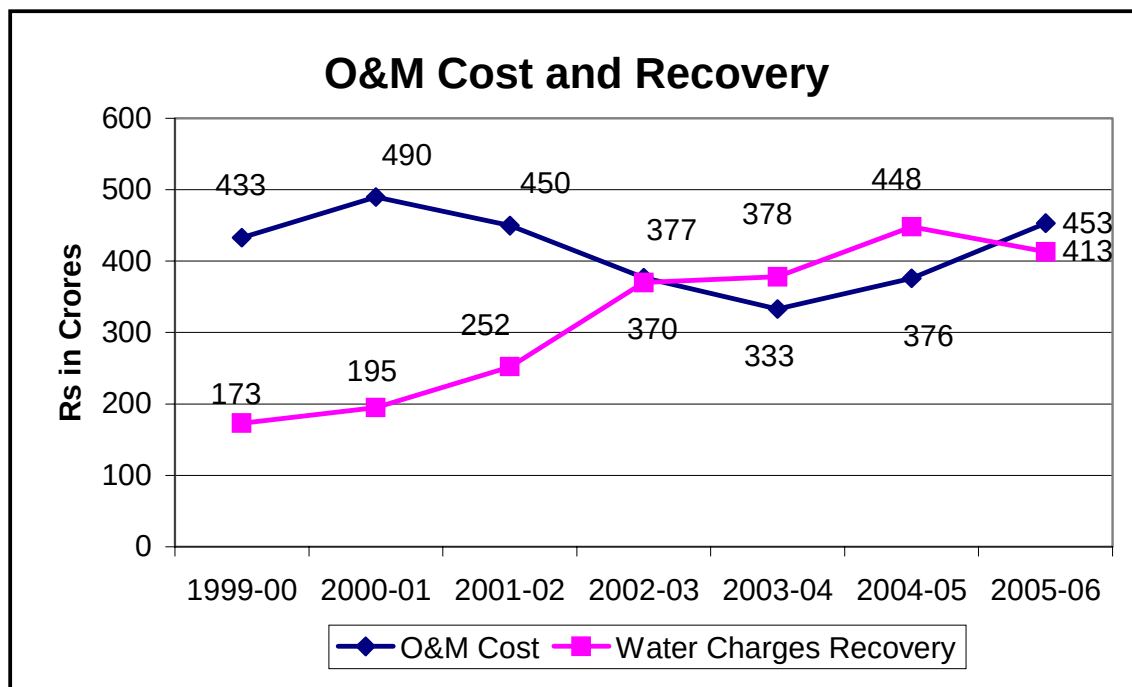
The sustainability of projects depends upon recovery of assessed water charges. The water rates for irrigation & non irrigation uses were revised with effect from September 2001 in such a way that at least maintenance cost is recovered from recovery of water charges. In addition there was an in built provision of 15% increase in water rates every year up to 2002-03. Water rates for irrigation & non irrigation effective for the year 2002-03 were continued for 2003-04 & 2004-05 due to drought conditions in the State. However, the water rates for non irrigation uses have been revised from 1-9-2006. Prescribed source wise water charges for irrigation and non-irrigation water supply are enclosed in Appendix-VIII

Circle wise targets for recovery are fixed right at the start of financial year and review of recovery is taken in every bimonthly meeting of Superintending Engineers with Secretary (CAD). Similarly, a special drive is taken for recovery of arrears of non-irrigation use every year. The recovery of water charges from municipal corporations and municipalities is effected at Government level by adjustment of funds from Rural/Urban Development Department. The recovery of water charges



from Gram Panchayats is effected at Government level by adjustment from relevant funds of Rural Development Department.

The expenditure on irrigation management including establishment charges for the year 2005-06 was Rs. 4530 million. Whereas the total recovery of the water



charges pertaining to irrigation and non-irrigation water use was Rs. 4130 million. Increase in O & M cost during this year was due to rehabilitation works carried out on distributaries/minors of irrigation projects damaged by heavy rains in the State.

### 5.7.0 Maharashtra Water Sector Improvement Project (MWSIP)

Though the irrigation potential of 4.03 Mha is created by June 2005, the actual utilisation is about 50% only. To increase the utilisation, top priority is given to improve the performance of the existing irrigation system. This is effected by initiating a combination of policy, institutional and physical improvements by modernisation of irrigation sector.

An agreement has been executed between World Bank, GoI & GoM for funding the **Maharashtra Water Sector Improvement Project (MWSIP)** on 19/08/2005. The project envisages to rehabilitate and modernise about 286 Irrigation projects (Including 9 major, 13 medium & 264 minor schemes) covering about 6,68,850 ha culturable command area. Important condition under MWSIP is that it includes beneficiaries contribution at Rs. 500/ha. In the form of cash or kind, for only those civil works which will be carried in WUA's area. The Government of Maharashtra's and beneficiaries' share will be respectively about 60.70 million US\$ and 7.62 million US\$ respectively and **World Bank's loan will be of 325 million US\$.**

The primary objectives of the Project are- i) to strengthen the State's capacity for multi-sectoral planning, development & sustainable management of the water

resources and ii) to improve irrigation service delivery on a sustainable basis to increase productivity of irrigated agriculture & contribute to rural poverty reduction.

The project consists of following four main components.

**A) Institutional Restructuring and Capacity Building**

This includes establishment and operationalisation of Maharashtra Water Resources Regulatory Authority, Restructuring MKVDC in to MKVWRC as a river basin agency & it's capacity building, restructuring & capacity building of WRD, strengthening & capacity building of Water and Land Management Institute (WALMI), and Integrated Computerized Information System (ICIS).

**B) Improving Irrigation Service Delivery and Management:** This includes participatory rehabilitation & modernization, Dam Safety works, formation and capacity building of Water Users' Associations, improved water management practices, strengthening agricultural support services in selected projects and environmental & social management plan.

**C) Innovative Pilots-** This includes piloting user centered aquifer level Ground Water Management and piloting innovative irrigation service management.

**D) Project Management-** This includes- Project preparation and Management Unit, monitoring & evaluation and information education & communication.

The Project is in its initial phase i.e. completion of prerequisites like walk-through surveys, preparation of estimates, bids, terms of references for various consultancies, tendering the works, etc. The project period is 6 years w. e. f. 29<sup>th</sup> Sept. 2005 up to 30<sup>th</sup> Sept. 2011.

### **5.8.0 Maharashtra Management of Irrigation Systems by Farmers Act, 2005**

Looking at the slow pace of participatory irrigation management in last decade, a policy decision has been taken to provide legal recognition to the contribution and operation of WUAs. Accordingly, the Maharashtra Management of Irrigation Systems by Farmers Act-2005 has been passed in State legislature.

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

### **5.9.0 Land Reclamation**

The problem of lands becoming saline or waterlogged is increasing with the advancement of irrigation facilities. The affected area in Maharashtra during the year 2002-03 was 26298 ha (1.85% of ICA)\* whereas during the year 2003-04 & 2004-05 it was 25573 ha (1.58% of ICA) & 26756 ha (1.98% of ICA) respectively., The Directorate of Irrigation Research & Development, Pune has been assigned the job to overcome this problem & suggest remedial measures of survey of drainage schemes, formulation of plans etc. in an integrated manner.

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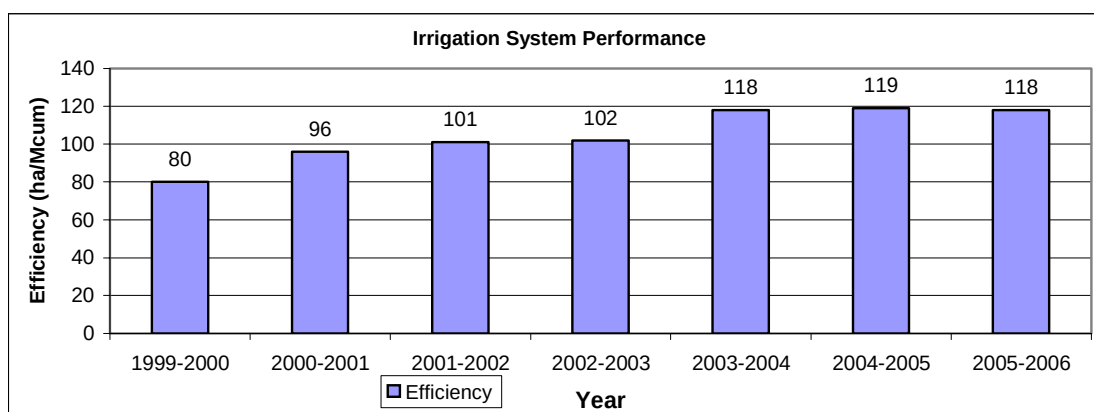
\* (Status Report published by DIRD-Pune in August 2004)

### 5.10.0 Fixing norms of Irrigation System Performance (ISP)

Prior to 2001 it was observed that actual irrigation use figures were far below even when the water was used for Rabi & Hot weather seasons. This state of affairs was not so encouraging, a criteria of ISP, a very important parameter in performance evaluation of irrigation was suggested.

GOM from December 2001 has fixed season wise norms for ISP as 150 ha/Mcum in Rabi season & 110 ha/Mcum in H.W season.

The useful storage available in all major, medium and minor (State sector) projects reservoirs in the State as on 15<sup>th</sup> October 2005, was 24860 Mcum. Out of the total, water used for irrigation was 13689 Mcum. On account of water use for irrigation, 1.617 Mha area on canals was irrigated whereas irrigation on wells was 0.597 Mha. The area irrigated by these two sources taken together was 2.214 Mha. With this data, the Irrigation system Performance comes to 118 ha/Mcum for the canal irrigation, which is slightly lower than that for the year 2004-05.



### 5.11.0 State Level Core Group for Benchmarking

Benchmarking has been recognised as an effective management tool for:

- Measurement of performance of irrigation projects,
- Finding out reasons of their under-performance,
- Suggesting solutions to bottlenecks.

In realisation of its usefulness in India, Union Ministry of Water Resources organised a “National Workshop on Benchmarking of Irrigation Projects” in February 2002 at Hyderabad. On the basis of inputs from the above workshop, “Guidelines on Benchmarking of Irrigation Systems in India” were prepared and sent to the Water Resources Department of all the States and Union Territories in the Country.

It is worth mentioning that Maharashtra has already taken a lead in this respect.

The Ministry of Water Resources, Gol, has constituted a Core Group for Benchmarking of Irrigation Systems in India, under the Chairmanship of Member

(Water Planning & Projects), CWC, New Delhi for assisting the states and the Union Territories for implementation of Benchmarking in Irrigation Sector in the Country.

Accordingly, a State level Core Group for co-ordinating the activities regarding benchmarking process has been constituted in July 2006.

The composition of constituted Core Group is as follows:-

|                                                                                               |                     |
|-----------------------------------------------------------------------------------------------|---------------------|
| Secretary, CAD, Water Resources Department                                                    | Chairman            |
| Chief Engineer (I) & Joint Secretary, Water Resources Department,                             | Member              |
| Regional Chief Engineers of Water Resources Department<br>(Pune, Nashik, Aurangabad & Nagpur) | Members             |
| Chief Engineer, Hydrology Project, Nashik                                                     | Member              |
| Deputy Secretary (CAD), Water Resources Department                                            | Member              |
| Chief Engineer, Maharashtra Water Resources Development<br>Centre, Aurangabad.                | Member<br>Secretary |

#### **Terms of references**

|   |                                                                                                                                                                       |
|---|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| a | The core group shall guide, facilitate and co-ordinate activities regarding benchmarking process of irrigation systems.                                               |
| b | To develop benchmarking methodology suitable and implementable in the State.                                                                                          |
| c | To evolve a work programme to implement benchmarking in the projects and advocate the use of benchmarking as a tool to enhance the performance of irrigation systems. |
| d | To help in the organisation of the State level and project level workshops for the benefit of the field functionaries of the concerned projects.                      |
| e | Any other related aspect.                                                                                                                                             |

The functions to be performed by Core Group of Maharashtra are enumerated below.

| Functions                                                                                 | Authority                                                                                               |
|-------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|
| Co-ordination with Central Core Group                                                     | Chairman of the Core Group (Secretary (CAD), Mantralaya, Mumbai) and Chief Engineer, MWRDC, Aurangabad. |
| Co-ordination with Core Groups of other State Governments.                                | Chief Engineer, MWRDC, Aurangabad.                                                                      |
| Co-ordination with field Superintending Engineers of the State.                           | Superintending Engineer, MWRDC, Aurangabad.                                                             |
| Collection of data from different circles in their jurisdiction and analysis of the same. | Executive Engineer, Unit 1, 2 & 3, MWRDC, Aurangabad.                                                   |

The first meeting of this Core Group was held on 10.11.2006 at Mumbai and action on some of the points discussed in the meeting is being initiated.

### **5.12 Committee for fixing plan group wise target values**

The performance evaluation of irrigation projects with the benchmarking was carried out plan group wise since 2004-05. Twelve indicators grouped in different key activity areas were selected for benchmarking.

Out of these 12 indicators, the indicators related with annual water use, irrigated area, agricultural production and recovery of water charges are dependent on Agro-climatic conditions of the projects, existing cropping pattern, water requirement of crops, number of rotations, conveyance losses etc.

At present the State target values decided for different indicators are same for all the projects in the State irrespective of different characteristics of the regions. Therefore it is necessary to decide the plan group wise targets considering project specific characteristics. Also irrigation system performance for Kharif season & reservoir lift also plays an important role in irrigation management and deciding the target value of first indicator i.e. Annual Irrigation Water Supply per unit Irrigated Area.

Therefore, a study group to decide plan group wise values of targets and plan group wise, season wise ISP is set up in May 2006. The Study Group is headed by the Chief Engineer, Maharashtra Water Resources Development Centre, Aurangabad.

Three meetings of this Study Group have taken place up till now and the report will be prepared in due course. The values recommended by this Study Group will be taken for consideration from the year 2006-07.

### **5.13 Improvement In Spread Sheet For Benchmarking Data Collection:**

Performance evaluation of irrigation projects and action to be taken for further improvement much depends upon the indicator wise values evaluated. For accurate and realistic evaluation of performance, precise definitions of indicators and collection of data according to it is important in Benchmarking.

Accordingly, a spread sheet for data collection is revised (Attached as **Appendix-IX**) also, to have an exact meaning of each column of spread sheet, an explanatory note along with guidelines is prepared & circulated among the concerned field staff. This has helped in submitting more realistic data in a uniform manner & uniform units.

# **APPENDICES**



## **Appendix-I**

### **Abstract of guidelines issued by GOM for Benchmarking of Irrigation Projects – 2005-06.**

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 (2005-06) based on guidelines of 2004-05.

- 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 2005-06.
- 2) All Projects included in report for 2004-05 are considered for 2005-06.
- 3) Indicators for 2005-06 are the same as for 2004-05. However, financial indicators are presented for irrigation and non-irrigation uses separately as well as combined.
- 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 2000-2001 to 2004-05 and values for 2005-06 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 2005-06**

#### **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 =  $100000/130 = 7692$  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 =  $100000/150 = 6666.67$  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 2005-06.

### III) Output per unit area:

The target is decided based on five years experience in 2004-05. The same targets are used for 2005-06.

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.

| Major            | Medium           | Minor            |
|------------------|------------------|------------------|
| (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 target is 3 Mandays / ha as per last year.

**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**  
**Evaluation of performance of Irrigation Circles 2005-06**

| Indicator No. | Type & Plangroup | State Target | Performance Ranking |                                |                               |                              |               |
|---------------|------------------|--------------|---------------------|--------------------------------|-------------------------------|------------------------------|---------------|
|               |                  |              | Below Average       | Fair                           | Moderate                      | Good                         | Very good     |
| I             | Major, Medium    | 7692         | < 3846 or > 11538   | 3846 to 5383 or 10001 to 11538 | 5384 to 6537 or 8847 to 10000 | 6538 to 7615 or 7769 to 8846 | 7616 to 7768  |
|               | Minor            | 6667         | < 3334 or > 10001   | 3334 to 4666<br>8668 to 10000  | 4667 to 5666 or 7668 to 8667  | 5667 to 6600 or 6734 to 7667 | 6601 to 6733  |
| II            | All              | 1            | < 0.50              | 0.50 to 0.69                   | 0.7 to 0.84                   | 0.85 to 0.99                 | 1             |
| III           | <b>Major</b>     |              |                     |                                |                               |                              |               |
|               | Highly deficit   | 21000        | < 10500             | 10500 to 14699                 | 14700 to 17849                | 17850 to 20999               | 21000 or more |
|               | Deficit          | 23000        | < 11500             | 11500 to 16099                 | 16100 to 19549                | 19550 to 22999               | 23000 or more |
|               | Normal           | 26000        | < 13000             | 13000 to 18199                 | 18200 to 22099                | 22100 to 25999               | 26000 or more |
|               | Surplus          | 25000        | < 12500             | 12500 to 17499                 | 17500 to 21249                | 21250 to 24999               | 25000 or more |
|               | Abundant         | 32000        | < 16000             | 16000 to 22399                 | 22400 to 27199                | 27200 to 31999               | 32000 or more |
|               | <b>Medium</b>    |              |                     |                                |                               |                              |               |
|               | Highly deficit   | 23000        | < 11500             | 11500 to 16099                 | 16100 to 19549                | 19550 to 22999               | 23000 or more |
| IV            | Deficit & Normal | 25000        | < 12500             | 12500 to 17499                 | 17500 to 21249                | 21250 to 24999               | 25000 or more |
|               | Surplus          | 31000        | < 15500             | 15500 to 21699                 | 21700 to 26349                | 26350 to 30999               | 31000 or more |
|               | Abundant         | 40000        | < 20000             | 20000 to 27999                 | 28000 to 33999                | 34000 to 39999               | 40000 or more |
|               | <b>Minor</b>     |              |                     |                                |                               |                              |               |
|               | Highly deficit   | 16000        | < 8000              | 8000 to 11199                  | 11200 to 13599                | 13600 to 15999               | 16000 or more |
|               | Deficit & Normal | 21000        | < 10500             | 10500 to 14699                 | 14700 to 17849                | 17850 to 20999               | 21000 or more |
|               | Surplus          | 27000        | < 13500             | 13500 to 18899                 | 18900 to 22949                | 22950 to 26999               | 27000 or more |
|               | Abundant         | 36000        | < 18000             | 18000 to 25199                 | 25200 to 30599                | 30600 to 35999               | 36000 or more |
|               | <b>Major</b>     |              |                     |                                |                               |                              |               |
|               | Highly deficit   | 2.69         | < 1.35              | 1.35 to 1.88                   | 1.89 to 2.29                  | 2.30 to 2.68                 | 2.69 or more  |
|               | Deficit          | 2.99         | < 1.50              | 1.50 to 2.00                   | 2.01 to 2.53                  | 2.54 to 2.98                 | 2.99 or more  |
|               | Normal           | 3.38         | < 1.69              | 1.69 to 2.36                   | 2.37 to 2.86                  | 2.87 to 3.37                 | 3.38 or more  |
|               | Surplus          | 3.25         | 1.63                | 1.63 to 2.27                   | 2.28 to 2.75                  | 2.76 to 3.24                 | 3.25 or more  |
|               | Abundant         | 4.16         | 2.08                | 2.08 to 2.90                   | 2.91 to 3.53                  | 3.54 to 4.15                 | 4.16 or more  |

| Indicator No.  | Type & Plangroup | State Target | Performance Ranking |               |              |              |
|----------------|------------------|--------------|---------------------|---------------|--------------|--------------|
|                |                  |              | Below Average       | Fair          | Modrate      | Good         |
| IV             | <b>Medium</b>    |              |                     |               |              |              |
|                | Highly deficit   | 2.99         | < 1.50              | 1.50 to 2.00  | 2.01 to 2.53 | 2.54 to 2.98 |
|                | Deficit & Normal | 3.15         | < 1.58              | 1.58 to 2.20  | 2.21 to 2.67 | 2.68 to 3.14 |
|                | Surplus          | 4.05         | < 2.03              | 2.03 to 2.83  | 2.84 to 3.43 | 3.44 to 4.04 |
|                | Abundant         | 5.4          | < 2.7               | 2.7 to 3.77   | 3.78 to 4.58 | 4.59 to 5.39 |
|                | <b>Minor</b>     |              |                     |               |              |              |
| V              | Highly deficit   | 2.4          | < 1.2               | 1.2 to 1.67   | 1.68 to 2.03 | 2.04 to 2.39 |
|                | Deficit & Normal | 3.15         | < 1.58              | 1.58 to 2.19  | 2.20 to 2.67 | 2.68 to 3.14 |
|                | Surplus          | 4.05         | < 2.03              | 2.03 to 2.83  | 2.84 to 3.43 | 3.44 to 4.04 |
|                | Abundant         | 5.4          | < 2.7               | 2.7 to 3.77   | 3.78 to 4.58 | 4.59 to 5.39 |
|                | All              | 1.00         | < 0.5               | < 0.5 to 0.69 | 0.7 to 0.84  | 0.85 to 0.99 |
|                |                  |              |                     |               |              | 1.00 or more |
| VI             | Major            | 1250         | 1876 & Above        | 1626 to 1875  | 1439 to 1625 | 1314 to 1438 |
|                | Medium           | 1200         | 1801 & Above        | 1561 to 1800  | 1381 to 1560 | 1261 to 1380 |
|                | Minor            | 1150         | 1726 & Above        | 1496 to 1725  | 1323 to 1495 | 1208 to 1322 |
|                |                  |              |                     |               |              | 1207 & Below |
| VII            | Major            | 0.16         | 0.25 & Above        | 0.22 tp 0.24  | 0.20 to 0.21 | 0.18 to 0.19 |
|                | Medium & Minor   | 0.17         | 0.26 & Above        | 0.23 to 0.25  | 0.21 to 0.22 | 0.19 to 0.20 |
| VIII           | Major, Medium    | 0.18         | < 0.09              | 0.09 to 0.13  | 0.14 to 0.16 | 0.16 to 0.18 |
|                | Minor            | 0.19         | < 0.10              | 0.10 to 0.12  | 0.13 to 0.15 | 0.16 to 0.18 |
| IX             | All              | 3.00         | > 4.5               | 3.9 to 4.49   | 3.45 to 3.89 | 3.00 to 3.44 |
| X              | All              | 0            | > 3.00              | 2.00 to 2.9   | 1.00 to 1.9  | 0.1 to 1.00  |
| XII (I) & (NI) | All              | 1.00         | < 0.5               | 0.5 to 0.69   | 0.7 to 0.84  | 0.85 to 0.99 |
|                |                  |              |                     |               |              | 1            |

# APPENDIX-IV

## Major Projects

### At a glance evaluation of performance of Irrigation Circles (Service providers) for 2004-05 & 2005-06

| Plan Group     | Circle          | Indicator Number |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |
|----------------|-----------------|------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
|                |                 | I                |         |         | II      |         |         | III     |         |         | IV      |         |         | V       |         |         | VI      |         |         |
|                |                 | 2004-05          | 2005-06 | 2004-05 | 2004-05 | 2005-06 | 2005-06 | 2004-05 | 2004-05 | 2005-06 | 2004-05 | 2004-05 | 2005-06 | 2004-05 | 2004-05 | 2005-06 | 2004-05 | 2004-05 | 2005-06 |
| Highly Deficit | CADA Solapur    | M                | G       | F       | F       | BA      | F       | VG      | M       | VG      | VG      | F       | M       | VG      | F       | BA      | BA      | BA      | VG      |
| Deficit        | AIC Akola       | M                | G       | F       | F       | BA      | F       | VG      | M       | VG      | VG      | BA      | M       | VG      | VG      | BA      | BA      | BA      | BA      |
|                | CADA Aurangabad | BA               | F       | F       | F       | BA      | F       | VG      | M       | VG      | VG      | BA      | M       | VG      | VG      | BA      | BA      | BA      | G       |
|                | CADA Beed       | BA               | BA      | BA      | BA      | BA      | BA      | BA      | BA      | BA      | BA      | BA      | M       | BA      | BA      | BA      | BA      | BA      | BA      |
|                | CADA Jalgaon    | F                | BA      | G       | G       | G       | F       | F       | M       | M       | VG      | G       | VG      | G       | F       | BA      | BA      | BA      | G       |
|                | NIC Nanded      | F                | F       | M       | M       | VG      | F       | F       | VG      | VG      | VG      | VG      | VG      | BA      | BA      | BA      | BA      | BA      | BA      |
|                | CADA Nashik     | F                | F       | BA      | BA      | VG      | VG      | VG      | VG      | VG      | VG      | VG      | VG      | VG      | VG      | VG      | BA      | BA      | M       |
|                | BIPC Buldhana   | BA               | M       | BA      | BA      | BA      | F       | F       | BA      | BA      | VG      | VG      | BA      | G       | BA      | BA      | F       | BA      | VG      |
| Normal         | AIC Akola       | NO IRR           | BA      | NO IRR  | M       | BA      | BA      | BA      | BA      | F       | BA      | BA      | F       | F       | VG      | BA      | BA      | BA      | VG      |
|                | NIC Nagpur      | BA               | BA      | G       | BA      | BA      | BA      | BA      | BA      | F       | BA      | BA      | BA      | VG      | BA      | BA      | BA      | BA      | VG      |
|                | CIPC Chandrapur | VG               | G       | BA      | F       | BA      | M       | M       | G       | G       | M       | G       | G       | BA      | BA      | BA      | BA      | BA      | VG      |
|                | YIC Yeotmal     | F                | BA      | VG      | VG      | G       | VG      | VG      | M       | M       | VG      | VG      | M       | BA      | BA      | BA      | BA      | BA      | BA      |
|                | CADA Pune       | F                | G       | VG      | VG      | VG      | G       | G       | G       | G       | VG      | VG      | VG      | F       | BA      | BA      | BA      | BA      | M       |
|                | PIC Pune        | G                | F       | G       | G       | VG      | M       | M       | VG      | VG      | M       | VG      | VG      | VG      | VG      | VG      | F       | BA      | VG      |
|                | UWPC Amravati   | BA               | BA      | BA      | BA      | BA      | M       | M       | VG      | VG      | BA      | BA      | M       | F       | F       | F       | M       | BA      | VG      |
|                | CADA Nashik     | BA               | F       | F       | F       | VG      | VG      | VG      | VG      | VG      | F       | VG      | VG      | VG      | VG      | VG      | BA      | BA      | M       |
|                | CADA Jalgaon    | G                | BA      | M       | M       | VG      | VG      | VG      | VG      | VG      | VG      | VG      | VG      | VG      | VG      | VG      | BA      | BA      | BA      |
| Surplus        | CADA Nagpur     | G                | M       | M       | M       | M       | G       | G       | VG      | VG      | M       | VG      | VG      | VG      | VG      | VG      | BA      | BA      | M       |
| Abundant       | CADA Pune       | M                | BA      | G       | G       | VG      | F       | F       | M       | M       | M       | G       | G       | VG      | VG      | G       | BA      | BA      | VG      |
|                | CIPC Chandrapur | F                | F       | VG      | G       | VG      | M       | M       | M       | M       | VG      | VG      | VG      | M       | M       | BA      | BA      | BA      | VG      |
|                | SIC Sangli      | F                | G       | BA      | BA      | BA      | VG      | VG      | VG      | VG      | VG      | VG      | G       | VG      | VG      | VG      | F       | F       | F       |
|                | TIC Thane       | BA               | BA      | BA      | BA      | G       | VG      | VG      | VG      | G       | BA      | BA      | BA      | VG      | VG      | VG      | BA      | BA      | BA      |

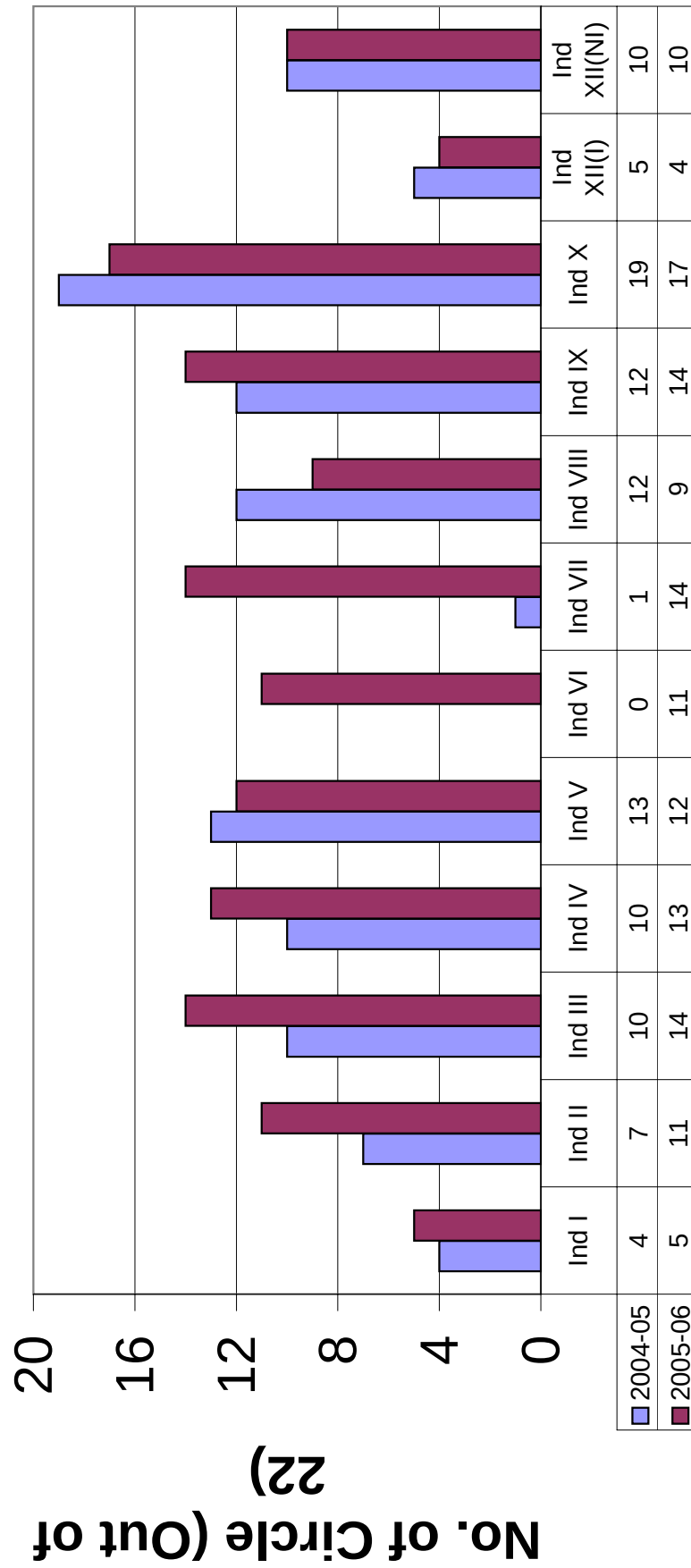
VG =VERY GOOD, G=GOOD, M=MODERATE, F=FAIR, BA=BELOW AVERAGE, NO IRR=NO IRRIGATION  
 NOTE ; The performance is very much affected by availability of water in the reservoirs, which is dependent on rainfall in the year.

**APPENDIX-IV**  
**Major Projects Continued**

| Plan Group     | Circle          | Indicator Number |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |
|----------------|-----------------|------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
|                |                 | VII              |         |         | VIII    |         |         | IX      |         |         | X       |         |         | XII Irr |         |         | XII NI  |         |         |
|                |                 | 2004-05          | 2005-06 | 2004-05 | 2004-06 | 2005-05 | 2004-06 | 2004-05 | 2004-06 | 2005-05 | 2004-05 | 2004-06 | 2005-05 | 2004-05 | 2004-06 | 2005-05 | 2004-05 | 2004-06 | 2005-05 |
| Highly Deficit | CADA Solapur    | BA               | VG      | BA      | F       | VG      | BA      | VG      | BA      | M       | M       | M       | F       | BA      | BA      | VG      | VG      | VG      | G       |
| Deficit        | AIC Akola       | BA               | BA      | VG      | F       | VG      | VG      | BA      | BA      | M       | VG      | G       | BA      | BA      | BA      | M       | G       | G       | G       |
|                | CADA Aurangabad | F                | VG      | VG      | M       | VG      | BA      | BA      | BA      | F       | G       | M       | BA      | VG      | VG      | G       | G       | G       | G       |
|                | CADA Beed       | BA               | BA      | VG      | VG      | VG      | BA      | BA      | BA      | G       | G       | G       | G       | BA      | BA      | BA      | M       | M       | M       |
|                | CADA Jalgaon    | BA               | M       | BA      | F       | VG      | BA      | VG      | VG      | VG      | VG      | VG      | VG      | F       | VG      | G       | G       | G       | G       |
|                | NIC Nanded      | BA               | F       | F       | BA      | BA      | BA      | BA      | BA      | G       | G       | G       | F       | G       | F       | M       | M       | M       | M       |
|                | CADA Nashik     | F                | VG      | VG      | VG      | VG      | VG      | VG      | VG      | VG      | VG      | VG      | VG      | VG      | VG      | M       | VG      | VG      | VG      |
|                | BIPC Buldhana   | M                | VG      | M       | BA      | VG      | BA      | VG      | VG      | VG      | VG      | VG      | VG      | BA      | BA      | VG      | BA      | BA      | BA      |
| Normal         | AIC Akola       | BA               | VG      | VG      | G       | NO IRR  | VG      | VG      | VG      | VG      | VG      | VG      | VG      | BA      | BA      | F       | G       | G       | G       |
|                | NIC Nagpur      | BA               | VG      | VG      | BA      | VG      | BA      | VG      | VG      | G       | G       | VG      | BA      | BA      | BA      | G       | F       | F       | F       |
|                | CIPC Chandrapur | BA               | VG      | BA      | BA      | BA      | BA      | BA      | BA      | G       | G       | VG      | BA      | BA      | BA      | BA      | BA      | BA      | BA      |
|                | YIC Yeotmal     | BA               | BA      | F       | BA      | BA      | BA      | BA      | BA      | G       | G       | BA      | VG      | BA      | BA      | BA      | BA      | BA      | BA      |
|                | CADA Pune       | BA               | BA      | BA      | BA      | VG      | BA      | VG      | VG      | VG      | VG      | G       | VG      | M       | VG      | BA      | BA      | BA      | BA      |
|                | PIC Pune        | BA               | VG      | VG      | VG      | VG      | VG      | VG      | VG      | M       | M       | M       | BA      | F       | BA      | F       | M       | M       | M       |
|                | UWPC Amravati   | BA               | VG      | BA      | BA      | F       | NO IRR  | VG      | VG      | VG      | VG      | VG      | BA      | BA      | BA      | G       | VG      | VG      | VG      |
|                | CADA Nashik     | F                | F       | VG      | VG      | BA      | BA      | BA      | BA      | G       | G       | G       | F       | BA      | BA      | M       | M       | M       | M       |
|                | CADA Jalgaon    | M                | BA      | VG      | VG      | BA      | BA      | BA      | BA      | G       | VG      | VG      | BA      | BA      | BA      | BA      | M       | M       | M       |
| Surplus        | CADA Nagpur     | G                | VG      | VG      | VG      | VG      | VG      | VG      | VG      | F       | VG      | VG      | BA      | BA      | BA      | G       | G       | G       | G       |
| Abundant       | CADA Pune       | BA               | VG      | F       | M       | VG      | VG      | VG      | VG      | G       | M       | M       | BA      | BA      | BA      | F       | M       | M       | M       |
|                | CIPC Chandrapur | BA               | VG      | BA      | BA      | VG      | BA      | VG      | VG      | VG      | VG      | VG      | BA      | BA      | BA      | VG      | VG      | VG      | VG      |
|                | SIC Sangli      | BA               | VG      | G       | G       | VG      | VG      | VG      | VG      | G       | G       | G       | F       | M       | M       | M       | F       | F       | F       |
|                | TIC Thane       | BA               | VG      | VG      | VG      | VG      | VG      | VG      | VG      | BA      | VG      | VG      | BA      | BA      | BA      | VG      | VG      | VG      | G       |

VG = VERY GOOD, G = GOOD, M = MODERATE, F = FAIR, BA=BELOW AVERAGE, NO IRR= NO IRRIGATION  
NOTE ; The performance is very much affected by availability of water in the reservoirs, which is dependent on rainfall in the year.

## Progress in Major Projects



**Indicator**

2004-05 2005-06



## Medium Projects

| Plan Group     | Circle          | Indicator Number |         |         |         |         |         |         |         |         |         |         |         |
|----------------|-----------------|------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
|                |                 | I                |         |         | II      |         |         | III     |         |         | IV      |         |         |
|                |                 | 2004-05          | 2005-06 | 2006-07 | 2004-05 | 2005-06 | 2006-07 | 2004-05 | 2005-06 | 2006-07 | 2004-05 | 2005-06 | 2006-07 |
| Highly deficit | CADA Solapur    | BA               | M       |         | F       |         | VG      | VG      | M       |         | VG      |         |         |
|                | PIC Pune        | F                | G       |         | F       |         | M       | VG      | F       |         | VG      |         |         |
|                | CADA Beed       | M                | G       |         | BA      |         | F       | M       | G       |         | VG      |         |         |
| Deficit        | CADA Beed       | F                | G       |         | M       |         | BA      | M       | VG      |         | VG      |         |         |
|                | CADA Nashik     | M                | M       |         | BA      |         | F       | VG      | VG      |         | VG      |         |         |
|                | NIC Nanded      | M                | G       |         | BA      |         | M       | G       | M       |         | VG      |         |         |
|                | CADA Abad       | G                | G       |         | BA      |         | F       | VG      | VG      |         | VG      |         |         |
|                | BIPC Buldhana   | G                | BA      |         | M       |         | BA      | F       | VG      |         | VG      |         |         |
|                | CADA Jalgaon    | G                | G       |         | VG      |         | VG      | F       | G       |         | VG      |         |         |
|                | AIC Akola       | F                | G       |         | F       |         | F       | VG      | VG      |         | VG      |         |         |
| Normal         | CADA Abad       | NO IRR           | NO IRR  |         | NO IRR  |         | NO IRR  | NO IRR  | NO IRR  |         | NO IRR  |         |         |
|                | YIC Yeotmal     | NO IRR           | BA      |         | NO IRR  |         | BA      | NO IRR  | F       |         | NO IRR  |         |         |
|                | NIC Nanded      | BA               | M       |         | BA      |         | F       | F       | F       |         | M       |         |         |
|                | CADA Nagpur     | BA               | G       |         | VG      |         | BA      | BA      | BA      |         | VG      |         |         |
|                | AIC Akola       | BA               | G       |         | BA      |         | F       | BA      | VG      |         | G       |         |         |
|                | PIC Pune        | M                | M       |         | F       |         | VG      | VG      | VG      |         | VG      |         |         |
|                | CIPC Chandrapur | G                | M       |         | F       |         | BA      | G       | G       |         | G       |         |         |
|                | CADA Jalgaon    | G                | G       |         | F       |         | VG      | VG      | VG      |         | VG      |         |         |
|                | CADA Nashik     | G                | F       |         | BA      |         | VG      | G       | G       |         | VG      |         |         |
|                | CADA Beed       | BA               | M       |         | BA      |         | VG      | VG      | G       |         | VG      |         |         |
| Surplus        | CADA Nagpur     | BA               | F       |         | VG      |         | M       | F       | F       |         | VG      |         |         |
|                | CIPC Chandrapur | G                | G       |         | G       |         | F       | M       | F       |         | F       |         |         |
| Abundant       | CIPC Chandrapur | F                | M       |         | VG      |         | M       | M       | F       |         | VG      |         |         |
|                | SIC Sangli      | G                | G       |         | F       |         | F       | G       | VG      |         | M       |         |         |
|                | TIC Thane       | BA               | BA      |         | BA      |         | BA      | BA      | BA      |         | BA      |         |         |
|                | KIC Ratnagiri   | BA               | BA      |         | BA      |         | BA      | VG      | VG      |         | BA      |         |         |

VG = VERY GOOD, G = GOOD, M = MODERATE, F = FAIR, BA=BELOW AVERAGE ,

NO IRR= NO IRRIGATION, NR= NO RECOVERY

NOTE ; The performance is very much affected by availability of water in the reservoirs, which is dependent on rainfall in the year.

### Medium Projects continued

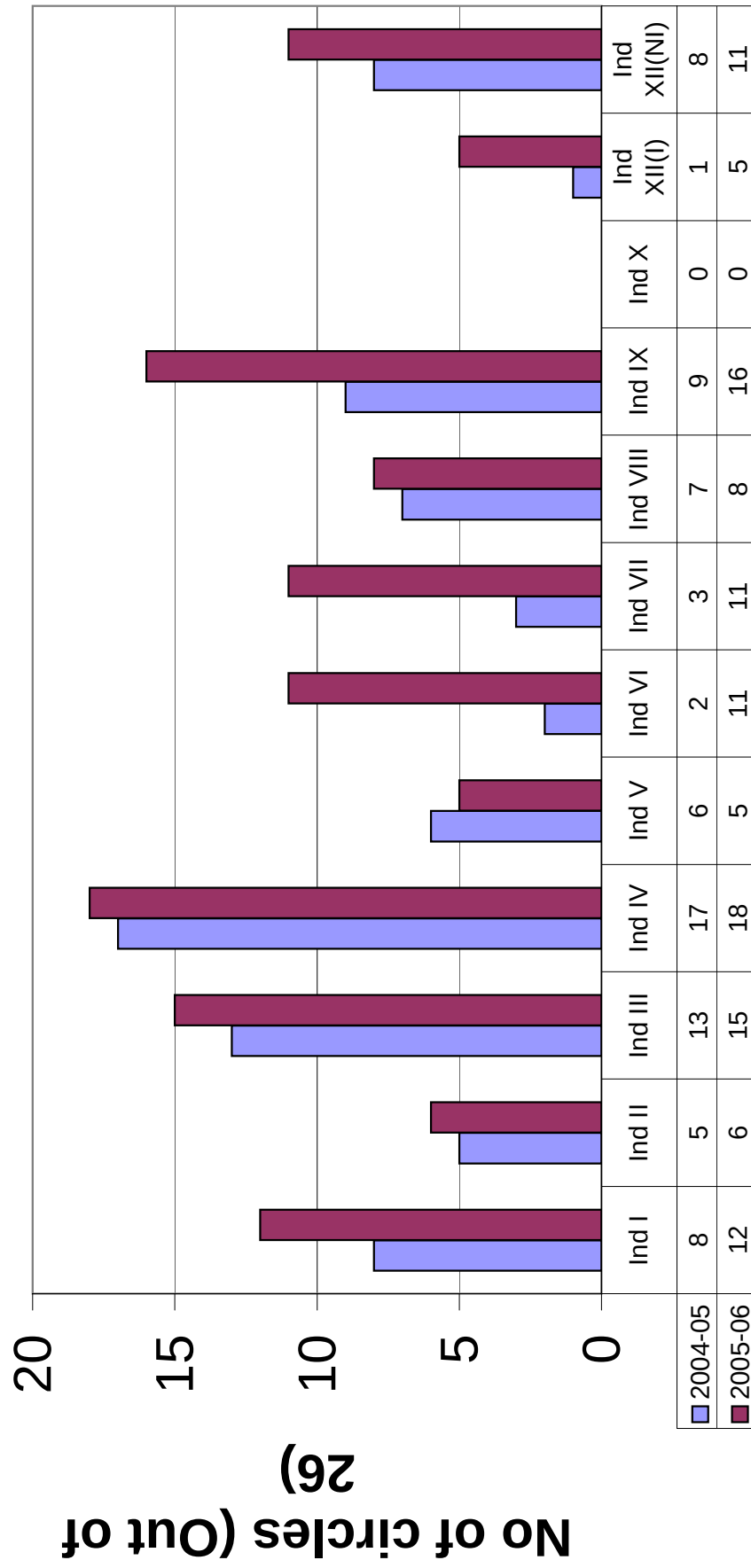
| Plan Group     | Circle          | Indicator Number |         |         |         |         |         |         |         |         |         |         |         |
|----------------|-----------------|------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
|                |                 | VII              |         |         | VIII    |         |         | IX      |         |         | XII Irr |         |         |
|                |                 | 2004-05          | 2005-06 | 2006-07 | 2004-05 | 2005-06 | 2006-07 | 2004-05 | 2005-06 | 2006-07 | 2004-05 | 2005-06 | 2006-07 |
| Highly deficit | CADA Solapur    | BA               | BA      | BA      | M       | F       | VG      | BA      | VG      | BA      | BA      | VG      | M       |
|                | PIC Pune        | BA               | BA      | BA      | BA      | VG      | BA      | BA      | BA      | F       | BA      | VG      | VG      |
|                | CADA Beed       | F                | VG      | VG      | BA      | BA      | G       | VG      | G       | NO IRR  | BA      | BA      | G       |
| Deficit        | CADA Beed       | G                | VG      | VG      | G       | G       | VG      | F       | VG      | M       | F       | BA      | BA      |
|                | CADA Nashik     | F                | VG      | VG      | BA      | VG      | VG      | VG      | BA      | VG      | VG      | BA      | VG      |
|                | NIC Nanded      | BA               | G       | M       | M       | BA      | BA      | BA      | BA      | F       | BA      | M       | M       |
|                | CADA Abad       | M                | VG      | VG      | F       | BA      | BA      | BA      | BA      | BA      | BA      | BA      | BA      |
|                | BIPC Buldhana   | BA               | NO IRR  | VG      | VG      | VG      | NO IRR  | VG      | NO IRR  | M       | VG      | VG      | VG      |
|                | CADA Jalgaon    | BA               | BA      | BA      | BA      | BA      | VG      | BA      | VG      | BA      | M       | F       | M       |
| Normal         | AIC Akola       | BA               | BA      | BA      | VG      | BA      | VG      | BA      | VG      | BA      | F       | M       | VG      |
|                | CADA Abad       | F                | BA      | BA      | BA      | VG      | NO IRR  | NO IRR  | NO IRR  | NO IRR  | NR      | NR      | F       |
|                | YIC Yeotmal     | NO IRR           | VG      | NO IRR  | NO IRR  | NO IRR  | NO IRR  | NO IRR  | VG      | NO IRR  | NR      | BA      | BA      |
|                | NIC Nanded      | BA               | BA      | BA      | VG      | BA      | BA      | BA      | BA      | BA      | BA      | F       | G       |
|                | CADA Nagpur     | BA               | VG      | VG      | VG      | VG      | VG      | F       | M       | F       | BA      | G       | G       |
|                | AIC Akola       | BA               | VG      | VG      | VG      | F       | VG      | BA      | VG      | BA      | BA      | BA      | G       |
|                | PIC Pune        | BA               | VG      | VG      | F       | F       | VG      | VG      | VG      | BA      | F       | M       | G       |
|                | CIPC Chandrapur | BA               | M       | VG      | VG      | VG      | VG      | BA      | VG      | BA      | BA      | G       | G       |
|                | CADA Jalgaon    | G                | F       | BA      | BA      | F       | VG      | F       | VG      | F       | VG      | BA      | M       |
|                | CADA Nashik     | BA               | BA      | BA      | BA      | BA      | VG      | BA      | VG      | M       | BA      | NR      | BA      |
|                | CADA Beed       | F                | VG      | BA      | BA      | BA      | VG      | VG      | VG      | NO IRR  | BA      | NR      | NR      |
|                | CADA Nagpur     | BA               | F       | F       | F       | BA      | VG      | VG      | VG      | BA      | F       | G       | F       |
| Surplus        | CIPC Chandrapur | F                | M       | BA      | BA      | BA      | VG      | M       | VG      | F       | BA      | F       | F       |
|                | CIPC Chandrapur | BA               | M       | BA      | BA      | BA      | VG      | VG      | VG      | F       | BA      | VG      | G       |
|                | SIC Sangli      | G                | VG      | F       | F       | F       | G       | VG      | G       | F       | VG      | BA      | BA      |
|                | TIC Thane       | BA               | BA      | BA      | BA      | BA      | VG      | VG      | BA      | BA      | BA      | NR      | NR      |
|                | KIC Ratnagiri   | BA               | BA      | BA      | BA      | VG      | VG      | BA      | BA      | F       | VG      | G       | NR      |

VG = VERY GOOD, G = GOOD, M = MODERATE, F = FAIR, BA=BELOW AVERAGE

NO IRR= NO IRRIGATION, NR= NO RECOVERY

NOTE ; The performance is very much affected by availability of water in the reservoirs, which is dependent on rainfall in the year.

## Progress in Medium Projects



### Indicator

2004-05 2005-06

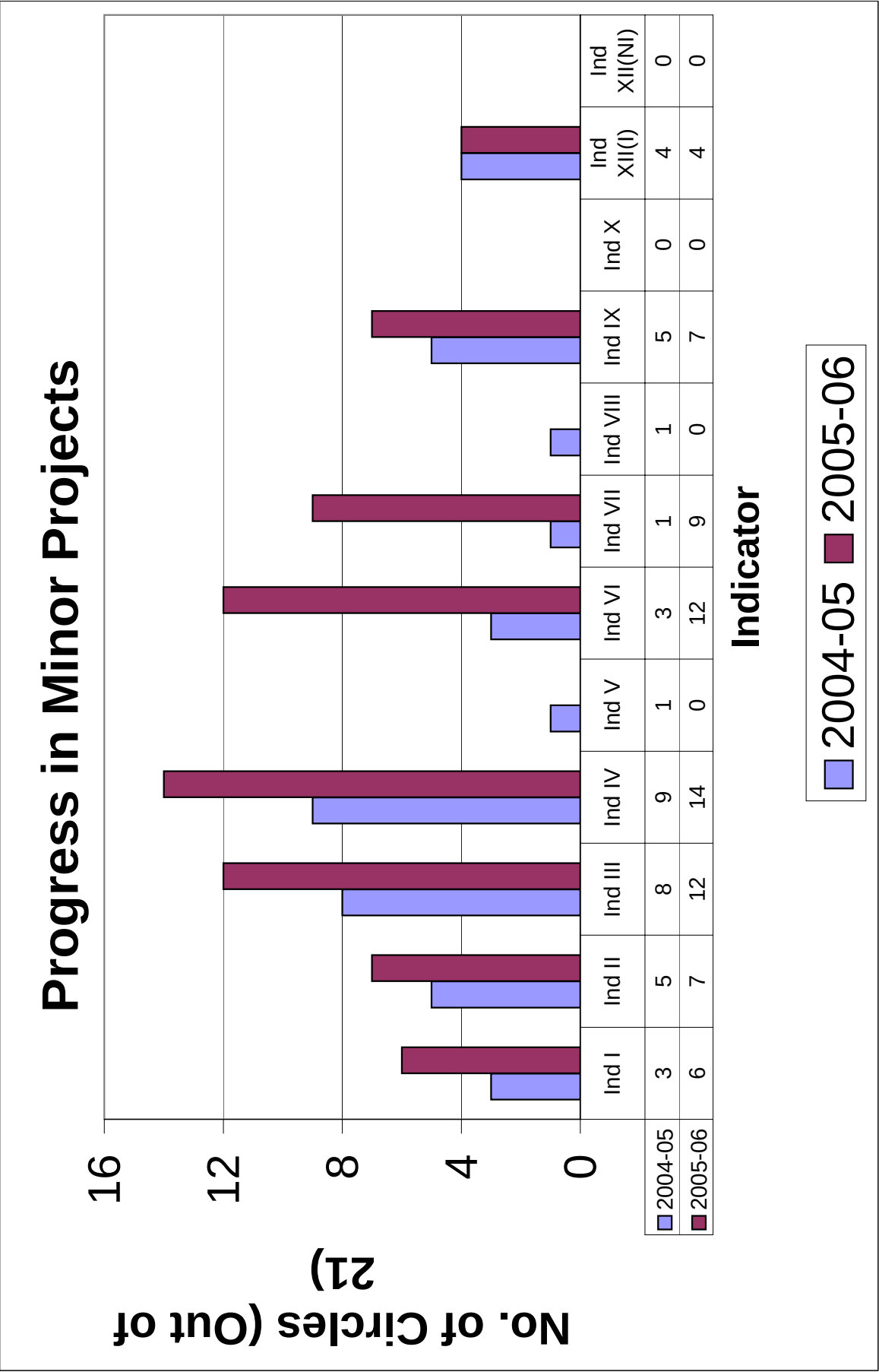
### Minor Projects

| At a glance evaluation of performance of Irrigation Circles (Service providers) for 2004-05 & 2005-06 |                 | Indicator Number |         |         |         |         |         |         |         |         |         |         |         |
|-------------------------------------------------------------------------------------------------------|-----------------|------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Plan Group                                                                                            | Circle          | I                |         | II      |         | III     |         | IV      |         | V       |         | VI      |         |
|                                                                                                       |                 | 2004-05          | 2005-06 | 2004-05 | 2005-06 | 2004-05 | 2005-06 | 2004-05 | 2005-06 | 2004-05 | 2005-06 | 2004-05 | 2005-06 |
| Highly Deficit                                                                                        | CADA Solapur    | BA               | VG      | VG      | VG      | VG      | VG      | VG      | VG      | BA      | BA      | BA      | VG      |
|                                                                                                       | CADA Beed       | VG               | M       | BA      | VG      | BA      | M       | F       | M       | BA      | BA      | BA      | VG      |
| Deficit                                                                                               | AIC Akola       | BA               | M       | VG      | F       | VG      | F       | VG      | F       | BA      | BA      | BA      | BA      |
|                                                                                                       | CADA Beed       | F                | G       | BA      | F       | BA      | G       | M       | VG      | BA      | BA      | BA      | VG      |
|                                                                                                       | BIPC Buldhana   | F                | M       | G       | BA      | VG      | VG      | VG      | VG      | BA      | F       | VG      | VG      |
|                                                                                                       | CADA Jalgaon    | M                | G       | G       | VG      | M       | F       | VG      | F       | BA      | BA      | G       | F       |
|                                                                                                       | NIC Nanded      | M                | F       | BA      | BA      | F       | VG      | M       | G       | BA      | BA      | BA      | BA      |
|                                                                                                       | CADA Nashik     | F                | G       | BA      | M       | F       | M       | BA      | G       | BA      | BA      | BA      | BA      |
|                                                                                                       | CADA Aurangabad | BA               | G       | BA      | BA      | VG      | VG      | F       | VG      | BA      | BA      | BA      | VG      |
| Normal                                                                                                | YIC Yavatmal    | NO IRR           | BA      | NO IRR  | NO IRR  | NO IRR  | VG      | NO IRR  | VG      | NO IRR  | BA      | NO IRR  | VG      |
|                                                                                                       | CADA Nagpur     | BA               | BA      | M       | M       | VG      | VG      | VG      | VG      | BA      | BA      | BA      | BA      |
|                                                                                                       | NIC Nanded      | M                | M       | BA      | M       | F       | M       | G       | VG      | BA      | BA      | BA      | BA      |
|                                                                                                       | PIC Pune        | VG               | G       | VG      | VG      | F       | VG      | F       | VG      | VG      | F       | BA      | VG      |
|                                                                                                       | CADA Nashik     | VG               | F       | F       | VG      | VG      | F       | VG      | VG      | BA      | BA      | M       | VG      |
|                                                                                                       | CADA Pune       | BA               | BA      | BA      | BA      | M       | M       | BA      | VG      | BA      | BA      | M       | VG      |
| Surplus                                                                                               | CADA Nagpur     | BA               | F       | M       | M       | M       | F       | VG      | VG      | BA      | BA      | BA      | VG      |
| Abundant                                                                                              | SIC Sangli      | BA               | BA      | BA      | VG      | BA      | VG      | BA      | F       | BA      | BA      | BA      | BA      |
|                                                                                                       | CIPC Chandrapur | BA               | F       | F       | G       | F       | F       | BA      | BA      | BA      | BA      | BA      | VG      |
|                                                                                                       | TIC Thane       | BA               | BA      | F       | F       | F       | VG      | BA      | F       | BA      | F       | BA      | BA      |
|                                                                                                       | KIC Ratnagiri   | BA               | BA      | BA      | BA      | VG      | VG      | VG      | VG      | BA      | BA      | G       | G       |
|                                                                                                       | NKIPC Thane     | BA               | BA      | BA      | BA      | VG      | VG      | BA      | F       | BA      | BA      | BA      | BA      |

## Minor Projects

| Plan Group     | Circle          | Indicator Number |         |         |         |         |         |         |         |         |         |         |         |
|----------------|-----------------|------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
|                |                 | VII              |         |         | VIII    |         |         | IX      |         |         | XII Irr |         |         |
|                |                 | 2004-05          | 2005-06 | 2004-05 | 2005-06 | 2004-05 | 2004-05 | 2005-06 | 2004-05 | 2004-05 | 2005-06 | 2004-05 | 2005-06 |
| Highly Deficit | CADA Solapur    | BA               | BA      | BA      | BA      | BA      | BA      | BA      | BA      | BA      | VG      | VG      | BA      |
|                | CADA Beed       | BA               | VG      | BA      | BA      | BA      | BA      | BA      | BA      | BA      | M       | NO IRR  | BA      |
| Deficit        | AIC Akola       | BA               | BA      | VG      | BA      | BA      | BA      | BA      | BA      | BA      | VG      | M       | BA      |
|                | CADA Beed       | BA               | VG      | BA      | BA      | BA      | BA      | BA      | BA      | BA      | F       | BA      | BA      |
|                | BIPC Buldhana   | BA               | VG      | BA      | BA      | BA      | BA      | BA      | BA      | BA      | VG      | BA      | F       |
|                | CADA Jalgaon    | BA               | BA      | BA      | BA      | BA      | BA      | F       | BA      | BA      | M       | F       | F       |
|                | NIC Nanded      | BA               | BA      | BA      | BA      | BA      | BA      | BA      | BA      | BA      | F       | BA      | BA      |
|                | CADA Nashik     | BA               | BA      | NO IRR  | NO IRR  | NO IRR  | NO IRR  | NO IRR  | BA      | BA      | BA      | F       | VG      |
|                | CADA Aurangabad | G                | G       | NO IRR  | NO IRR  | NO IRR  | NO IRR  | NO IRR  | BA      | NO IRR  | NO IRR  | NO IRR  | VG      |
| Normal         | YIC Yavatmal    | NO IRR           | NO IRR  | NO IRR  | NO IRR  | NO IRR  | NO IRR  | NO IRR  | NO IRR  | NO IRR  | NO IRR  | NO IRR  | VG      |
|                | CADA Nagpur     | BA               | BA      | BA      | BA      | BA      | NO IRR  | M       | BA      | BA      | BA      | BA      | G       |
|                | NIC Nanded      | BA               | BA      | BA      | BA      | BA      | BA      | BA      | BA      | BA      | BA      | BA      | BA      |
|                | PIC Pune        | BA               | BA      | BA      | BA      | BA      | BA      | BA      | BA      | VG      | VG      | G       | F       |
|                | CADA Nashik     | M                | VG      | BA      | BA      | BA      | NO IRR  | BA      | BA      | BA      | VG      | G       | M       |
|                | CADA Pune       | BA               | BA      | BA      | BA      | BA      | F       | VG      | VG      | BA      | BA      | VG      | F       |
| Surplus        | CADA Nagpur     | BA               | G       | BA      | BA      | BA      | BA      | VG      | VG      | VG      | VG      | F       | M       |
| Abundant       | SIC Sangli      | BA               | BA      | BA      | BA      | BA      | NO IRR  | BA      | BA      | BA      | BA      | F       | M       |
|                | CIPC Chandrapur | BA               | VG      | BA      | BA      | BA      | BA      | BA      | BA      | BA      | M       | BA      | F       |
|                | TIC Thane       | F                | VG      | BA      | BA      | BA      | BA      | VG      | VG      | BA      | BA      | BA      | VG      |
|                | KIC Ratnagiri   | BA               | VG      | NO IRR  | BA      | BA      | BA      | BA      | BA      | BA      | BA      | BA      | BA      |
|                | NKIPC Thane     | F                | BA      | BA      | BA      | BA      | BA      | BA      | BA      | BA      | BA      | F       | BA      |

VG=VERY GOOD, G=GOOD, M=MODERATE, F=FAIR, BA=BELOW AVERAGE, NO IRR=NO IRRIGATION  
 NOTE ; The performance is very much affected by availability of water in the reservoirs, which is dependent on rainfall in the year.



Appendix-V

| Overview of Projects selected for Benchmarking (Major Projects) |                  |                         |                              |                                          |                                              |                                     |                            |                           |                                                |                                 |                   |                                                              |                           |
|-----------------------------------------------------------------|------------------|-------------------------|------------------------------|------------------------------------------|----------------------------------------------|-------------------------------------|----------------------------|---------------------------|------------------------------------------------|---------------------------------|-------------------|--------------------------------------------------------------|---------------------------|
| Plan Group /SB No                                               | Circle/ Project  | Avg. Annual Rainfall mm | Designed                     |                                          |                                              | Year of Commence ment of Irrigation | Culturable Command Area Ha | Irrigable command area Ha | Max.Live Storage observed on 15th October 2005 | 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                    | 1689.11                                        | 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                      | 56.74                                          | 30                              | 1.5 to 2          | Wheat, Peas, Cotton, Sunflower.                              | 11187 7166                |
| 10                                                              | Nalganga         | 737                     | 69.32                        | 53.21                                    | 6.51                                         | 1963                                | 9165                       | 8604                      | 5.63                                           | 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                    | 1927.72                                        | 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                              | 21929 10597               |
| 2                                                               | Majalgaon        | 840                     | 312.00                       | 680.28                                   | 46.88                                        | 1989-90                             | 64295                      | 54737                     | 312.00                                         | 132                             | 1 to 2            | Wheat, Sorghum, Cotton, Sugarcane                            | 5147 3259                 |
| 4                                                               | Manjira          | 685                     | 173.32                       | 185.64                                   | 85.67                                        | 1980-81                             | 23690                      | 18223                     | 176.50                                         | 80                              | 2.03              | -do-                                                         | ND                        |
| 4                                                               | Lower Terna      | 710                     | 113.95                       | 62.50                                    | 21.05                                        | 1997-98                             | 14513                      | 11610                     | 37.52                                          | 63                              | 1 to 1.5          | Sorghum, Wheat, Sunflower, Groundnut, Gram                   |                           |
| <b>CADA Jalgaon</b>                                             |                  |                         |                              |                                          |                                              |                                     |                            |                           |                                                |                                 |                   |                                                              |                           |
| 11                                                              | Gima             | 743                     | 523.55                       | 549.66                                   | 0                                            | 1962-63                             | 79293                      | 69350                     | 523.55                                         | 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                    |

| 1  | 2                    | 3    | 4      | 5      | 6      | 7       | 8      | 9     | 10     | 11  | 12       | 13                                                               | 14    | 15    |
|----|----------------------|------|--------|--------|--------|---------|--------|-------|--------|-----|----------|------------------------------------------------------------------|-------|-------|
|    | <b>NIC Nanded</b>    |      |        |        |        |         |        |       |        |     |          |                                                                  |       |       |
| 2  | Vishnupuri           | 910  | 81.37  | 275.18 | 54.37  | 1990    | 37785  | 28340 | 80.79  | 46  | 2.06     | -do-                                                             | 1069  | 0     |
| 3  | Puma                 | 685  | 809.77 | 732.33 | 68.67  | 1968-69 | 78485  | 57988 | 499.31 | 232 | 1 to 2   | Cotton, Wheat, Sorghum                                           | 24459 | 4486  |
| 4  | Manar                | 850  | 128.68 | 198.06 | 5.94   | 1968    | 27745  | 23310 | 138.33 | 96  | 1.55     | Wheat, Gram, Sugarcane, Cotton, Groundnut, Sorghum               | 4523  | 4523  |
|    | <b>UWPC Amravati</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>AIC Akola</b>     |      |        |        |        |         |        |       |        |     |          |                                                                  |       |       |
| 6  | Arunawati            | 913  | 169.67 | 121.65 | 15.62  | 1995    | 24135  | 20515 | 129.69 | 73  | 2 to 3   | Cotton, Wheat, Sugarcane                                         | 24135 | 366   |
| 6  | Pus                  | 945  | 91.26  | 100.35 | 19.06  | 1972    | 13678  | 8215  | 91.26  | 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 | 303.73 | 110 | 4 to 5   | Sorghum, Wheat, Grass, Maize, Sunflower, Sugarcane               | 9300  | 705   |
| 1  | Mula                 | 500  | 608.89 | 540.27 | 87.90  | 1972    | 138792 | 82920 | 608.89 | 160 | 4 to 5   |                                                                  | 91719 | 28668 |
| 1  | Ozerkhed             | 746  | 60.32  | 31.59  | 2.19   | 1985    | 14856  | 10400 | 60.31  | 35  | 0.8      | Wheat, Sorghum, Gram                                             | 7849  | 2143  |
| 1  | Palkhed              | 661  | 187.47 | 82.90  | 46.85  | 1976    | 60704  | 43154 | 6.05   | 144 | 0.8      | Gram, Sorghum                                                    | 50345 | 14144 |
| 1  | Waghad               | 964  | 72.23  | 36.53  | 3.50   | 1981    | 9642   | 6750  | 70.84  | 23  | 0.6      | Paddy, Onion, Vegetables, Groundnut, Bajri, Wheat, Gram, Sorghum | 9557  | 9429  |
| 1  | Darna                | 550  | 202.40 | 135.73 | 66.67  | 1918    | 88822  | 33170 | 200.22 | 146 | 2        | Sugarcane, Sorghum, Bajri, Wheat, Gram, Fruits                   | 7906  | 6691  |
| 1  | Gangapur             | 500  | 203.85 | 86.78  | 117.07 | 1954    | 21900  | 15960 | 158.48 | 92  | 1.3      | -do-                                                             | 3239  | 1834  |
| 1  | Kadwa                | 533  | 52.90  | 61.96  | 8.46   | 1997    | 15523  | 10117 | \      | 42  | 0.47     | -do-                                                             | 465   | 345   |



| 1  | 2                      | 3    | 4      | 5      | 6      | 7       | 8      | 9      | 10      | 11  | 12         | 13                                                            | 14     | 15    |
|----|------------------------|------|--------|--------|--------|---------|--------|--------|---------|-----|------------|---------------------------------------------------------------|--------|-------|
|    | <b>CADA Pune</b>       |      |        |        |        |         |        |        |         |     |            |                                                               |        |       |
| 17 | Kukadi                 | 790  | 864.64 | 951.29 | 0      | 1978    | 224699 | 156278 | 343.07  | 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   |
|    | <b>CIPC Chandrapur</b> |      |        |        |        |         |        |        |         |     |            |                                                               |        |       |
| 7  | Bor                    | 1327 | 127.42 | 109.29 | 6.35   | 1967    | 24055  | 13360  | 98.90   | 77  | 1.5 to 2   | Cotton, Wheat                                                 | 18169  | 10761 |
|    | <b>NIC Nagpur</b>      |      |        |        |        |         |        |        |         |     |            |                                                               |        |       |
| 7  | Lower Wuma             | 1330 | 189.18 | 148.00 | 29     | 1991    | 21591  | 19500  | 187.88  | 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 | 401.71  | 356 | 1 to 2     | Cotton, Wheat, Sorghum,                                       | 23589  | 7355  |
|    | <b>PIC Pune</b>        |      |        |        |        |         |        |        |         |     |            |                                                               |        |       |
| 17 | Khadakwasla            | 911  | 712.00 | 602.55 | 204    | 1970    | 83302  | 62146  | 778.48  | 96  | 0.5 to 5   | Sorghum, Bajri, Maize, Wheat, Sugarcane                       | 83302  | 3180  |
| 17 | Pawana                 | 2210 | 274.00 | 96.50  | 168.32 | 1975    | 7468   | 6365   | 235.68  | 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  | 665.43  | 214 | 1.7        | Sugarcane, Sorghum, Bajri, Wheat, Other Perennials            | 181266 | 390   |
|    | <b>UWPC Amravati</b>   |      |        |        |        |         |        |        |         |     |            |                                                               |        |       |
| 7  | Upper Wardha           | 840  | 614.79 | 302.78 | 99.72  | 1994-95 | 83300  | 75000  | 582.86  | 279 | 1.5        | Cotton, Wheat, Hy. Jowar, Chilli, Groundnut                   | 83300  | 340   |
|    | <b>Surplus</b>         |      |        |        |        |         |        |        |         |     |            |                                                               |        |       |
|    | <b>CADA Nagpur</b>     |      |        |        |        |         |        |        |         |     |            |                                                               |        |       |
| 8  | Bagh Sirpur            | 1325 | 268.96 | 214.44 | 0      | 1971    | 0      | 0      | 207.78  | 0   | 1 to 2     | -do-                                                          | 29703  | 3511  |
| 8  | Pench                  | 1138 | 180.00 | 689.00 | 243    | 1976    | 126913 | 101200 | 1249.00 | 407 | 1 to 2     | Paddy, Cotton, Chilly, Wheat, Gram, Sunflower, Soybean        | 126913 | 11180 |
| 8  | Itiadh                 | 1336 | 318.86 | 412.04 | 0      | 1971    | 22752  | 17500  | 287.08  | 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  |

| 1  | 2                 | 3    | 4       | 5      | 6      | 7       | 8      | 9     | 10     | 11  | 12         | 13                                  | 14     | 15   |
|----|-------------------|------|---------|--------|--------|---------|--------|-------|--------|-----|------------|-------------------------------------|--------|------|
|    | CIPC Chandrapur   |      |         |        |        |         |        |       |        |     |            |                                     |        |      |
| 9  | Asolamendha       | 1147 | 56.37   | 52.00  | 0      | 1918    | 37945  | 9919  | 42.63  | 67  | 1.5 to 2   | Paddy                               | 10317  | 0    |
| 9  | Dina              | 1315 | 55.94   | 55.94  | 0      | 1974    | 12494  | 7826  | 37.32  | 66  | 1.5 to 2   | -do-                                | 12494  | 0    |
|    | <b>SIC Sangli</b> |      |         |        |        |         |        |       |        |     |            |                                     |        |      |
| 15 | Radhanagari       | 3638 | 219.97  | 203.87 | 24.35  | 1955    | 35422  | 26560 | 226.25 | 91  | 0.5 to 1.5 | Sugarcane, Paddy, Wheat, Vegetables | 47288  | 366  |
| 15 | Tulashi           | 1870 | 89.31   | 91.92  | 42.50  | 1978    | 5711   | 4720  | 91.92  | 23  | 0.5 to 2   | -do-                                | 4495   | 0    |
| 15 | Warna             | 2092 | 779.35  | 578.05 | 6.46   | 1986-87 | 123463 | 96919 | 773.40 | 332 | 0.8        | -do-                                | 148972 | 0    |
| 15 | Dudhganga         | 2636 | 679.11  | 622.11 | 57     | 1993-94 | 46976  | 38388 | 672.67 | 125 | 1 to 2     | Sugarcane, Paddy, Wheat             | 61032  | 2000 |
|    | <b>TIC Thane</b>  |      |         |        |        |         |        |       |        |     |            |                                     |        |      |
| 21 | Surya             | 2286 | 176.48  | 145.42 | 31.06  | 1981-82 | 30547  | 14696 | 158.69 | 64  | 0.25       | Paddy                               | 400    | 0    |
| 21 | Bhatsa            | 2589 | 942.10  | 511.86 | 389.03 | 1985-86 | 29378  | 23000 | 838.63 | 149 | 0.39       | -do-                                | ND     |      |
| 21 | Rajanala          | 3461 | 339.140 | 32.00  | 0.00   | 1958-59 | 3050   | 2542  | 0.00   | 35  | 0.20       | Paddy                               | 400    |      |
| 22 | Kal               | 3020 | 522.76  | 156.41 | 54.70  | 1973-74 | 9558   | 7965  | 332.07 | 127 | 0.20       | -do-                                | 351    | 0    |
|    | ND= No Data       |      |         |        |        |         |        |       |        |     |            |                                     |        |      |

| Plan group/<br>SB No | Circle/ | Project     | Overview of Projects selected for Benchmarking (Medium Projects) |                                          |                                                      |                                                          |                                     |                   |                             |                                                |                                   |                                 |                     |            |                                                        |             | Area covered under WUA (ha) |  |
|----------------------|---------|-------------|------------------------------------------------------------------|------------------------------------------|------------------------------------------------------|----------------------------------------------------------|-------------------------------------|-------------------|-----------------------------|------------------------------------------------|-----------------------------------|---------------------------------|---------------------|------------|--------------------------------------------------------|-------------|-----------------------------|--|
|                      |         |             | Avg. Annual Rainfall (mm)                                        | Designed Live Storage (Mm <sup>3</sup> ) | Designed Water use for Irrigation (Mm <sup>3</sup> ) | Designed Water use for Non irrigation (Mm <sup>3</sup> ) | Year of Commence ment of Irrigation | Command Area (ha) | Irrigable command area (ha) | Max Live Storage observed on 15th October 2005 | Total No. of farmers benefit zone | No. of villages in benefit zone | Avg. farm size (ha) | Main crops | Proposed                                               | Handed over |                             |  |
|                      |         |             |                                                                  |                                          |                                                      |                                                          |                                     |                   |                             |                                                |                                   |                                 |                     |            |                                                        |             |                             |  |
| 1                    |         | 2           | 3                                                                | 4                                        | 5                                                    | 6                                                        | 7                                   | 8                 | 9                           | 10                                             | 11                                | 12                              | 13                  | 14         | 15                                                     | 16          |                             |  |
| Highly Deficit       |         |             |                                                                  |                                          |                                                      |                                                          |                                     |                   |                             |                                                |                                   |                                 |                     |            |                                                        |             |                             |  |
| CADA Beed            |         |             |                                                                  |                                          |                                                      |                                                          |                                     |                   |                             |                                                |                                   |                                 |                     |            |                                                        |             |                             |  |
| 19                   |         | Banganga    |                                                                  | 685                                      | 4.93                                                 | 6.35                                                     | 0.59                                | 1975              | 964                         | 906                                            | 6.53                              | 545                             | 5.00                | 1 to 3     | Groundnut, Sorghum, Sunflower, Wheat                   | 540         | 0                           |  |
| 19                   |         | Chandani    |                                                                  | 770                                      | 18.29                                                | 20.59                                                    | 3.11                                | 1966              | 2891                        | 2024                                           | 8.95                              | 1716                            | 10.00               | 2 to 3     | Sorghum, Sunflower, Wheat, Pulses                      | 300         | 0                           |  |
| 19                   |         | Jakapur     |                                                                  | 770                                      | 7.43                                                 | 7.43                                                     | 0.00                                | 1979              | 1600                        | 1584                                           | 5.46                              | 1500                            | 4.00                | 2 to 3     | -do-                                                   | No Data     | No Data                     |  |
| 19                   |         | Kada        |                                                                  | 589                                      | 8.56                                                 | 8.38                                                     | 0.18                                | 1970              | 1804                        | 12214                                          | -1.44                             | 1407                            | 5.00                | 1 to 1.5   | Sorghum, Wheat, Groundnut, Sugarcane, Maize, Sunflower | No Data     | No Data                     |  |
| 19                   |         | Kadi        |                                                                  | 589                                      | 5.47                                                 | 5.47                                                     | 0.00                                | 1965              | 1190                        | 1084                                           | -2.11                             | 578                             | 4.00                | 0.5 to 4   | Sorghum, Wheat, Groundnut, Sugarcane, Sunflower        | No Data     | No Data                     |  |
| 19                   |         | Kambli      |                                                                  | 589                                      | 3.1                                                  | 3.10                                                     | 0.00                                | 1958              | 1047                        | 972                                            | 0.00                              | 1013                            | 5.00                | 1 to 1.5   | Sorghum, Wheat, Groundnut, Sugarcane, Maize, Sunflower | No Data     | No Data                     |  |
| 19                   |         | Khasapur    |                                                                  | 770                                      | 13.04                                                | 13.30                                                    | 2.55                                | 1954              | 3575                        | 2146                                           | 13.04                             | 1372                            | 15.00               | 2 to 3     | -do-                                                   | No Data     | No Data                     |  |
| 19                   |         | Khendeshwar |                                                                  | 685                                      | 7.85                                                 | 11.28                                                    | 0.00                                | 1981              | 1710                        | 1471                                           | 27.18                             | 810                             | 10.00               | 1 to 3     | Groundnut, Sorghum, Sunflower, Wheat                   | No Data     | No Data                     |  |
| 19                   |         | Kurnoor     |                                                                  | 770                                      | 32.28                                                | 32.18                                                    | 4.81                                | 1968              | 6414                        | 3644                                           | 32.28                             | 4331                            | 9.00                | 2 to 3     | Groundnut, Sugarcane, Sorghum, Sunflower, Wheat        | 628         | 270                         |  |
| 19                   |         | Mehakari    |                                                                  | 589                                      | 12.98                                                | 12.98                                                    | 0.00                                | 1966              | 5007                        | 4048                                           | -3.14                             | 2780                            | 8.00                | 1 to 1.5   | Sorghum, Wheat, Groundnut, Sugarcane, Maize, Sunflower | 617         | 0                           |  |
| 19                   |         | Ranganga    |                                                                  | 685                                      | 5.34                                                 | 6.50                                                     | 0.00                                | 1977              | 1017                        | 963                                            | 16.92                             | 585                             | 7.00                | 1 to 3     | Groundnut, Sorghum, Sunflower, Wheat                   | 1017        |                             |  |
| 19                   |         | Rooty       |                                                                  | 589                                      | 6.57                                                 | 6.09                                                     | 0.48                                | 1938              | 1943                        | 1862                                           | 35.37                             | 1059                            | 5.00                | 1 to 1.5   | Sorghum, Wheat, Vegetables, Sugarcane                  | No Data     | No Data                     |  |
| 19                   |         | Sakat       |                                                                  | 770                                      | 13.48                                                | 15.17                                                    | 0.00                                | 1994              | 3140                        | 2355                                           | 7.83                              | 923                             | 9.00                | 2 to 3     | -do-                                                   | 697         | 0                           |  |

| 1                   | 2               | 3    | 4     | 5     | 6     | 7    | 8    | 9    | 10    | 11   | 12   | 13         | 14                                                     | 15      | 16      |
|---------------------|-----------------|------|-------|-------|-------|------|------|------|-------|------|------|------------|--------------------------------------------------------|---------|---------|
| 19                  | Talwar          | 589  | 3.23  | 3.23  | 0.00  | 1960 | 760  | 668  | 42.71 | 530  | 4.00 | 0.5 to 1.5 | Sorghum, Wheat, Groundnut, Sugarcane, Maize, Sunflower | No Data | No Data |
| 19                  | Turori          | 770  | 5.73  | 5.73  | 1.70  | 1984 | 900  | 830  | 6.20  | 900  | 8.00 | 2 to 3     | -do-                                                   | No Data | No Data |
| <b>CADA Solapur</b> |                 |      |       |       |       |      |      |      |       |      |      |            |                                                        |         |         |
| 19                  | Ekrakh          | 500  | 61.16 | 43.21 | 15.95 | 1871 | 6858 | 2610 | 27.89 | 2000 | 11   | 1 to 1.5   | Sorghum, Wheat, Vegetables, Sugarcane                  | No Data | No Data |
| 18 AA               | Buddhihal       | 500  | 19.03 | 15.08 | 0.00  | 1966 | 5448 | 4251 | -4.05 | 1883 | 8    | 0.5 to 1.5 | Sorghum, Wheat, Groundnut, Sugarcane, Maize, Sunflower | 5444    | 0       |
| 19                  | Hingni (P)      | 500  | 31.97 | 37.83 | 1.68  | 1977 | 6482 | 5629 | 32.00 | 5000 | 15   | 1 to 1.5   | -do-                                                   | 5714    | 2228    |
| 19                  | Javalgon        | 500  | 29.18 | 29.37 | 6.15  | 1997 | 5372 | 5341 | 19.11 | 4500 | 13   | 1 to 1.5   | -do-                                                   | 4635    | 1245    |
| 18 AA               | Padawalkar wadi | 500  | 2.12  | 2.12  | 0.00  | 1973 | 458  | 352  |       | 250  | 2    | 1 to 1.5   | -do-                                                   | 458     | 0       |
| <b>PIC Pune</b>     |                 |      |       |       |       |      |      |      |       |      |      |            |                                                        |         |         |
| 19                  | Khairi          | 682  | 13.74 | 17.83 | 0     | 1989 | 2718 | 2318 | 13.74 | 1150 | 14   | 2          | Sorghum, Bajri, Wheat, Groundnut                       | 2318    | 0       |
| 16                  | Nher            | 508  | 11.79 | 11.79 | 0     | 1886 | 4324 | 2636 | 11.79 | 3440 | 18   | 1          | Bajari, Sorghum, Wheat other Non Perennial             | 4324    | 0       |
| 19                  | Sina            | 562  | 52.3  | 67.09 | 0.2   | 1984 | 9677 | 8445 | 9.46  | 9500 | 26   | 1          | Sorghum, Bajri, Wheat, Maize, Kadwal                   | 8445    | 0       |
| <b>Deficit</b>      |                 |      |       |       |       |      |      |      |       |      |      |            |                                                        |         |         |
| <b>AIC Akola</b>    |                 |      |       |       |       |      |      |      |       |      |      |            |                                                        |         |         |
| 10                  | Dnyanganga      | 732  | 33.93 | 33.80 | 8.69  | 1971 | 4494 | 4249 | 4.69  | 2962 | 21   | 1.5 to 2   | Wheat, Gram, Cotton                                    | 4494    | 158     |
| 10                  | Mas             | 696  | 15.04 | 21.48 | 8.09  | 1982 | 6107 | 4415 | 0.70  | 2900 | 22   | 2 to 3     | -do-                                                   | 6100    | 0       |
| 11                  | Morna           | 827  | 41.46 | 46.50 | 0.00  | 1972 | 6464 | 4633 | 15.49 | 2228 | 29   | 1 to 3     | Wheat, Gram, Cotton, Hy.Jawar                          | 6539    | 1935    |
| 11                  | Nirguna         | 812  | 28.85 | 34.50 | 0.00  | 1979 | 6377 | 5836 | 21.33 | 4574 | 20   | 1 to 2     | Wheat, Gram, Cotton, Hy.Jawar, Groundnut               | 6377    | 2565    |
| 10                  | Paldhag         | 766  | 7.51  | 10.40 | 0.37  | 1978 | 3082 | 1932 | 0.70  | 1534 | 14   | 1 to 2     | Wheat, Gram, Cotton                                    | 3032    | 563     |
| 10                  | Shahanur        | 1440 | 46.04 | 41.12 | 12.45 | 1990 | 9330 | 7466 | 46.04 | 7347 | 47   | 1.27       | Cotton, Sorghum, Wheat, Gram, Orange                   | 9330    | 0       |
| 10                  | Sonal           | 860  | 16.92 | 17.95 | 0.00  | 1981 | 3496 | 2447 | 6.15  | 2347 | 46   | 1 to 2     | Hy. Jawar, Sunflower, Cotton, Wheat, Gram              | 3293    | 764     |
| 10                  | Uma             | 818  | 11.68 | 10.23 | 0.92  | 1982 | 3007 | 2241 | 11.68 | 1996 | 21   | 1 to 3     | Wheat, Gram, Cotton, Hy.Jawar                          | 3007    | 267     |

| 1                      | 2              | 3   | 4      | 5     | 6    | 7       | 8    | 9    | 10    | 11   | 12 | 13     | 14                                                                          | 15      | 16      |
|------------------------|----------------|-----|--------|-------|------|---------|------|------|-------|------|----|--------|-----------------------------------------------------------------------------|---------|---------|
| <b>BIPC Buldhana</b>   |                |     |        |       |      |         |      |      |       |      |    |        |                                                                             |         |         |
| 10                     | Mun            | 761 | 36.83  | 45.10 | 0.00 | 1992-93 | 9735 | 7804 | 3.85  | 2782 | 32 | 2.5    | Cotton, Chilly, Sunflower                                                   | 9735    | 0       |
| 10                     | Torna          | 711 | 7.9    | 7.75  | 0.11 | 1994-95 | 1725 | 1465 | 0.50  | 753  | 7  | 2.5    | -do-                                                                        | 1725    | 0       |
| <b>CADA Aurangabad</b> |                |     |        |       |      |         |      |      |       |      |    |        |                                                                             |         |         |
| 11                     | Ajitha Andhari | 650 | 7.65   | 5.27  | 2.38 | 1984    | 1967 | 1578 | 1.20  | 500  | 3  | 3.93   | -do-                                                                        | 294     | 0       |
| 3                      | Dhamna         | 677 | 8.49   | 8.34  | 0.15 | 1973    | 1882 | 1280 | 0.00  | 510  | 8  | 2.5    | -do-                                                                        | 696     | 0       |
| 11                     | Gadadgad       | 840 | 4.64   | 3.97  | 0.67 | 1971    | 1448 | 1180 | 3.48  | 820  | 4  | 1.77   | -do-                                                                        | 1449    | 1449    |
| 2                      | Galhati        | 598 | 13.84  | 7.08  | 4.34 | 1964    | 2812 | 2200 | 11.01 | 1200 | 12 | 1 to 2 | Sorghum, Wheat, Cotton, Tur                                                 | No Data | No Data |
| 3                      | Girija         | 762 | 21.23  | 14.66 | 6.57 | 1990    | 3443 | 3443 | 0.00  | 4447 | 10 | 0.77   | -do-                                                                        | 2309    | 278     |
| 3                      | Jvrekha        | 668 | 6.14   | 6.14  | 0.00 | 1964    | 2589 | 1064 | 4.78  | 908  | 6  | 2.5    | -do-                                                                        | 1318    | 0       |
| 3                      | Jui            | 647 | 8.22   | 6.22  | 2.00 | 1960    | 2636 | 2206 | 0.75  | 880  | 14 | 2.5    | -do-                                                                        | 434     | 0       |
| 3                      | Kalyan         | 567 | 10.48  | 7.35  | 3.03 | 1986    | 2693 | 2020 | 11.57 | 800  | 9  | 3      | -do-                                                                        | 850     | 0       |
| 3                      | Kalyan Girija  | 663 | 8.42   | 8.42  | 0.00 | 1972    | 1557 | 1377 | 8.47  | 420  | 9  | 3      | Wheat, Sorghum, Sunflower                                                   | 1655    | 0       |
| 3                      | Karpara        | 760 | 24.9   | 21.03 | 2.80 | 1974    | 2862 | 2151 | 24.76 | 1980 | 7  | 1.5    | -do-                                                                        | No Data | No Data |
| 3                      | Khelna         | 650 | 11.07  | 4.74  | 6.33 | 1967    | 4935 | 2429 | 4.61  | 1210 | 11 | 4.08   | -do-                                                                        | 590     | 0       |
| 3                      | Lahuki         | 688 | 5.31   | 3.72  | 1.59 | 1977    | 1323 | 1092 | 1.96  | 1384 | 4  | 0.96   | -do-                                                                        | 484     | 0       |
| 2                      | Masoli         | 780 | 27.37  | 23.44 | 3.94 | 1982    | 3502 | 2591 | 27.14 | 2067 | 7  | 1.5    | -do-                                                                        | 805     | 510     |
| 3                      | Sukhana        | 688 | 18.49  | 16.56 | 1.93 | 1968    | 3136 | 2511 | 15.66 | 1150 | 14 | 2.73   | -do-                                                                        | 1735    | 0       |
| <b>CADA Beed</b>       |                |     |        |       |      |         |      |      |       |      |    |        |                                                                             |         |         |
| 4                      | Devarjan       | 838 | 10.680 | 7.12  | 0.00 | 1997    | 2853 | 1882 | 10.68 | 920  | 7  | 2.04   | Sorghum, Wheat, Gram, Sunflower                                             | No Data | No Data |
| 4                      | Gharni         | 716 | 22.460 | 23.78 | 0.00 | 1969    | 3542 | 2834 | 22.46 | 1347 | 14 | 2.10   | Sugarcane, Groundnut, Sorghum, Cotton, Maize, Paddy, Vegetable, Wheat, Gram | 3542    | 0       |
| 2                      | Kundlika       | 753 | 37.690 | 37.83 | 0.33 | 1988    | 3927 | 2964 | 37.69 | 1009 | 13 | 3.91   | Sugarcane, Groundnut, Sorghum, Bajri, Cotton, Sunflower                     | 287     | 287     |
| 4                      | Masalga        | 673 | 13.590 | 11.54 | 0.00 | 1996    | 1678 | 1364 | 4.76  | 790  | 11 | 1.73   | Sorghum, Bajri, Cotton, Sunflower, Groundnut                                | 1664    | 0       |
| 4                      | Raigavhan      | 770 | 11.259 | 8.57  | 0.28 | 1992    | 2267 | 1700 | 7.96  | 1261 | 8  | 1.30   | -do-                                                                        | 1370    | 0       |
| 4                      | Rui            | 770 | 8.605  | 5.80  | 1.72 | 1994    | 1893 | 1650 | 7.04  | 250  | 7  | 1.20   | -do-                                                                        | No Data | No Data |
| 4                      | Sakol          | 850 | 10.840 | 8.40  | 0.00 | 1996    | 2174 | 2064 | 10.95 | 945  | 7  | 2.18   | Sorghum, Chilli, Groundnut, Maize, Paddy, Vegetables, Wheat, Gram           | No Data | No Data |
| 4                      | Tavarja        | 744 | 20.340 | 10.98 | 3.92 | 1983    | 4907 | 3603 | 12.26 | 2105 | 19 | 1.72   | Sorghum, Sunflower, Wheat                                                   | No Data | No Data |
| 4                      | Terna          | 770 | 19.663 | 10.84 | 4.81 | 1964    | 1928 | 1652 | 19.40 | 1469 | 9  | 1.50   | Sugarcane                                                                   | 100     | 0       |

|                     |   |             |   |      |        |        |      |         |       |      |       |       |    |          |                                                                           |         |         |
|---------------------|---|-------------|---|------|--------|--------|------|---------|-------|------|-------|-------|----|----------|---------------------------------------------------------------------------|---------|---------|
| 1                   | 4 | Tiru        | 2 | 3    | 4      | 5      | 6    | 7       | 8     | 9    | 10    | 11    | 12 | 13       | 14                                                                        | 15      | 16      |
|                     |   |             |   | 684  | 15.290 | 21.19  | 0.00 | 1978    | 2654  | 2348 | 15.29 | 1741  | 14 | 1.40     | Sorghum, Chilli, Groundnut, Maize, Paddy, Vegetables, Wheat, Gram         | 2625    | 2625    |
| 4                   |   | Vhati       |   | 880  | 8.270  | 9.93   | 0.00 | 1983    | 1809  | 1760 | 8.27  | 829   | 7  | 2.15     | Sorghum, Chilli, Groundnut, Maize, Paddy, Vegetables, Wheat, Gram, Fodder | 1005    | 0       |
| 4                   |   | Wan         |   | 533  | 19.37  | 19.31  | 7.64 | 1967    | 7125  | 5262 | 19.34 | 4630  | 22 | 1.54     | Sorghum, Wheat, Sunflower, Cotton, Groundnut                              | 265     | 0       |
| <b>CADA Jalgaon</b> |   |             |   |      |        |        |      |         |       |      |       |       |    |          |                                                                           |         |         |
| 11                  |   | Agnawati    |   | 743  | 2.76   | 2.90   | 0.58 | 1987    | 960   | 605  | 2.18  | 375   | 3  | 0.75     | -do-                                                                      | 480     | 0       |
| 13 AA               |   | Bhokarbari  |   | 694  | 6.54   | 8.15   | 0.00 | 1993-94 | 1790  | 1205 | 2.78  | 603   | 5  | 1.5      | -do-                                                                      | No Data | No Data |
| 13 AA               |   | Bori        |   | 694  | 25.15  | 31.30  | 7.08 | 1985-76 | 6504  | 4553 | 11.36 | 2277  | 15 | 2        | -do-                                                                      | 839     | 0       |
| 13 AA               |   | Burai       |   | 500  | 14.21  | 19.23* | 0.87 | 1984-85 | 2981  | 2760 | 14.21 | 2524  | 5  | 1        | Wheat, Cotton, Gram, Bajri, Sorghum, Onion, Maize                         | 1297    | 155     |
| 13 AA               |   | Kanoli      |   | 660  | 8.45   | 10.50  | 0.00 | 1974-75 | 1620  | 1363 | 6.59  | 1500  | 8  | 1 to 2   | Wheat, Cotton, Gram, Bajri, Sorghum                                       | 449     | 0       |
| 11                  |   | Hwara       |   | 810  | 3.6    | 12.30  | 0.00 | 1997    | 2923  | 2231 | 6.11  | 608   | 3  | 0.8      | -do-                                                                      | 1580    | 0       |
| 11                  |   | Manyad      |   | 750  | 40.27  | 45.30  | 0.00 | 1973-74 | 6500  | 4864 | 20.02 | 4245  | 12 | 2        | Sugarcane, Banana, Cotton                                                 | 1908    | 0       |
| 13 AA               |   | Rangavali   |   | 1055 | 12.89  | 23.05* | 0.00 | 1983-84 | 5130  | 3134 | 12.82 | 1400  | 21 | 2 to 2.5 | Sorghum, Wheat, Cotton, Vegetables                                        | 1261    | 0       |
| 13 AA               |   | Tondapur    |   | 763  | 4.63   | 4.77   | 0.85 | 1998    | 1597  | 1060 | 0.00  | 712   | 2  | 0.8      | -do-                                                                      | 380     | 0       |
| <b>CADA Nashik</b>  |   |             |   |      |        |        |      |         |       |      |       |       |    |          |                                                                           |         |         |
| 4                   |   | G.Pargaon   |   | 685  | 8.5    | 12.36  | 0.00 | 1984    | 2142  | 1660 | 0.00  | 1792  | 15 | 3 to 4   | -do-                                                                      | 747     | 0       |
| 11                  |   | Haranbari   |   | 795  | 33.02  | 47.66  | 0.00 | 1988-89 | 12966 | 9726 | 33.02 | 11150 | 55 | 0.5      | Paddy, Sorghum, Groundnut, Wheat, Gram, Sugarcane                         | 632     | 491     |
| 11                  |   | Kelzar      |   | 687  | 16.2   | 16.51  | 0.00 | 1988-89 | 5583  | 3394 | 16.22 | 2594  | 19 | 0.5      | Bajri, Two seasonals, Paddy, Sorghum, Groundnut, Wheat, Gram              | 630     | 630     |
| 11                  |   | Nagya Sakya |   | 528  | 11.24  | 13.72  | 0.00 | 1992-93 | 2400  | 2400 | 3.99  | 2125  | 11 | 0.5      | Paddy, Sorghum, Groundnut, Wheat, Gram, Sugarcane                         | 0       | 0       |

| 1                      | 2         | 3    | 4     | 5      | 6     | 7    | 8     | 9    | 10    | 11    | 12   | 13       | 14                                                          | 15      | 16      |
|------------------------|-----------|------|-------|--------|-------|------|-------|------|-------|-------|------|----------|-------------------------------------------------------------|---------|---------|
| <b>NIC Nanded</b>      |           |      |       |        |       |      |       |      |       |       |      |          |                                                             |         |         |
| 4                      | Karadkhed | 650  | 11.01 | 11.34  | 6.56  | 1976 | 2510  | 1780 | 11.01 | 1298  | 11   | 1.93     | -do-                                                        | 1652    | 1652    |
| 2                      | Kudala    | 700  | 4.35  | 5.54   | 1.38  | 1974 | 676   | 567  | 4.35  | 428   | 5    | 1.23     | -do-                                                        | No Data | No Data |
| 4                      | Kundrala  | 630  | 10.41 | 12.81  | 4.21  | 1981 | 1265  | 1012 | 10.42 | 784   | 7    | 1.61     | Wheat, Gram, Groundnut, Sorghum                             | 1277    | 1277    |
| 4                      | Loni      | 1150 | 8.38  | 9.51   | 0.91  | 1981 | 1835  | 1377 | 8.10  | 1788  | 7    | 1.02     | -do-                                                        | No Data | No Data |
| 4                      | Mahalingi | 775  | 4.78  | 4.06   | 1.68  | 1980 | 1015  | 784  | 4.79  | 568   | 6    | 1.8      | -do-                                                        | 1449    | 784     |
| 4                      | Pethwadaj | 850  | 9.04  | 13.52  | 1.31  | 1977 | 1970  | 1478 | 9.03  | 1985  | 13   | 1        | -do-                                                        | No Data | No Data |
| <b>Normal</b>          |           |      |       |        |       |      |       |      |       |       |      |          |                                                             |         |         |
| <b>AIC Akola</b>       |           |      |       |        |       |      |       |      |       |       |      |          |                                                             |         |         |
| 6                      | Adan      | 798  | 67.25 | 69.67  | 11.14 | 1979 | 10067 | 7804 | 67.25 | 14000 | 32   | 0.56     | Cotton, Tur, Sugarcane, Groundnut                           | 10067   | 0       |
| 6                      | Borgaon   | 988  | 6.61  | 10.86  | 0.35  | 1992 | 3028  | 2271 | 6.53  | 980   | 16   | 1.5 to 3 | Groundnut, Cotton, Sorghum, Wheat, Gram, Pulses             | 3028    | 3028    |
| 6                      | Ekurji    | 986  | 11.97 | 9.08   | 0.76  | 1964 | 2625  | 2429 | 11.97 | 1700  | 11   | 1 to 2   | Wheat, Gram                                                 | 2625    | 0       |
| 6                      | Koradi    | 660  | 15.12 | 15.12  | 0.00  | 1981 | 5067  | 4061 | 15.89 | 4125  | 26   | 1 to 2   | Cotton, Sorghum, Wheat, Groundnut                           | 5067    | 127     |
| 6                      | Lower Pus | 852  | 59.63 | 70.50  | 2.42  | 1990 | 7606  | 6600 | 59.63 | 1653  | 29   | 2 to 4   | Sugarcane, Cotton, Sorghum, Wheat, Gram, Pulses, Vegetables | 6740    | 0       |
| 6                      | Saikheda  | 1098 | 27.18 | 24.77  | 4.38  | 1972 | 3895  | 3116 | 27.18 | 1132  | 18   | 1.5 to 3 | Cotton, Sorghum, Wheat, Gram, Pulses, Vegetables            | 3239    | 0       |
| <b>CADA Aurangabad</b> |           |      |       |        |       |      |       |      |       |       |      |          |                                                             |         |         |
| 1                      | Ambadi    | 650  | 9.42  | 6.92   | 2.50  | 1979 | 2375  | 2147 | 0.00  | 1050  | 10   | 2.26     | -do-                                                        | 1467    | 0       |
| 1                      | Dheku     | 600  | 12.15 | 6.55   | 5.60  | 1961 | 3564  | 2712 | 0.00  | 1725  | 15   | 2.07     | -do-                                                        | 580     | 0       |
| 1                      | Kolhi     | 600  | 3.23  | 2.63   | 0.60  | 1967 | 1056  | 472  | 0.39  | 350   | 4    | 3.02     | -do-                                                        | 472     | 0       |
| <b>CADA Beed</b>       |           |      |       |        |       |      |       |      |       |       |      |          |                                                             |         |         |
| 18                     | Khandala  | 770  | 5.24  | 5.24   | 0.00  | 1974 | 1328  | 830  | 4.44  | 1300  | 2.00 | 2 to 3   | -do-                                                        | 296     | 0       |
| <b>CADA Jalgaon</b>    |           |      |       |        |       |      |       |      |       |       |      |          |                                                             |         |         |
| 13 A                   | Abhora    | 750  | 6.02  | 7.13   | 0.00  | 1985 | 1403  | 1115 | 3.96  | 450   | 2    | 0.8      | -do-                                                        | 580     | 0       |
| 13 A                   | Aner      | 970  | 59.2  | 79*    | 8.50  | 1976 | 9201  | 7180 | 59.21 | 3402  | 10   | 0.5      | Wheat, Groundnut, Cotton                                    | 2154    | 0       |
| 13 A                   | Karvand   | 960  | 21.39 | 21.39  | 0.62  | 1968 | 7027  | 4534 | 10.41 | 2200  | 14   | 0.4      | -do-                                                        | 1899    | 0       |
| 13 A                   | Malangaon | 780  | 11.32 | 15.02  | 0.00  | 1972 | 2674  | 1587 | 11.33 | 2675  | 15   | 0.5      | -do-                                                        | 647     | 0       |
| 12                     | Panzara   | 780  | 35.63 | 72.66* | 0.71  | 1976 | 7328  | 6868 | 35.63 | 6500  | 25   | 0.8      | Maize, Bajra, Wheat                                         | 1231    | 0       |

|                       |      |                 |   |      |       |       |       |         |       |      |       |      |    |           |                                                     |       |      |
|-----------------------|------|-----------------|---|------|-------|-------|-------|---------|-------|------|-------|------|----|-----------|-----------------------------------------------------|-------|------|
| 1                     | 13 A | Suki            | 2 | 3    | 4     | 5     | 6     | 7       | 8     | 9    | 10    | 11   | 12 | 13        | 14                                                  | 15    | 16   |
|                       |      |                 |   | 774  | 39.85 | 45.47 | 0.00  | 1985    | 8647  | 5128 | 35.66 | 1467 | 8  | 0.9       | Groundnut, Pulses, Sorghum, Cotton                  | 5124  | 3639 |
| <b>CADA Nagpur</b>    |      |                 |   |      |       |       |       |         |       |      |       |      |    |           |                                                     |       |      |
| 7                     |      | Chandrabhaga    |   | 1016 | 8.262 | 8.25  | 0.02  | 1974-75 | 3181  | 2604 | 23.35 | 106  | 15 | 2.1       | Orange, Wheat, Gram, Vegetable, Cotton              | 3181  | 0    |
| 7                     |      | Wenna           |   | 1100 | 21.66 | 9.49  | 11.55 | 1968    | 2000  | 1214 | 11.07 | 279  | 10 | 1.33      | Wheat, Cotton, Orange, Gram, Vegetables             | 2000  | 0    |
| <b>CADA Nashik</b>    |      |                 |   |      |       |       |       |         |       |      |       |      |    |           |                                                     |       |      |
| 1                     |      | Adhala          |   | 500  | 27.6  | 38.74 | 0.00  | 1977    | 6427  | 3914 | 27.61 | 3646 | 16 | 3 to 4    | Sorghum, Wheat, Grass, Bajri, Groundnut, Maize      | 1512  | 0    |
| 1                     |      | Alandi          |   | 614  | 27.57 | 21.00 | 5.67  | 1985    | 7408  | 6296 | 27.46 | 2000 | 18 | 3         | Vegetables, Grapes, Sorghum, Sugarcane, Wheat, Gram | 1837  | 0    |
| 1                     |      | Bhojapur        |   | 393  | 10.7  | 8.15  | 2.55  | 1973    | 4580  | 4500 | 9.93  | 4000 | 24 | 1.7       | Bajri, Wheat, Sorghum, Gram                         | 500   | 0    |
| 1                     |      | Mand Ohol       |   | 600  | 8.78  | 13.16 | 0.00  | 1983    | 2833  | 2266 | 8.78  | 2830 | 15 | 3 to 4    | Sorghum, Wheat, Grass, Maize, Sunflower, Sugarcane  | 2427  | 0    |
| <b>GPC Chandrapur</b> |      |                 |   |      |       |       |       |         |       |      |       |      |    |           |                                                     |       |      |
| 7                     |      | Amalnalla       |   | 1218 | 21.2  | 19.52 | 0.00  | 1981    | 4710  | 2962 | 21.20 | 1280 | 22 | 1.5 to 2  | Wheat, Cotton, Gram                                 | 3771  | 0    |
| 7                     |      | Dongargaon      |   | 1100 | 4.44  | 3.17  | 0.00  | 1974    | 972   | 631  | 4.44  | 328  | 9  | 1.5 to 2  | -do-                                                | 608   | 608  |
| 7                     |      | Labhansarad     |   | 1103 | 7.35  | 5.87  | 0.00  | 1987    | 2024  | 2024 | 7.24  | 725  | 11 | 1.5 to 2  | Wheat, Cotton, Cotton, Wheat                        | 2024  | 0    |
| 7                     |      | Panchdhara      |   | 1103 | 8.75  | 8.43  | 0.00  | 1976    | 2262  | 1822 | 10.10 | 1375 | 14 | 1.5 to 2  | -do-                                                | 2667  | 1974 |
| 7                     |      | Pothara         |   | 1100 | 34.72 | 34.72 | 0.00  | 1984    | 10910 | 8948 | 34.17 | 1821 | 33 | 1.5 to 2  | -do-                                                | 10910 | 0    |
| <b>NIC Nanded</b>     |      |                 |   |      |       |       |       |         |       |      |       |      |    |           |                                                     |       |      |
| 6                     |      | Dongargaon      |   | 1150 | 8.36  | 11.55 | 0.00  | 1983    | 1008  | 830  | 91.26 | 561  | 5  | 1.8       | -do-                                                | 1008  | 1008 |
| 6                     |      | Nagzari         |   | 1150 | 6.56  | 6.18  | 2.92  | 1983    | 1260  | 960  | 6.39  | 269  | 6  | 4.68      | -do-                                                | 665   | 0    |
| <b>PIC Pune</b>       |      |                 |   |      |       |       |       |         |       |      |       |      |    |           |                                                     |       |      |
| 18                    |      | Mhaswad         |   | 533  | 46.21 | 46.21 | 0     | 1981    | 5804  | 4049 | 8.35  | 2500 | 11 | 1         | Sorghum, Bajri, Groundnut                           | 5804  | 0    |
| 18                    |      | Ranand          |   | 538  | 6.42  | 1.83  | 0     | 1953    | 3886  | 1093 | 4.98  | 1100 | 6  |           | Kadwal, Wheat, Sorghum                              | 3886  | 0    |
| 18                    |      | Tisangi         |   | 508  | 24.46 | 24.46 | 0     | 1965    | 5068  | 4049 | 24.09 | 2697 | 0  | 1         | Sorghum, Bajri, Paddy, Wheat                        | 5132  | 0    |
| 17                    |      | Vadiwale        |   | 2845 | 30.39 | 22.18 | 0     | 1990    | 5564  | 5000 | 30.39 | 4415 | 26 | 0.15 to 1 | -do-                                                | 5564  | 0    |
| <b>YIC Yavatmal</b>   |      |                 |   |      |       |       |       |         |       |      |       |      |    |           |                                                     |       |      |
| 7                     |      | Nawargaon       |   | 1067 | 12.47 | 13.28 | 2.71  | 1999    | 2574  | 2056 | 12.47 | 2680 | 15 | 0.56      | -do-                                                | 2574  | 0    |
| <b>Surplus</b>        |      |                 |   |      |       |       |       |         |       |      |       |      |    |           |                                                     |       |      |
| <b>CADA Nagpur</b>    |      |                 |   |      |       |       |       |         |       |      |       |      |    |           |                                                     |       |      |
| 8                     |      | Bageda          |   | 1146 | 4.535 | 4.11  | 0.00  | 1974    | 1887  | 1798 | 2.63  | 1296 | 10 | 0.85      | Paddy                                               | 2566  | 679  |
| 8                     |      | Betekar Bothali |   | 1186 | 3.666 | 3.67  | 0.00  | 1989    | 1266  | 1315 | 1.80  | 672  | 4  | 0.75      | -do-                                                | 1266  | 0    |
| 8                     |      | Bodakasa        |   | 1281 | 19.18 | 16.45 | 2.73  | 1917    | 14665 | 4047 | 8.73  | 6283 | 36 | 0.21      | -do-                                                | 9839  | 0    |



| 1                      | 2            | 3    | 4      | 5     | 6    | 7       | 8     | 9    | 10    | 11   | 12 | 13           | 14                                                                                        | 15     | 16  |
|------------------------|--------------|------|--------|-------|------|---------|-------|------|-------|------|----|--------------|-------------------------------------------------------------------------------------------|--------|-----|
| 8                      | Chandpur     | 1200 | 28.87  | 28.87 | 0.00 | 1916    | 10117 | 6271 | 13.93 | 8274 | 40 | 0.9          | -do-                                                                                      | 10117  | 617 |
| 8                      | Chorkhanara  | 1267 | 22.8   | 20.80 | 0.00 | 1917    | 13246 | 4047 | 13.11 | 1210 | 25 | 0.35         | -do-                                                                                      | 13246  | 0   |
| 8                      | Chulband     | 1384 | 22.24  | 16.82 | 0.00 | 1976    | 3378  | 3167 | 14.27 | 2929 | 21 | 1.1          | -do-                                                                                      | 3378   | 0   |
| 8                      | Kanholibara  | 1004 | 19.82  | 22.03 | 4.73 | 1976    | 4815  | 3371 | 19.71 | 1217 | 22 | 3            | HW Groundnut,<br>Cotton, Soybean,<br>Wheat, Gram,<br>Vegetables                           | 6025   | 0   |
| 8                      | Kesamala     | 979  | 3.93   | 4.28  | 0.00 | 1976    | 937   | 780  | 3.93  | 126  | 7  | 1.6          | -do-                                                                                      | 937    | 0   |
| 8                      | Khairbanda   | 870  | 15.953 | 12.22 | 0.00 | 1915    | 11271 | 6109 | 11.91 | 6400 | 31 |              | -do-                                                                                      | 112267 | 0   |
| 8                      | Khekranala   | 963  | 23.81  | 29.54 | 0.00 | 1987    | 3810  | 2610 | 22.14 | 1829 | 14 | 1.5          | Cotton, Wheat,<br>Gram, Orange,<br>Sugarcane, HW<br>Groundnut,<br>Soybean,<br>Vegetables. | 3144   | 0   |
| 8                      | Kolar        | 978  | 31.32  | 41.23 | 1.21 | 1984    | 8088  | 5940 | 31.32 | 2829 | 43 | 2.1          | -do-                                                                                      | 8088   | 0   |
| 8                      | Makardhokda  | 963  | 26.91  | 27.37 | 1.45 | 1980-81 | 5835  | 5477 | 18.71 | 2625 | 29 | 1.33         | Paddy, Cotton,<br>Chillies, Wheat,<br>Sorghum, Gram,<br>Soybean,<br>Vegetables            | 3512   | 0   |
| 8                      | Managad      | 1609 | 7.081  | 7.83  | 0.00 | 1970    | 3390  | 1700 | 4.90  | 1006 | 11 | 0.35         | -do-                                                                                      | 3390   | 0   |
| 8                      | Mordham      | 1016 | 4.95   | 4.91  | 0.05 | No data | 1423  | 1315 | 4.95  | 406  | 8  | 2.1          | Orange, Wheat,<br>Gram, Vegetables,<br>Cotton                                             | 1423   | 0   |
| 8                      | Pandharabodi | 1290 | 13.25  | 14.51 | 2.15 | 1974-75 | 1044  | 862  | 12.01 | 754  | 12 | 2.18         | Paddy, Chillies,<br>Wheat, Gram,<br>Soybean,<br>Sunflower.                                | 1030   | 0   |
| 8                      | Rengepar     | 1138 | 3.338  | 5.86  | 0.00 | 1977    | 1305  | 870  | 1.96  | 1044 | 7  | 0.75         | -do-                                                                                      | 1305   | 0   |
| 8                      | Sangrampur   | 1281 | 3.868  | 8.87  | 0.46 | 1969    | 1536  | 1094 | 2.15  | 1409 | 7  |              | -do-                                                                                      | 1194   | 0   |
| 8                      | Soma         | 1255 | 5.733  | 5.73  | 0.00 | 1972    | 1553  | 933  | 3.71  | 943  | 8  | 0.75         | -do-                                                                                      | 1553   | 0   |
| 8                      | Umari        | 1064 | 5.14   | 5.85  | 0.00 | 1971-72 | 1802  | 1195 | 5.14  | 749  | 8  | 2            | Wheat, Cotton,<br>Orange, Gram,<br>Vegetables,<br>Groundnut                               | 1902   | 0   |
| <b>GIPC Chandrapur</b> |              |      |        |       |      |         |       |      |       |      |    |              |                                                                                           |        |     |
| 8                      | Chandai      | 1205 | 10.69  | 9.28  | 0.00 | 1983    | 2565  | 2056 | 8.95  | 1309 | 14 | 1.5 to 2     | -do-                                                                                      | 2565   | 0   |
| 8                      | Chargaon     | 1285 | 19.86  | 11.98 | 0.00 | 1983    | 1946  | 1500 | 17.74 | 1149 | 12 | 1.5 to 2     | Paddy, Wheat                                                                              | 884    | 0   |
| <b>Abundant</b>        |              |      |        |       |      |         |       |      |       |      |    |              |                                                                                           |        |     |
| <b>GIPC Chandrapur</b> |              |      |        |       |      |         |       |      |       |      |    |              |                                                                                           |        |     |
| 9                      | Ghorazari    | 1285 | 38     | 35.00 | 0.00 | 1923    | 12868 | 3846 | 28.92 | 7181 | 65 | 1.5 to 2     | Paddy                                                                                     | 4961   | 0   |
| 9                      | Nalashwar    | 1147 | 8.18   | 4.29  | 0.00 | 1922    | 5035  | 1888 | 5.79  | 3097 | 23 | 1.5 to 2     | -do-                                                                                      | 2329   | 0   |
| <b>KIC Ratnagiri</b>   |              |      |        |       |      |         |       |      |       |      |    |              |                                                                                           |        |     |
| 23                     | Natuwadi     | 3632 | 27.230 | 27.23 | 0.00 | 1984    | 2139  | 2050 | 26.59 | 3629 | 18 | 0.02 to 0.05 | Paddy, Groundnut,<br>Pulses, Mango                                                        | 2050   | 0   |

| 1  | 2                 | 3    | 4      | 5     | 6     | 7       | 8     | 9    | 10    | 11   | 12 | 13        | 14                                                     | 15      | 16      |
|----|-------------------|------|--------|-------|-------|---------|-------|------|-------|------|----|-----------|--------------------------------------------------------|---------|---------|
|    | <b>SIC Sangli</b> |      |        |       |       |         |       |      |       |      |    |           |                                                        |         |         |
| 15 | Chikotra          | 1074 | 43.08  | 43.05 | 0.00  | 2001    | 6833  | 5630 | 37.32 | 1326 | 27 | 1 to 2    | Sugercane, Paddy, Wheat, Vegetables                    | 6833    | 0       |
| 15 | Chitri            | 1524 | 52.35  | 64.45 | 0.00  | 2001-02 | 9160  | 5850 | 52.73 | 2590 | 54 | 0.55      | -do-                                                   | 9160    | 0       |
| 15 | Jangamhatti       | 2190 | 33.21  | 26.37 | 6.84  | 1996-97 | 4450  | 3700 | 26.15 | 8000 | 10 | 0.1       | Sugercane, Maize, Chilly Wheat, Potato, GrouNo Datanut | 4457    | 0       |
| 15 | Kadavi            | 3418 | 70.67  | 70.56 | 0.00  | 2001    | 9908  | 9219 | 69.77 | 2211 | 52 | 0.8       | -do-                                                   | 9908    | 0       |
| 15 | Kasari            | 4560 | 77.96  | 61.57 | 0.00  | 1989    | 9995  | 5458 | 76.90 | 3197 | 61 | 1 to 1.5  | Sugercane, Paddy, Wheat                                | 9995    | 0       |
| 15 | Kumbhi            | 4985 | 76.5   | 74.81 | 1.68  | 2001    | 9170  | 8711 | 60.18 | 1773 | 51 | 0.10 to 1 | Sugercane, Wheat, Groundnut, Sunflower                 | 9170    | 0       |
| 15 | Patgaon           | 3486 | 104.77 | 78.58 | 26.19 | 1996    | 10000 | 8100 | 79.86 | 3525 | 44 | 1 to 2    | Sugercane, Paddy, Wheat                                | 10000   | 0       |
| 21 | <b>TIC Thane</b>  |      |        |       |       |         |       |      |       |      |    |           |                                                        |         |         |
| 21 | Wandri            | 2540 | 35.938 | 35.94 | 0.00  | 1984.85 | 3066  | 2044 | 33.28 | 1526 | 17 | 0.25      | -do-                                                   | No Data | No Data |

| Overview of Projects selected for Benchmarking (Minor Projects) |                 |                           |                                          |                                         |                                             |                                     |                              |                             |                                                |                                 |                     |                                                 |                              |
|-----------------------------------------------------------------|-----------------|---------------------------|------------------------------------------|-----------------------------------------|---------------------------------------------|-------------------------------------|------------------------------|-----------------------------|------------------------------------------------|---------------------------------|---------------------|-------------------------------------------------|------------------------------|
| Plan Group/ SB No                                               | Circle/ Project | Avg. Annual Rainfall (mm) | Designed Live Storage (Mm <sup>3</sup> ) | Designed Water use for Irrigation (Mm3) | Designed Water use for Non irrigation (Mm3) | Year of Commence ment of Irrigation | Culturable Command Area (ha) | Irrigable command area (ha) | Max.Live Storage observed on 15th October 2005 | No. of villages in benefit zone | Avg. farm size (ha) | Main crops                                      | Area handed over to WUA (ha) |
| 1                                                               | 2               | 3                         | 4                                        | 5                                       | 6                                           | 7                                   | 8                            | 9                           | 10                                             | 11                              | 12                  | 13                                              | 14                           |
| Highly Deficit                                                  |                 |                           |                                          |                                         |                                             |                                     |                              |                             |                                                |                                 |                     |                                                 |                              |
| CADA Beed                                                       |                 |                           |                                          |                                         |                                             |                                     |                              |                             |                                                |                                 |                     |                                                 |                              |
| 19                                                              | Bagalwadi       | 685                       | 1.33                                     | 1.65                                    | 0                                           | 1971                                | 441                          | 340                         | 1.33                                           | 3                               | 1 to 3              | Sorghum, Groundnut, Wheat Sunflower             | 0                            |
| 19                                                              | Incharna        | 589                       | 1.93                                     | 1.93                                    | 0                                           | 1971                                | 615                          | 555                         | 2.20                                           | 7                               | 0.5 to 4            | Sorghum, Groundnut, Sugarcane, Maize Sunflower  | No Data                      |
| 19                                                              | Kini            | 589                       | 1.24                                     | 1.24                                    | 0                                           | 1967                                | 385                          | 380                         | 0.91                                           | 3                               | 0.5 to 4            | Sorghum, Groundnut, Sugarcane, Maize Sunflower  | No Data                      |
| 19                                                              | Titraj          | 685                       | 1.14                                     | 1.47                                    | 0                                           | 1985                                | 367                          | 275                         | 1.14                                           | 3                               | 1 to 3              | Sorghum, Groundnut, Wheat Sunflower             | No Data                      |
| Cada Solapur                                                    |                 |                           |                                          |                                         |                                             |                                     |                              |                             |                                                |                                 |                     |                                                 |                              |
| 19                                                              | Mangi           | 500                       | 32.70                                    | 27.50                                   | 0                                           | 1966                                | 4000                         | 3117                        | 14.11                                          | 21                              | 0.5 to 4            | Sorghum, Groundnut, Sugarcane, Maize, Sunflower | 931                          |
| 19                                                              | Pathari         | 500                       | 11.62                                    | 10.63                                   | 0.99                                        | 1905                                | 1012                         | 647                         | 8.27                                           | 7                               | 0.5 to 4            | Sorghum, Groundnut, Sugarcane, Wheat, Sunflower | 0                            |
| Deficit                                                         |                 |                           |                                          |                                         |                                             |                                     |                              |                             |                                                |                                 |                     |                                                 |                              |
| AIC Akola                                                       |                 |                           |                                          |                                         |                                             |                                     |                              |                             |                                                |                                 |                     |                                                 |                              |
| 3                                                               | Ancharwadi-1    | 737                       | 2.34                                     | 2.66                                    | 0                                           | 1985                                | 607                          | 370                         | 2.34                                           | 2                               | 1 to 2              | Wheat, Gram, Cotton                             | No Data                      |
| 10                                                              | Jamwadi         | 1196                      | 2.16                                     | 2.16                                    | 0                                           | 1978                                | 580                          | 406                         | 2.16                                           | 4                               | 1 to 2              | Wheat, Gram, Cotton, Sorghum                    | 0                            |
| 10                                                              | Mozari          | 695                       | 2.93                                     | 2.35                                    | 0                                           | 1977                                | 675                          | 475                         | 2.93                                           | 2                               | 1 to 2              | Wheat, Gram, Cotton, Hy,Jawar.                  | 928                          |
| 10                                                              | Shekdari        | 911                       | 4.56                                     | 4.88                                    | 0                                           | 1981                                | 1975                         | 1331                        | 4.75                                           | 7                               | 1.2                 | Cotton, Sorghum, Wheat, Gram, Orange.           | 1208                         |

| 1  | 2                      | 3    | 4     | 5     | 6    | 7       | 8    | 9    | 10   | 11 | 12     | 13                                                | 14      |
|----|------------------------|------|-------|-------|------|---------|------|------|------|----|--------|---------------------------------------------------|---------|
|    | <b>BIPC Buldhana</b>   |      |       |       |      |         |      |      |      |    |        |                                                   |         |
| 10 | Adol                   | 850  | 9.30  | 7.06  | 2.45 | 1991-92 | 1506 | 1585 | 7.20 | 10 | 3.0    | -do-                                              | 329     |
| 10 | Brahamanwada           | 753  | 6.18  | 6.08  | 0.00 | 1995-96 | 1495 | 1196 | 0.91 | 4  | 3.0    | Cotton, Chilly, Sunflower                         | 0       |
| 3  | Kardi                  | 766  | 4.89  | 5.52  | 0.00 | 1991-92 | 1197 | 958  | 0.00 | 8  | 1.5    | Cotton, Chilly, Sunflower                         | 40      |
| 3  | Masural                | 776  | 8.25  | 7.88  | 2.92 | 1990-91 | 841  | 734  | 0.00 | 5  | 1.0    | Cotton, Chilly, Sunflower                         | 0       |
| 3  | Mohagavan              | 800  | 5.72  | 4.14  | 0.52 | 1998-99 | 1048 | 706  | 5.83 | 5  | 3.0    | Cotton, Chilly, Sunflower                         | 190     |
| 4  | Sawakhed Bhoi          | 66   | 3.79  | 2.61  | 0    | 1988-99 | 589  | 445  | 2.95 | 7  | 3.0    | Cotton, Chilly, Sunflower                         | 589     |
| 4  | Shivan kd.             | 793  | 4.67  | 2.58  | 0    | 1995-96 | 712  | 605  | 3.58 | 6  | 2.0    | -do-                                              | 0       |
| 3  | Vidrupa                | 590  | 3.41  | 0.00  | 0.00 | 1990-91 | 1020 | 840  | 3.41 | 6  | 1.5    | Cotton, Chilly, Sunflower                         | 0       |
| 10 | Vishwamitri            | 772  | 10.75 | 13.91 | 1.25 | 1993-94 | 1882 | 1392 | 5.84 | 7  | 3.0    | -do-                                              | 0       |
| 10 | Vyaghra                | 747  | 7.14  | 7.86  | 1.35 | 1991-92 | 1993 | 1615 | 0.00 | 8  | 1.5    | Cotton, Chilly, Sunflower                         | 40      |
|    | <b>CADA Aurangabad</b> |      |       |       |      |         |      |      |      |    |        |                                                   |         |
| 2  | Tandulwadi             | 653  | 1.994 | 1.99  | 0.00 | 1972    | 566  | 474  | 1.99 | 3  | 1.15   | Wheat, Sorghum, Cotton, Gram Groundnut            | No Data |
|    | <b>CADA Beed</b>       |      |       |       |      |         |      |      |      |    |        |                                                   |         |
| 4  | Bhutekarwadi           | 855  | 2.870 | 3.37  | 0    | 1969    | 1013 | 809  | 2.87 | 4  | 1.90   | Sorghum, Chilli, Maize, Vegetables, Wheat, Cotton | 809     |
| 4  | Dhanori                | 770  | 1.389 | 1.41  | 0    | 1974    | 467  | 343  | 0.99 | 1  | 1.10   | Sugarcane                                         | No Data |
| 4  | Hiwarsinga             | 675  | 1.270 | 1.27  | 0    | 1989    | 299  | 257  | 1.28 | 1  | 1.16   | Sorghum, Bajri, Cotton, Sunflower, Groundnut      | No Data |
|    | <b>CADA Jalgaon</b>    |      |       |       |      |         |      |      |      |    |        |                                                   |         |
| 11 | Bambrud                | 743  | 2.18  | 1.97  | 0    | 1975    | 579  | 461  | 0.75 | 1  | 0.8    | -do-                                              | No Data |
| 11 | Chavdi                 | 482  | 4.38  | 4.38  | 0    | 1972    | 388  | 323  | 4.38 | 2  | 1 to 2 | Wheat Gram, Onion, Groundnut                      | 323     |
| 11 | Dudhkhedda             | 6350 | 3.366 | 3.37  | 0    | 1972    | 480  | 303  | 1.40 | 4  | 0.4    | Wheat, Cotton, Gram                               | 0       |
| 11 | Galan                  | 743  | 1.87  | 2.01  | 0    | 1968    | 425  | 340  | 1.27 | 1  | 0.75   | Cotton, Groundnut                                 | No Data |
| 11 | Hatgaon-1              | 743  | 1.4   | 1.52  | 0    | 1974-75 | 441  | 267  | 0.09 | 1  | 1.5    | Cotton, Vegetables                                | No Data |
| 11 | Kunzar-2               | 743  | 1.01  | 1.21  | 0    | 1991-92 | 223  | 178  | 0.00 | 1  | 1.5    | -do-                                              | 0       |
| 11 | Waghala-1              | 743  | 1.21  | 1.21  | 0    | 1976-77 | 313  | 223  | 0.71 | 1  | 1.5    | -do-                                              | No Data |
| 11 | Wakdi                  | 743  | 0.98  | 0.93  | 0    | 1975    | 228  | 183  | 0.89 | 1  | 0.8    | -do-                                              | No Data |

| 1  | 2                      | 3    | 4     | 5    | 6    | 7       | 8    | 9    | 10   | 11 | 12       | 13                                                         | 14      |
|----|------------------------|------|-------|------|------|---------|------|------|------|----|----------|------------------------------------------------------------|---------|
| 4  | <b>CADA Nashik</b>     | 618  | 1.46  | 2.12 | 0    | 1993    | 370  | 297  | 1.46 | 2  | 2 to 3   | Sorghum, Wheat, Grass, Bajri, Groundnut, Maize,            | No Data |
|    | <b>NIC Nanded</b>      |      |       |      |      |         |      |      |      |    |          |                                                            |         |
| 4  | B.Hiperga              | 850  | 2.05  | 2.93 | 0    | 1973    | 481  | 481  | 2.06 | 3  | 2.09     | -do-                                                       | No Data |
| 4  | Daryapur               | 875  | 1.02  | 1.57 | 0    | 1973    | 230  | 222  | 1.03 | 3  | 1.35     | -do-                                                       | 230     |
| 2  | Koshrewadi             | 850  | 0.77  | 1.05 | 0    | 1966    | 190  | 190  | 0.77 | 1  | 1.05     |                                                            | No Data |
| 4  | Panshewadi             | 850  | 1.58  | 2.02 | 0    | 1975    | 320  | 263  | 1.58 | 3  | 1.16     | -do-                                                       | No Data |
| 3  | Purjal                 | 830  | 2.656 | 2.66 | 0    | 1975    | 631  | 558  | 2.66 | 4  | 0.9      |                                                            | 601     |
| 4  | Wasur                  | 830  | 0.88  | 1.18 | 0    | 1971    | 213  | 171  | 0.88 | 2  | 3.32     | Wheat, Gram, Sugarcane, Cotton, Groundnut, Sorghum         | 213     |
|    | <b>Normal</b>          |      |       |      |      |         |      |      |      |    |          |                                                            |         |
|    | <b>AIC Akola</b>       |      |       |      |      |         |      |      |      |    |          |                                                            |         |
| 6  | Majara                 | 924  | 3.23  | 2.50 | 0    | 1994    | 1425 | 1269 | 3.23 | 6  | 2.5 to 3 | Cotton, Tur, Wheat                                         | 0       |
| 6  | Singdoh                | 714  | 1.22  | 1.22 | 0    | 1976    | 246  | `    | 2.71 | 3  | 1 to 2   | Wheat, Gram, Cotton, Hy. Jawar.                            | 0       |
|    | <b>CADA Nagpur</b>     |      |       |      |      |         |      |      |      |    |          |                                                            |         |
| 7  | Wahi                   | 1267 | 2.02  | 2.88 | 0    | 1992    | 442  | 402  | 1.44 | 5  | 0.85     | -do-                                                       | No Data |
|    | <b>CADA Nashik</b>     |      |       |      |      |         |      |      |      |    |          |                                                            |         |
| 1  | Mahirawani             | 600  | 2.52  | 2.52 | 0    | 1974    | 949  | 576  | 2.52 | 9  |          | Wheat, Gram Kh.Vegetables                                  | No Data |
|    | <b>PIC Pune</b>        |      |       |      |      |         |      |      |      |    |          |                                                            |         |
| 17 | Thoseghar              | 1158 | 1.84  | 1.84 | 0    | 1996    | 306  | 270  | 1.84 | 2  | 0.1      | Paddy, Sorghum                                             | 0       |
| 18 | Chincholi patil        | 500  | 2.17  | 2.17 | 0    | 1977    | 569  | 455  | 2.17 | 3  | 0.83     | Sorghum, Grain, Sunflower, Maze                            | 0       |
| 17 | Rahu                   | 364  | 9.79  | 9.79 | 0    | 1993    | 2300 | 1887 | 9.79 | 5  | 0.5 to 5 | Sorghum, Bajri, Wheat, Maize, Vegetables, Paddy, Sugarcane | No Data |
| 18 | Tambe                  | 500  | 4.85  | 4.85 | 0    | 1968    | 1354 | 750  | 4.85 | 7  | 0.4      | Bajri, Sorghum, Kadwal                                     | No Data |
|    | <b>CIPC Chandrapur</b> |      |       |      |      |         |      |      |      |    |          |                                                            |         |
| 7  | Bhatala                | 1175 | 1.55  | 1.40 | 0    | No Data | 415  | 350  | 1.55 | 3  | 1.5 to 2 | Paddy, Wheat                                               | 0       |
|    | <b>NIC Nanded</b>      |      |       |      |      |         |      |      |      |    |          |                                                            |         |
| 6  | Hirdi                  | 82   | 1.34  | 1.34 | 0    | 1983    | 353  | 283  | 1.34 | 2  | 0.9      | -do-                                                       | No Data |
| 6  | Nichpur                | 1150 | 2.2   | 2.26 | 0.32 | 1973    | 525  | 385  | 1.91 | 2  | 4.77     | Wheat, Gram, Sugarcane, Cotton, Groundnut, Sorghum         | No Data |
|    |                        |      |       |      |      |         |      |      |      |    |          |                                                            |         |
| 6  | Pimparala              | 750  | 2.43  | 3.39 | 0    | 1968    | 749  | 672  | 2.43 | 5  | 2.2      | -do-                                                       | 0       |
| 6  | Pota                   | 650  | 1.67  | 2.13 | 0    | 1972    | 718  | 432  | 1.67 | 4  | 3.43     | -do-                                                       | No Data |
| 6  | Sawana                 | 804  | 2.154 | 1.65 | 0.51 | 1979    | 431  | 410  | 2.15 | 3  | 1        | -do-                                                       | 431     |
| 5  | Amthana                | 755  | 1.16  | 1.47 | 0    | 1966    | 413  | 344  | 1.16 | 4  | 2.9      | -do-                                                       | No Data |

| 1                      | 2              | 3    | 4     | 5    | 6    | 7       | 8    | 9    | 10   | 11 | 12           | 13                                       | 14      |
|------------------------|----------------|------|-------|------|------|---------|------|------|------|----|--------------|------------------------------------------|---------|
| <b>Surplus</b>         |                |      |       |      |      |         |      |      |      |    |              |                                          |         |
| <b>CADA Nagpur</b>     |                |      |       |      |      |         |      |      |      |    |              |                                          |         |
| 8                      | Bhadbhadya     | 1284 | 2.85  | 2.85 | 0.19 | 1975    | 800  | 674  | 2.89 | 3  | 1.11         | Paddy                                    | No Data |
| 8                      | Urkudapar      | 1214 | 4.75  | 4.75 | 0    | 1980    | 1265 | 1012 | 4.75 | 6  | 2            | Paddy, Chilly, Wheat, Gram               | No Data |
| 8                      | Wani           | 1190 | 2.021 | 1.98 | 0    | 1983    | 526  | 405  | 2.02 | 5  | 5            | -do-                                     | No Data |
| <b>Abundant</b>        |                |      |       |      |      |         |      |      |      |    |              |                                          |         |
| <b>CIPC Chandrapur</b> |                |      |       |      |      |         |      |      |      |    |              |                                          |         |
| 9                      | Ashti          | 1100 | 1.64  | 1.36 | 0    | 1965    | 455  | 364  | 1.41 | 4  | 1.5 to 2     | Wheat, Cotton, Gram                      | No Data |
| 9                      | Lagam          | 1283 | 1.16  | 3.41 | 0    | No Data | 344  | 315  | 3.42 | 4  | 1.5 to 2     | Paddy,                                   | No Data |
| 23                     | KIC Ratnagiri  | 3800 | 3.750 | 2.35 | 0    | 1979    | 421  | 200  | 3.68 | 2  | 0.15 to 0.05 | Coconut, Arecanut, Pepper, Spices, Paddy | 0       |
| <b>NKIPC Thane</b>     |                |      |       |      |      |         |      |      |      |    |              |                                          |         |
| 21                     | Dhasai         | 2200 | 4.478 | 4.20 | 0    | 1984-85 | 457  | 340  | 4.47 | 6  | 0.5          | Paddy, Vegetables & fruits               | No Data |
| 22                     | Panchanadi     | 3320 | 1.481 | 1.46 | 0    | 1984-85 | 114  | 91   | 1.46 | 3  | 0.2          | Beetlenut, Coconut, Paddy                | No Data |
| <b>SIC Sangli</b>      |                |      |       |      |      |         |      |      |      |    |              |                                          |         |
| 9                      | Atpadi         | 300  | 7.95  | 6.74 | 1.21 | 1967-68 | 1619 | 1120 | 7.98 | 5  | 2            | Cotton, Sorghum                          | 0       |
| 15                     | Benikre        | 1400 | 1.784 | 1.78 | 0    | 1990    | 358  | 286  | 1.78 | 1  | 1.5 to 2     | Sorghum, Groundnut, Wheat                | No Data |
| <b>TIC Thane</b>       |                |      |       |      |      |         |      |      |      |    |              |                                          |         |
| 21                     | Bhoj           | 2472 | 1.620 | 1.62 | 0    | 1974    | 216  | 135  | 1.56 | 3  | 0.35         | -do-                                     | 160     |
| 22                     | Kalote Mokashi | 3623 | 4.190 | 4.19 | 0    | 1976-77 | 126  | 105  | 4.19 | 4  | 0.20         | Paddy                                    | 105     |
| 21                     | Khandpe        | 2377 | 2.000 | 2.00 | 0    | 1985    | 202  | 120  | 1.99 | 2  | 0.40         | -do-                                     | 120     |
| 22                     | Kondgaon       | 3872 | 3.641 | 3.64 | 0    | 1979-80 | 212  | 188  | 3.64 | 5  | NA           | -do-                                     | 0       |
| 21                     | Mohknurd       | 3070 | 3.590 | 4.74 | 0    | 1975    | 213  | 173  | 4.36 | 5  | 0.35         | -do-                                     | 0       |
| 22                     | Pahre          | 3429 | 1.787 | 1.79 | 0    | 1978-79 | 174  | 133  | 1.79 | 3  | 0.20         | -do-                                     | 0       |

## Appendix-VI

### Quantitative Performance Evaluation

An attempt has been made this year as a part of internal benchmarking to evaluate the performance of circles quantitatively.

The method adopted for working evaluation is as follows.

- The analysis is done for major projects only.
- Four main indicators have been chosen for the exercise.

The indicators selected are;

| Sr. No. | Indicator                                              | Objective                                                            |
|---------|--------------------------------------------------------|----------------------------------------------------------------------|
| 1       | Annual Irrigation Water Supply per Unit Irrigated Area | To verify water use efficiency.                                      |
| 2       | Potential Created & Utilised                           | To verify the extent of utilisation of created irrigation potential. |
| 3       | Output per unit Area                                   | To check productivity per unit of water use in the command.          |
| 4       | Cost Recovery Ratio                                    | To check whether the project is financially sustainable or not.      |

- The evaluation is based on ratio of values for 2005-06 and values for past (2000-01 to 2004-05)
- The overall evaluation is average of ratios for four indicators.
- The figure arrived at indicates the overall index of the respective circle for 2005-06.

For example, the index for CADA Solapur (highly deficit) is 1.35, and for UWPC Amravati (Normal), the index is 0.86.

- Increase in value of overall index in subsequent years will indicate improvement in the performance.
- The value for cost recovery ratio is restricted to 1.00 in case it exceeds 1.00
- In sum circle the best of past value for indicator no.1 is taken to State target as the values in past in these circles exorbitantly deviate for State target.
- As the quantitative performance is comparison of self performance, inter-se comparison of other circles is not expected.

**Quantitative Performance Evaluation of a Circle**  
**Major Projects**

| Indicator                                                | Best of past | Value for 2005-06 | Formula | Ratio | Overall Performance |             |
|----------------------------------------------------------|--------------|-------------------|---------|-------|---------------------|-------------|
|                                                          |              |                   |         |       | 2005-06             | 2004-05     |
| <b>Highly Deficit Plangroup</b>                          |              |                   |         |       |                     |             |
| <b>CADA Solapur</b>                                      |              |                   |         |       |                     |             |
| I Annual Irrigation Water Supply per Unit Irrigated Area | 9572         | 7094              | 1.35    | 1.35  | <b>1.06</b>         | <b>1.03</b> |
| II Potential Created & Utilised                          | 0.63         | 0.64              | 1.02    | 1.02  |                     |             |
| III Output per unit Area                                 | 46175        | 46175             | 1.00    | 1.00  |                     |             |
| V Cost Recovery Ratio                                    | 1.00         | 0.88              | 0.88    | 0.88  |                     |             |
| <b>Deficit Plangroup</b>                                 |              |                   |         |       |                     |             |
| <b>CADA Nashik</b>                                       |              |                   |         |       |                     |             |
| I Annual Irrigation Water Supply per Unit Irrigated Area | 7692         | 4338              | 0.56    | 0.56  | <b>0.79</b>         | <b>0.81</b> |
| II Potential Created & Utilised                          | 1            | 1                 | 1.00    | 1.00  |                     |             |
| III Output per unit Area                                 | 58043        | 35543             | 0.61    | 0.61  |                     |             |
| V Cost Recovery Ratio                                    | 1            | 1                 | 1.00    | 1.00  |                     |             |
| <b>NIC Nanded</b>                                        |              |                   |         |       |                     |             |
| I Annual Irrigation Water Supply per Unit Irrigated Area | 7692         | 10666             | 0.72    | 0.72  | <b>0.72</b>         | <b>0.59</b> |
| II Potential Created & Utilised                          | 1            | 1                 | 1.00    | 1.00  |                     |             |
| III Output per unit Area                                 | 42361        | 35801             | 0.85    | 0.85  |                     |             |
| V Cost Recovery Ratio                                    | 1            | 0.29              | 0.29    | 0.29  |                     |             |
| <b>CADA Jalgaon</b>                                      |              |                   |         |       |                     |             |
| I Annual Irrigation Water Supply per Unit Irrigated Area | 7692         | 14336             | 0.54    | 0.54  | <b>0.70</b>         | <b>1.46</b> |
| II Potential Created & Utilised                          | 0.94         | 0.94              | 1.00    | 1.00  |                     |             |
| III Output per unit Area                                 | 22616        | 16724             | 0.74    | 0.74  |                     |             |
| V Cost Recovery Ratio                                    | 1            | 0.52              | 0.52    | 0.52  |                     |             |
| <b>AIC Akola</b>                                         |              |                   |         |       |                     |             |
| I Annual Irrigation Water Supply per Unit Irrigated Area | 9622         | 7816              | 1.23    | 1.23  | <b>0.79</b>         | <b>0.73</b> |
| II Potential Created & Utilised                          | 0.71         | 0.46              | 1.00    | 1.00  |                     |             |
| III Output per unit Area                                 | 27290        | 16658             | 0.61    | 0.61  |                     |             |
| V Cost Recovery Ratio                                    | 1            | 0.31              | 0.31    | 0.31  |                     |             |
| <b>CADA Beed</b>                                         |              |                   |         |       |                     |             |
| I Annual Irrigation Water Supply per Unit Irrigated Area | 11975        | 15240             | 0.79    | 0.79  | <b>0.76</b>         | <b>0.34</b> |
| II Potential Created & Utilised                          | 0.55         | 0.3               | 0.55    | 0.55  |                     |             |
| III Output per unit Area                                 | 53030        | 36903             | 0.70    | 0.70  |                     |             |
| V Cost Recovery Ratio                                    | 1            | 1                 | 1.00    | 1.00  |                     |             |
| <b>CADA Aurangabad</b>                                   |              |                   |         |       |                     |             |
| I Annual Irrigation Water Supply per Unit Irrigated Area | 7692         | 10278             | 0.75    | 0.75  | <b>0.90</b>         | <b>1.17</b> |
| II Potential Created & Utilised                          | 0.68         | 0.57              | 0.84    | 0.84  |                     |             |
| III Output per unit Area                                 | 27729        | 27729             | 1.00    | 1.00  |                     |             |
| V Cost Recovery Ratio                                    | 1            | 1                 | 1.00    | 1.00  |                     |             |
| <b>Normal Plangroup</b>                                  |              |                   |         |       |                     |             |
| <b>AIC Akola</b>                                         |              |                   |         |       |                     |             |
| I Annual Irrigation Water Supply per Unit Irrigated Area | 8996         | 12318.00          | 0.73    | 0.73  | <b>0.79</b>         | <b>0.63</b> |
| II Potential Created & Utilised                          | 0.84         | 0.70              | 0.83    | 0.83  |                     |             |
| III Output per unit Area                                 | 25524        | 14819.00          | 0.58    | 0.58  |                     |             |
| V Cost Recovery Ratio                                    | 1.00         | 1                 | 1.00    | 1.00  |                     |             |
| <b>NIC Nanded</b>                                        |              |                   |         |       |                     |             |
| I Annual Irrigation Water Supply per Unit Irrigated Area | 9731         | 12121             | 0.80    | 0.80  | <b>0.65</b>         | <b>0.85</b> |
| II Potential Created & Utilised                          | 1            | 0.97              | 0.97    | 0.97  |                     |             |
| III Output per unit Area                                 | 39808        | 21803             | 0.55    | 0.55  |                     |             |
| V Cost Recovery Ratio                                    | 0.47         | 0.13              | 0.28    | 0.28  |                     |             |



| Indicator                                                | Best of<br>past | Value for<br>2005-06 | Formula | Ratio | Overall<br>Performance |         |
|----------------------------------------------------------|-----------------|----------------------|---------|-------|------------------------|---------|
|                                                          |                 |                      |         |       | 2005-06                | 2004-05 |
| <b>CADA Pune</b>                                         |                 |                      |         |       |                        |         |
| I Annual Irrigation Water Supply per Unit Irrigated Area | 8543            | 8034                 | 1.06    | 1.06  | 0.69                   | 0.67    |
| II Potential Created & Utilised                          | 1               | 1                    | 1.00    | 1.00  |                        |         |
| III Output per unit Area                                 | 50853           | 25674                | 0.50    | 0.50  |                        |         |
| V Cost Recovery Ratio                                    | 1               | 0.23                 | 0.23    | 0.23  |                        |         |
| <b>CIPC Chandrapur</b>                                   |                 |                      |         |       |                        |         |
| I Annual Irrigation Water Supply per Unit Irrigated Area | 7692            | 8315                 | 0.93    | 0.93  | 0.84                   | 0.63    |
| II Potential Created & Utilised                          | 1               | 0.69                 | 0.69    | 0.69  |                        |         |
| III Output per unit Area                                 | 28572           | 22935                | 0.80    | 0.80  |                        |         |
| V Cost Recovery Ratio                                    | 0.45            | 0.42                 | 0.93    | 0.93  |                        |         |
| <b>CADA Jalgaon</b>                                      |                 |                      |         |       |                        |         |
| I Annual Irrigation Water Supply per Unit Irrigated Area | 8315            | 11615                | 0.72    | 0.72  | 0.85                   | 1.4     |
| II Potential Created & Utilised                          | 1               | 1                    | 1.00    | 1.00  |                        |         |
| III Output per unit Area                                 | 72332           | 48351                | 0.67    | 0.67  |                        |         |
| V Cost Recovery Ratio                                    | 1               | 1                    | 1.00    | 1.00  |                        |         |
| <b>PIC Pune</b>                                          |                 |                      |         |       |                        |         |
| I Annual Irrigation Water Supply per Unit Irrigated Area | 8286            | 11261                | 0.74    | 0.74  | 0.74                   | 0.98    |
| II Potential Created & Utilised                          | 1               | 1                    | 1.00    | 1.00  |                        |         |
| III Output per unit Area                                 | 58000           | 36834                | 0.64    | 0.64  |                        |         |
| V Cost Recovery Ratio                                    | 1               | 1                    | 1.00    | 1.00  |                        |         |
| <b>CADA Nashik</b>                                       |                 |                      |         |       |                        |         |
| I Annual Irrigation Water Supply per Unit Irrigated Area | 12033           | 11123                | 1.08    | 1.08  | 1.05                   | 0.67    |
| II Potential Created & Utilised                          | 1               | 1                    | 1.00    | 1.00  |                        |         |
| III Output per unit Area                                 | 26755           | 41133                | 1.54    | 1.54  |                        |         |
| V Cost Recovery Ratio                                    | 1               | 1                    | 1.00    | 1.00  |                        |         |
| <b>UWPC Amravati</b>                                     |                 |                      |         |       |                        |         |
| I Annual Irrigation Water Supply per Unit Irrigated Area | 17268           | 20045                | 0.86    | 0.86  | 0.85                   | 0.9     |
| II Potential Created & Utilised                          | 0.25            | 0.22                 | 0.88    | 0.88  |                        |         |
| III Output per unit Area                                 | 37535           | 37535                | 1.00    | 1.00  |                        |         |
| V Cost Recovery Ratio                                    | 1               | 0.67                 | 0.67    | 0.67  |                        |         |
| <b>Surplus Plangroup</b>                                 |                 |                      |         |       |                        |         |
| <b>CADA Nagpur</b>                                       |                 |                      |         |       |                        |         |
| I Annual Irrigation Water Supply per Unit Irrigated Area | 8833            | 9097                 | 0.97    | 0.97  | 0.92                   | 0.89    |
| II Potential Created & Utilised                          | 1.00            | 0.78                 | 0.78    | 0.78  |                        |         |
| III Output per unit Area                                 | 32272           | 29214                | 0.91    | 0.91  |                        |         |
| V Cost Recovery Ratio                                    | 1.00            | 1.00                 | 1.00    | 1.00  |                        |         |
| <b>Abundant Plangroup</b>                                |                 |                      |         |       |                        |         |
| <b>CIPC Chandrapur</b>                                   |                 |                      |         |       |                        |         |
| I Annual Irrigation Water Supply per Unit Irrigated Area | 8092            | 5118                 | 0.63    | 0.63  | 0.73                   | 1.19    |
| II Potential Created & Utilised                          | 1.00            | 0.99                 | 0.99    | 0.99  |                        |         |
| III Output per unit Area                                 | 29413           | 24263                | 0.82    | 0.82  |                        |         |
| V Cost Recovery Ratio                                    | 0.92            | 0.45                 | 0.49    | 0.49  |                        |         |
| <b>CADA Pune</b>                                         |                 |                      |         |       |                        |         |
| I Annual Irrigation Water Supply per Unit Irrigated Area | 11858           | 11858                | 1.00    | 1.00  | 0.84                   | 0.96    |
| II Potential Created & Utilised                          | 1               | 1                    | 1.00    | 1.00  |                        |         |
| III Output per unit Area                                 | 30159           | 25036                | 0.83    | 0.83  |                        |         |
| V Cost Recovery Ratio                                    | 1               | 0.85                 | 0.85    | 0.85  |                        |         |
| <b>SIC Sangli</b>                                        |                 |                      |         |       |                        |         |
| I Annual Irrigation Water Supply per Unit Irrigated Area | 10120           | 6662                 | 1.52    | 1.52  | 0.94                   | 0.77    |
| II Potential Created & Utilised                          | 1               | 0.43                 | 0.43    | 0.43  |                        |         |
| III Output per unit Area                                 | 63025           | 50324                | 0.80    | 0.80  |                        |         |
| V Cost Recovery Ratio                                    | 1               | 1                    | 1.00    | 1.00  |                        |         |
| <b>TIC THANE</b>                                         |                 |                      |         |       |                        |         |
| I Annual Irrigation Water Supply per Unit Irrigated Area | 24784           | 27830                | 0.89    | 0.89  | 0.85                   | 0.96    |
| II Potential Created & Utilised                          | 1               | 0.87                 | 0.87    | 0.87  |                        |         |
| III Output per unit Area                                 | 48433           | 31493                | 0.65    | 0.65  |                        |         |
| V Cost Recovery Ratio                                    | 1               | 1                    | 1.00    | 1.00  |                        |         |

Note: The cost recovery ratio is restricted to 1 even for higher values.

## Appendix-VII

### 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 Commisison 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                                                                  |

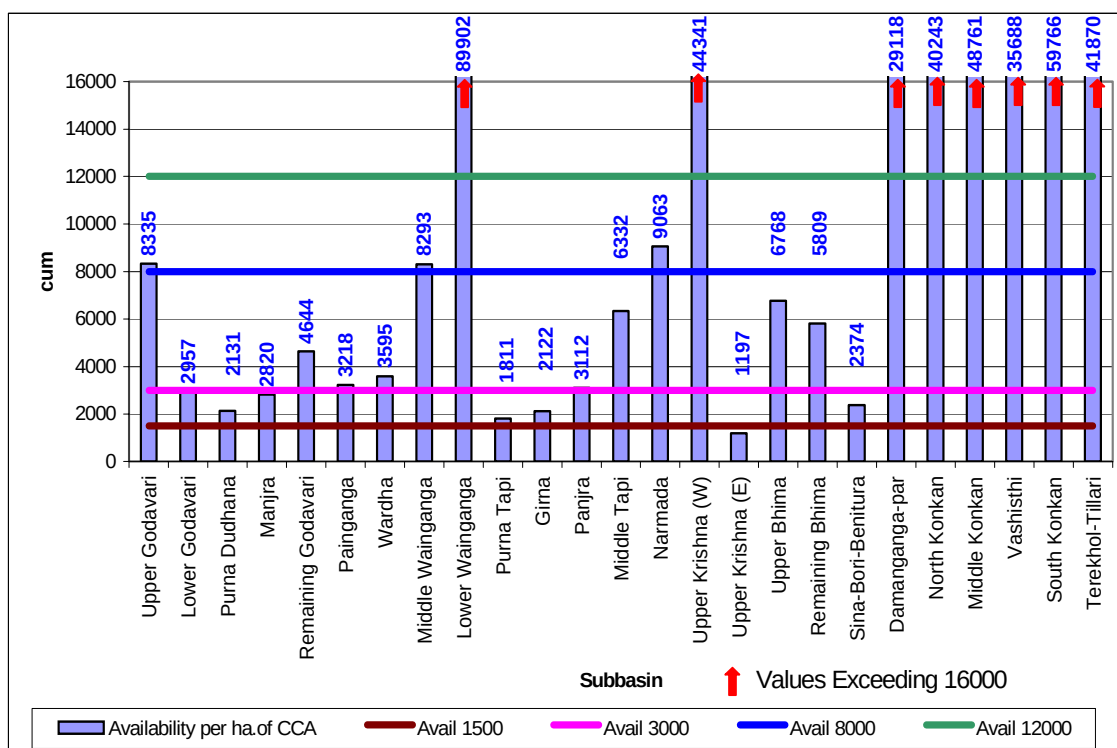
Categorisation of sub basins for planning, on basis of naturally available quantum of water, is given below :

| 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.

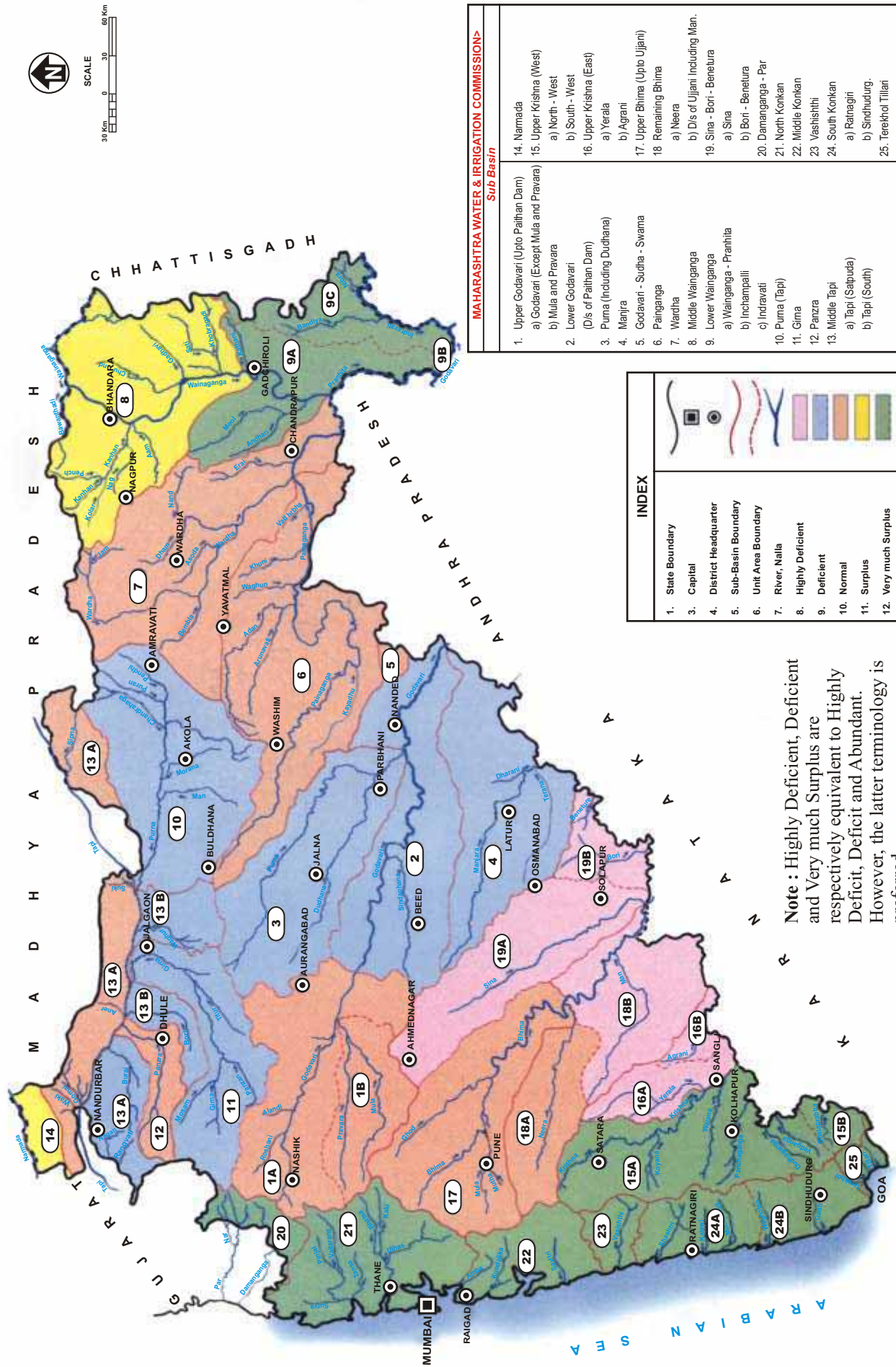
1 The coastal districts of Konkan experience heavy rains but mild winter. The weather, however, is mostly humid throughout the year.

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

# SUB - BESINS IN MAHARASHTRA AS PROPOSED BY THE COMMISSION & CATEGORIZATION THEREOF IN PLANNING GROUPS



**Note :** Highly Deficient, Deficient and Very much Surplus are respectively equivalent to Highly Deficit, Deficit and Abundant. However, the latter terminology is preferred.

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°C to 41°C) but winter temperature is low (minimum temperature. 10°C to 16°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°C to 43°C) and minimum winter temperature is found to be 12°C to 15°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°C to 45°C) while it is cooler in winter as compared to other regions (12°C to 14°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-VIII**  
**Abstract of Water Rates for Irrigation Domestic and Industrial Use for the year 2005-06**

|          | <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>Seasonals                                                                                           | 724                                     |
| D        | <b>Two Seasonals</b><br>Kharif and Rabi<br>Rabi & Hot Weather                                                             | 357<br>605                              |
| E        | <b>Perennial</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>Perennial (Sugarcane, Banana)<br>Other Perennial 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>Perennial<br>Other Perennial                       | 40<br>60<br>120<br>910<br>605           |
| C        | <b>River</b><br>Kharif Crops<br>Rabi Crops<br>Hot Weather Crops<br>Perennial<br>Other Perennial                           | 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<br/>Domestic Supply</b>                                                                     |                                         |
| A        | From reservoirs, canals and rivers downstream of dams                                                                     | 5.80                                    |
| B        | 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 Cold drinks, beverages, mineral water etc.<br>From reservoirs, canals and rivers downstream of dams                   | 410.00                                  |
| B        | 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, canals and rivers downstream of dams                                | 82.00           |
| B        | In case Capital Investment is done by user or contributed in proportion of water use | 12.00           |

**APPENDIX - IX**  
**Terms& corresponding abbreviations used in proforma for**  
**data submission for Bench Marking**

| Col No. | Term used in BM Proforma                                              | Abbreviations<br>(For Computer use) |
|---------|-----------------------------------------------------------------------|-------------------------------------|
| 1       | Name of Circle in short                                               | <b>Circle</b>                       |
| 2       | Name of Project                                                       | <b>Project</b>                      |
| 3       | Sr No of Sub basin as per MWIC                                        | <b>Sub basin No</b>                 |
| 4       | Type of Project i.e. Major, Medium, Minor                             | <b>Type</b>                         |
| 5       | Irrigation year (1-July to 30-June)                                   | <b>Year</b>                         |
| 6       | Total Utilisation of water (Irrigation + Non Irrigation)              | <b>TotalUtil</b>                    |
| 7       | Annual Irrigation water supply (mm3)                                  | <b>UtilIrr</b>                      |
| 8       | Annual Irrigated area (ha)                                            | <b>Area irr</b>                     |
| 9       | Irrigation potential utilised (ha)                                    | <b>Util Pot</b>                     |
| 10      | Effective irrigation potential created (ha)                           | <b>EIP Created</b>                  |
| 11      | Annual Output (Agricultural production) (Rs. lakhs)                   | <b>AnnualOP</b>                     |
| 12      | Annual revenue collected for irrigation use (Rs. lakhs)               | <b>Revenue (I)</b>                  |
| 13      | Annual revenue collected for non irrigation use (Rs. lakhs)           | <b>Revenue (NI)</b>                 |
| 14      | Annual O & M expenditure for irrigation use (Rs. lakhs)               | <b>OM(I)</b>                        |
| 15      | Annual O & M expenditure for non irrigation use (Rs. lakhs)           | <b>OM (NI)</b>                      |
| 16      | Annual Mandays for O & M for irrigation (Mandays)                     | <b>Mandays(I)</b>                   |
| 17      | Annual Mandays for O & M for non irrigation (Mandays)                 | <b>Mandays (NI)</b>                 |
| 18      | Annual total land damaged area (ha)                                   | <b>LD</b>                           |
| 19      | Culturable Command Area As per Potential created                      | <b>CCA</b>                          |
| 20      | Annual irrigation potential created (I.C.A. on canal)                 | <b>Irr Pot (ICA)</b>                |
| 21      | Annual cumulative created irrigation potential in <b>Head</b> reach   | <b>CIPHead</b>                      |
| 22      | Annual cumulative created irrigation potential in <b>Middle</b> reach | <b>CIPMiddle</b>                    |
| 23      | Annual cumulative created irrigation potential in <b>Tail</b> reach   | <b>CIPTail</b>                      |
| 24      | Utilised cumulative irrigation potential in <b>Head</b> reach         | <b>UIPHead</b>                      |
| 25      | Utilised cumulative irrigation potential in <b>Middle</b> reach       | <b>UIPMiddle</b>                    |
| 26      | Utilised cumulative irrigation potential in <b>Tail</b> reach         | <b>UIPTail</b>                      |
| 27      | Assessment of Water charges of irrigation Utilisation Rs Lakhs        | <b>AssessIrr</b>                    |
| 28      | Recovery of Water charges of irrigation Utilisation                   | <b>RecoveryIrr</b>                  |
| 29      | Assessment of Water charges of Non-irrigation Utilisation             | <b>AssessNonIrr</b>                 |
| 30      | Recovery of Water charges of Non-irrigation Utilisation               | <b>RecoveryNonIrr</b>               |

**Explanatory note for terms used in proforma for  
data submission for Bench Marking of Water Resources projects.**

1. **Name of circle in short (Circle):**  
Name of circle to which irrigation management of the project is entrusted shall be given.
2. **Name of project – (Project) ::**  
Mention name of project about which the data is submitted.
3. **Sr. No. of sub basin as pr MWIC (sub basin no.) :**  
MWIC has allotted a specific number to each sub basin of the State. corresponding number of that sub basin in which the dam of the project lies to be mention under this column.
4. **Type of project (Type) ::**  
Type of the project i.e. whether it is Major, Medium or Minor (as per administrative approval) to be mention.
5. **Irrigation year ( 1 July to 30<sup>th</sup> June) – (Year)**  
Irrigation year spanning from 1<sup>st</sup> July to 30<sup>th</sup> June to be mention.
6. **Total utilisation of water (Irrigation + non irrigation) - (Total util) :**  
It is the sum of the quantity of water utilised (in kharif, Rabbi & hot weather) for irrigation & non irrigation purpose . For irrigation, the water may have utilised from canal (flow +Lift ), reservoir (Lift) and river (when water is a let out in river from the dam) Similarly, water lifted from canal, reservoir & river (where let out from storage dam) for domestic and industrial use is considered as non irrigation water use.  
Total utilisation of water can be calculated from the data in proforma 6(B) for water audit.  
Data to be considered for evaluation of **Total util** is shown in tabulation form in Appendix enclosed herewith.
7. **Annual irrigation Water supply (Util Irr.):**  
It is sum of the quantity of water utilised for irrigation in all the three irrigation seasons. Water supply may be from canal (flow + Lift), reservoir, or river (when water is lifted from flow let out from storage dam). It can be obtained by substaracting non irrigation water use ( sum of domestic, industrial, cultural water use either from canal , reservoir and river) from the total water use as mentioned in column 6 of this proforma for bench marking..  
(Col No.7 B.M. proforma) Util.Irri. = col 6 of B.M. proforma - sum of water used for domestic, Industrial, cultural use.
8. **Annual irrigated area (Area irr) :**  
Sum of the area under different standing crops in kharif, rabi & Hot weather seasons to which water is supplied either from canal, reservoir & river is considered as annual irrigated area. In case of projects having perennial crops, if the area under such crops, is supplied with irrigation water in two or more seasons, then such area shall be considered twice or thrice as the case may be while evaluating the annual irrigated area. In other words annual irrigated area is the summation of crop intensity in three irrigation seasons.  
Annual irrigated area can be calculated by adding kharif, rabi, Hot weather area shown in sub clause 9 (A), 9 (B), 9 (c) of water audit proforma 6 (B)  
Col 8 Annual irrigated area = Annual irrigated area (9 A LBC + 9A RBC +9B R Lift+ 9 C river (Note: Area on well & nalla to be excluded )
9. **Irrigation Potential Utilised (Util Pot)**  
It is sum of the area under different crops grown in the command area by irrigation water supplied either from canal (flow + Lift), reservoir, or river and crop area, grown in project influenced area.

Irrigation potential utilised can be evaluated by adding together grand total of crop area assessed and shown in column 6 (for canal, reservoir, river & wells) of proforma 6 (c) of water audit.

**10. Effective Irrigation potential created (E IP created)**

It is the command area that has been fully developed and declared by project authorities as created potential. Though it is expected that the created potential should be fully utilised every year, it is not so possible due to number of constraints. Potential utilisation during an irrigation year mainly depends upon the availability of water for irrigation in the reservoir. Low in flow in the reservoir along with increased non irrigation use, compared to project planning compels to curtail down the water availability for irrigation. Under such condition for realistic evaluation of potential utilisation with respect to potential created, potential created needs to be corrected in proportion to actual water available as compared to water considered for designed potential utilisation in project planning. Potential created thus derived is called as effective irrigation potential created.

**11. Annual out put (Agricultural production)- (Annual Op.):**

It is the total out put in Rs. worked out by multiplying the area (ha) under each crop by the crop yield of that year and market rate in 1998-99 as per concerned Taluka Krishi Utpanna Bazar Samiti. The crop area shall be the sum of area shown in proforma 6 (C) of water audit for irrigation on canal (flow+Lift), reservoir, river & wells.

The yield of irrigated crops considered for evaluating the total out put shall be obtained each year from the agricultural department. For projects under CADA such yield should be as per crop cutting experiments carried out in the command area of the project. In no case, the crop wise yield based on local inquiry, or staff's own guess shall be considered for such evaluation.

Also the price value of agricultural produce per quintal (or suitable unit) shall invariably be of the year 1998-99 and specified by the concerned Taluka Krishi Utpanna Bazar Samiti only. Rates for sugar & Cotton shall be obtained from sugar factory & Cotton Federation in the command area.

**12. Annual Revenue collected for irrigation use (Revenue I) :**

It is the total irrigation revenue recovered during the irrigation year. The revenue recovered shall comprise of (i) revenue recovered against the assessment of area irrigated during the irrigation year or an advance realized while sanctioning the water demand & (ii) recovery realized against the arrears of water recovery

**13. Annual revenue collected for non irrigation use (Revenue NI) :**

It is the revenue recovered on part of water supplied for domestic, industrial, cultural & fisheries etc. The revenue recovered during the irrigation year may consist of (i) advance realized from concerned agency for water reservations or water tax recovery for water supply during the irrigation year & (ii) revenue recovery against the arrears of pending water recovery towards the agency.

**14. Annual O & M expenditure for irrigation use (O & M I) :**

Expenditure in the form of salary of staff in an irrigation section, working directly or in directly on irrigation management is considered as an operation cost. Staff personnel working on irrigation managements may belong to RT, CRT, work charged or Daily rated establishment.

For effective irrigation performance, certain periodical repairs are necessary to dam, its appurtenances and to canal system. The cost of such repair works paid in the irrigation year is defined as maintenance cost. Sum of operation & maintenance cost incurred during the irrigation year is called as O & M cost. As per availability of funds, expenditure incurred on repairs works carried out in previous year also have to be considered as maintenance cost of the irrigation year only. However, special note regarding such expenditure may be given along with the bench marking data.

**15. Annual O & M expenditure for non irrigation use (O & M NI) :**

It is sum of the expenditure incurred during the irrigation year on salary of staff working for non irrigation water supply & proportionate share of cost of repairs to dam & its allied components Proportionate share of repair cost to canal system is also considered as maintenance cost for non irrigation., if non irrigation water supply is from canal.

**16. Annual mandays for O & M for irrigation use. (Mandays I) :**

It means total number of mandays utilised on a project for irrigation management. Staff on RT, CRT, WC & Daily establishment utilised for irrigation management upto section is considered for working out annual mandays for irrigation.

During scarcity year there may be no irrigation on the project. However, Salary of staff, being an unavoidable expenditure mandays shall be submitted for bench marking irrespective of irrigation carried out or not on the project. There should not be considerable change in the mandays in an year compared. to its previous year unless and until either some staff personnel's are retired or are transfered to other project.

**17. Annual mandys for O & M for non irrigation use (Mandays NI) :**

It means total number of man days utilised for non irrigation water use. Staff working on water supply pumping stations, proportionate staff personals working on dam and canal (if non irrigation water supply is from canal) is considered for working out man days for non irrigation water supply.

**18. Annual total land damaged area (LD) :**

Command area certified as damaged area by DIRD Pune on account of water logging, salt efflorescence shall be shown as land damaged area. Changes in the damaged area shall be as per DIRD'S report only.

**19. Culturable Command Area (CCA) :**

Culturable command area corresponding to potential created should be mentioned in under this column.

**20. Annual Irrigation Potential Created (I.C.A.) on canal (Irr Pot (ICA) ):**

To check whether the irrigation water is supplied equitably to head, middle & tail reaches of canal system, the system is divided in three reaches so that command area on each reach is equal. Naturally, I.C.A. corresponding to potential created shall be considered for deciding the head, middle & tail reaches of the canal. The details about calculations of length of reaches is shown in detail in the enclosed appendix. The length of reaches thus calculated shall remain constant for all irrigations years, unless there is change in created potential. Procedure for evaluating the area irrigated in each reach is exhibited in enclosed appendix. Area irrigated on reservoir lift or on river and wells shall not be considered as area irrigated in head or tail reaches.

**21. Annual cumulative created irrigation potential on head reach (CIP head) :**

Means one third of the area to be irrigated as per design I.C.A. on canal (CIP head)  
 $1/3 \times (\text{Irr Pot ICA})$

**22. Annual cumulative created irrigation potential on middle reach (CIP Middle):**

Means one third of the area to be irrigated as per design I.C.A. on canal (CIP Middle)  
 $1/3 \times (\text{Irr Pot ICA})$

**23. Annual cumulative created irrigation potential on tail reach (CIP Tail) :**

Means one third of the area to be irrigated as per design I.C.A. on canal (CIP Tail)  
 $\text{Tail}) = 1/3 \times (\text{Irr Pot ICA})$

**24. Utilised cumulative irrigation potential in head reach (UIP Head) :**

It means Area under standing crops irrigated in Kharif, Rabi, Hot weather by canal (flow +Lift) water in head reaches of canal system. Area of standing crops on reservoir lift, wells shall not be considered here.

**25 Utilised cumulative irrigation potential in middle reach (UIP middle) :**

It means Area under standing crops irrigated in Kharif, Rabi, Hot weather by canal (flow +Lift) water in middle reaches of canal system.

**26. Utilised cumulative irrigation potential in tail reach (UIP tail ) :**

It means Area under standing crops irrigated in Kharif, Rabi, Hot weather by canal (flow +Lift) water in tail reaches of canal system. Area irrigated on river lift shall not be considered here.

**27. Assessment of water charges of irrigation utilisation (AssesIrr) :**

As per Govt Resolution dated शासन शुद्धीपत्रक क्र. संकीर्ण /१००२/(२०९/२००२) सि.व्य.(धो) दिनांक ९ जून २००४ Assessments of area irrigated in hot weather season of previous irrigation year and assessment of area irrigated in kharif, rabi seasons of current irrigation year to be completed and sanctioned during the current irrigation year. Naturally assessment of water charges for irrigation in an irrigation year comprises of, sum of the assessments of above three seasons only. Even if assessment of any irrigation season other than above three seasons is completed & sanctioned during the irrigation year as an arrears of works, such assessment should not be considered as assessment of that year.

**28. Recovery of water charges of irrigation utilisation (Recovery-Irr) :**

It is the recovery of water charges against the assesment of (i) area irrigated in hot weather of previous irrigation year & (ii) area irrigated in kharif & rabi season of the irrigation year.

Recovery may contain the advance amount realized while sanctioning the water demand application for hot weather of current irrigation year.

**29. Assessment of water charges of non irrigation utilisation (Assess NonIrr):**

Assessment of water charges for supply of water for all sorts of non irrigation use during the irrigation year.

**30. Recovery of water charges of Non irrigation utilisation ( Recovery Non Irr) :**

Recovery realized (including advances) against the assessment for supply of water for non irrigation use during the year.

| Proforma for data submission for Benchmarking (Revised) |                                                       |                                     |                                                |                                                       |                                                             |                                                               |                                                             |                                                               |                                                                 |                                                               |                                                                |                                                             |                                                           |
|---------------------------------------------------------|-------------------------------------------------------|-------------------------------------|------------------------------------------------|-------------------------------------------------------|-------------------------------------------------------------|---------------------------------------------------------------|-------------------------------------------------------------|---------------------------------------------------------------|-----------------------------------------------------------------|---------------------------------------------------------------|----------------------------------------------------------------|-------------------------------------------------------------|-----------------------------------------------------------|
| Name of Circle in short                                 | Name of Project                                       | Sr No of Sub basin as per MWIC      | Type of Project i.e. Major, Medium, Minor      | Irrigation year (1-July to 30-June)                   | Total Utilisation of water (Irrigation + Non Irrigation)    | Annual Irrigation water supply (mm3)                          | Annual Irrigated area (ha)                                  | Irrigation potential utilised (ha)                            | Effective irrigation potential created (ha)                     | Annual Output (Agricultural production) (Rs. lakhs)           | Annual revenue collected for irrigation use (Rs. lakhs)        | Annual revenue collected for non irrigation use (Rs. lakhs) | Annual O & M expenditure for irrigation use (Rs. lakhs)   |
| 1                                                       | 2                                                     | 3                                   | 4                                              | 5                                                     | 6                                                           | 7                                                             | 8                                                           | 9                                                             | 10                                                              | 11                                                            | 12                                                             | 13                                                          | 14                                                        |
|                                                         |                                                       |                                     |                                                |                                                       |                                                             |                                                               |                                                             |                                                               |                                                                 |                                                               |                                                                |                                                             | 15                                                        |
|                                                         |                                                       |                                     |                                                |                                                       |                                                             |                                                               |                                                             |                                                               |                                                                 |                                                               |                                                                |                                                             |                                                           |
|                                                         |                                                       |                                     |                                                |                                                       |                                                             |                                                               |                                                             |                                                               |                                                                 |                                                               |                                                                |                                                             |                                                           |
|                                                         |                                                       |                                     |                                                |                                                       |                                                             |                                                               |                                                             |                                                               |                                                                 |                                                               |                                                                |                                                             |                                                           |
|                                                         |                                                       |                                     |                                                |                                                       |                                                             |                                                               |                                                             |                                                               |                                                                 |                                                               |                                                                |                                                             |                                                           |
| Annual Mandays for O & M for irrigation (Mandays)       | Annual Mandays for O & M for non irrigation (Mandays) | Annual total land damaged area (Ha) | Cultural Command Area As per Potential created | Annual irrigation potential created (I.C.A.) on canal | Annual cumulative irrigation potential in <b>Head</b> reach | Annual cumulative irrigation potential in <b>Middle</b> reach | Annual cumulative irrigation potential in <b>Tail</b> reach | Utilised cumulative irrigation potential in <b>Head</b> reach | Utilised cumulative irrigation potential in <b>Middle</b> reach | Utilised cumulative irrigation potential in <b>Tail</b> reach | Assessment of Water charges of irrigation Utilisation Rs Lakhs | Recovery of Water charges of irrigation Utilisation         | Assessment of Water charges of Non-irrigation Utilisation |
| 16                                                      | 17                                                    | 18                                  | 19                                             | 20                                                    | 21                                                          | 22                                                            | 23                                                          | 24                                                            | 25                                                              | 26                                                            | 27                                                             | 28                                                          | 29                                                        |
|                                                         |                                                       |                                     |                                                |                                                       |                                                             |                                                               |                                                             |                                                               |                                                                 |                                                               |                                                                |                                                             | 30                                                        |
|                                                         |                                                       |                                     |                                                |                                                       |                                                             |                                                               |                                                             |                                                               |                                                                 |                                                               |                                                                |                                                             |                                                           |
|                                                         |                                                       |                                     |                                                |                                                       |                                                             |                                                               |                                                             |                                                               |                                                                 |                                                               |                                                                |                                                             |                                                           |
|                                                         |                                                       |                                     |                                                |                                                       |                                                             |                                                               |                                                             |                                                               |                                                                 |                                                               |                                                                |                                                             |                                                           |
|                                                         |                                                       |                                     |                                                |                                                       |                                                             |                                                               |                                                             |                                                               |                                                                 |                                                               |                                                                |                                                             |                                                           |
|                                                         |                                                       |                                     |                                                |                                                       |                                                             |                                                               |                                                             |                                                               |                                                                 |                                                               |                                                                |                                                             |                                                           |

## Appendix

### Evaluation of data for Bench Marking of Water Resources Projects

For evaluating the data for Bench Marking, data about irrigation & Total Water use, area irrigated, potential utilise is to be retrieved from water audit proformae 6B & 6C. Numbers prefixed to sub captions belongs to the clause Nos in water audit proforma where from the data is retrieved.

#### Column 6 of BM Proforma : Total utilisation of water (Irrigation + Non Irrigation) Total Util

6A LBC Water drawn at canal head (Water use in  $Mm^3$ )

| Season       | Water use for |            |            | Total          |
|--------------|---------------|------------|------------|----------------|
|              | Domestic      | Industrial | Irrigation |                |
| 1            | 2             | 3          | 4          | 5              |
| Kharif       |               |            |            |                |
| Rabbi        |               |            |            |                |
| H.W.         |               |            |            |                |
| <b>Total</b> |               |            |            | <b>..... I</b> |

6B RBC Water drawn at canal head

| Season       | Water use for |            |            | Total           |
|--------------|---------------|------------|------------|-----------------|
|              | Domestic      | Industrial | Irrigation |                 |
| 1            | 2             | 3          | 4          | 5               |
| Kharif       |               |            |            |                 |
| Rabbi        |               |            |            |                 |
| H.W.         |               |            |            |                 |
| <b>Total</b> |               |            |            | <b>..... II</b> |

7 Water lifted from reservoir

| Season       | Water use for |            |            | Total            |
|--------------|---------------|------------|------------|------------------|
|              | Domestic      | Industrial | Irrigation |                  |
| 1            | 2             | 3          | 4          | 5                |
| Kharif       |               |            |            |                  |
| Rabbi        |               |            |            |                  |
| H.W.         |               |            |            |                  |
| <b>Total</b> |               |            |            | <b>..... III</b> |

8 Releases in to river

| Season       | Water use from       |                        |                          |                            | Total           |
|--------------|----------------------|------------------------|--------------------------|----------------------------|-----------------|
|              | 1 Lifts for Domestic | 2 Lifts for Industrial | 5 Let out for irrigation | 4 Let out for cultural use |                 |
| 1            | 2                    | 3                      | 4                        | 5                          | 6               |
| Kharif       |                      |                        |                          |                            |                 |
| Rabbi        |                      |                        |                          |                            |                 |
| H.W.         |                      |                        |                          |                            |                 |
| <b>Total</b> |                      |                        |                          |                            | <b>..... IV</b> |

**Total utilisation of water (Irrigation + Non Irrigation) Total Util = (I+II+III+IV)**



**Column 7 of BM Proforma : Annual Irrigation Water Supply (Util Irr)**

Water drawn at canal head for non irrigation use.

6A LBC

(Water use in  $\text{Mm}^3$ )

| Season       | Water use for |            | Total   |
|--------------|---------------|------------|---------|
|              | Domestic      | Industrial |         |
| 1            | 2             | 3          | 4       |
| Kharif       |               |            |         |
| Rabbi        |               |            |         |
| H.W.         |               |            |         |
| <b>Total</b> |               |            | ..... I |

Water drawn at canal head for non irrigation use.

6B RBC

| Season       | Water use for |            | Total    |
|--------------|---------------|------------|----------|
|              | Domestic      | Industrial |          |
| 1            | 2             | 3          | 4        |
|              |               |            |          |
| Kharif       |               |            |          |
| Rabbi        |               |            |          |
| H.W.         |               |            |          |
| <b>Total</b> |               |            | ..... II |

7 Water lifted from reservoir for Non Irrigation use.

| Season       | Water use for |            | Total     |
|--------------|---------------|------------|-----------|
|              | Domestic      | Industrial |           |
| 1            | 2             | 3          | 4         |
|              |               |            |           |
| Kharif       |               |            |           |
| Rabbi        |               |            |           |
| H.W.         |               |            |           |
| <b>Total</b> |               |            | ..... III |

Release in to the river for Non Irrigation use.

| Season       | Water use for |            |          | Total    |
|--------------|---------------|------------|----------|----------|
|              | Domestic      | Industrial | Cultural |          |
| 1            | 2             | 3          | 4        | 5        |
| Kharif       |               |            |          |          |
| Rabbi        |               |            |          |          |
| H.W.         |               |            |          |          |
| <b>Total</b> |               |            |          | ..... IV |

**Annual Irrigation Water Supply (Util Irr) :**

= Column 6 of BM Proforma – (I+II+III+IV) of above table.

### Column 8 of BM Proforma : Annual irrigated area Ha (Area Irr)

Data shown under **actual area irrigated** in clause 9 of Water Audit proforma 6B is to be used for evaluating annual irrigated area. (AIrra)

| Season       | Actual area irrigated on |         |                    |                | Total        |
|--------------|--------------------------|---------|--------------------|----------------|--------------|
|              | 9A ) LBC                 | 9A) RBC | 9B) Reservoir Lift | 9C) River Lift |              |
| 1            | 2                        | 3       | 4                  | 5              | 6            |
| Kharif       |                          |         |                    |                |              |
| Rabbi        |                          |         |                    |                |              |
| H.W.         |                          |         |                    |                |              |
| <b>Total</b> |                          |         |                    |                | ***** .... I |

**Annual irrigated area Ha (AIrra) = \*\*\*\*\***

### Column 9 of BM Proforma : Irrigation Potential Utilised Ha (Util Pot)

Refer water audit proforma 6C

| Sr. No. | Details of Potential utilisation         | Crop area assessed & shown under grand total in column 6 of proforma 6C |
|---------|------------------------------------------|-------------------------------------------------------------------------|
| 1       | 2                                        | 3                                                                       |
| 1.      | Potential utilised on canals (ha)        |                                                                         |
| 2.      | Potential utilised on reservoir (ha)     |                                                                         |
| 3.      | Potential utilised on river by lift (ha) |                                                                         |
| 4.      | Potential utilised on Nala & Wells (ha)  |                                                                         |
|         | <b>Total : (Util Pot) (ha)</b>           | <b>=</b>                                                                |

Irrigation Potential utilised (Util Pot) = addition of potential utilisation on canals reservoir lift, river lift & Area on wells.

### Column 10 of BM Proforma : Effective irrigation potential created (EIP created)

**EIP created** = Cumulative potential created on the project x A/B

where , **A** = Actual water available for irrigation during the irrigation year &

**B** = Water available for irrigation as per project planning

### Column 11 of BM Proforma : Annual out put(Agricultural production )Annual OP

Out put can be derived by using crop wise area assessed and shown in Col 6 of water audit proforma 6C

| Sr. No. | Crop Name | Area assessed & shown in col.6of 6C (ha) | Yield per Ha | Total production         | Unit* | Rate per Unit | Amount in Rs. (Lacs) |
|---------|-----------|------------------------------------------|--------------|--------------------------|-------|---------------|----------------------|
| 1       | 2         | 3                                        | 4            | 5                        | 6     | 7             | 8                    |
|         |           |                                          |              |                          |       |               |                      |
|         |           |                                          |              |                          |       |               |                      |
|         |           |                                          |              | Total (Annual Out put) = |       |               |                      |

\* (Unit may be tonne/Quintals)

**Column 14 & 15 of BM Proforma Annual O & M Expenditure for Irrigation & Non Irrigation Use**

Annual O & M expenditure for Irrigation & Non Irrigation is to be worked out from physical figures in relevant office record. It is to be presented in the format given below which will help in analysing the expenditure per unit area irrigated.

**Statement showing the O & M Cost incurred on ..... Major project during the year**

| Circle : |                                       |                   |                 |         |
|----------|---------------------------------------|-------------------|-----------------|---------|
| Sr.No.   | Particulars                           | Amount in Rs.lakh |                 | Remarks |
|          |                                       | Last year         | Irrigation year |         |
| 1        | 2                                     | 3                 | 4               | 5       |
| A        | Operation cost                        |                   |                 |         |
|          | i) Salary of staff                    |                   |                 |         |
|          | ii) Arrears                           |                   |                 |         |
|          | Total :                               |                   |                 |         |
| B        | Maintenance cost                      |                   |                 |         |
|          | i) Repairs to dam & allied structures |                   |                 |         |
|          | ii) Repairs to canal system           |                   |                 |         |
|          | Total :                               |                   |                 |         |
|          | <b>Grand Total :</b>                  |                   |                 |         |

**Column 16 & 17 of BM Proforma Annual Mandays for O & M for Irrigation & Non Irrigation: (Mandays I+NI)**

Number of Mandays utilised for Irrigation & Non Irrigation on the project are to be worked out staff category wise by actual calculation and to be presented in following format.

**Statement showing the details of staff personnel working on**

**Irrigation management of .....Major Project**

| Circle : |                         |     |                              |         |
|----------|-------------------------|-----|------------------------------|---------|
| Sr. No.  | Post of Staff personnel | Nos | No of working days (Mandays) | Remarks |
| 1        | 2                       | 3   | 4                            | 5       |
| 1        | J.E./ S.O.              |     |                              |         |
| 2        | Assistant to J.E.       |     |                              |         |
| 3        | Canal Inspector         |     |                              |         |
| 4        | Patkari                 |     |                              |         |
| 5        | Measurer                |     |                              |         |
| 6        | Daftar Karkoon          |     |                              |         |
| 7        | Chowkidar               |     |                              |         |
| 8        | Peon                    |     |                              |         |
| 9        | Keyman                  |     |                              |         |
| 10       | Muster clerk            |     |                              |         |
| 11       | Mukadam                 |     |                              |         |
| 12       | Labours                 |     |                              |         |
| 13       | So on.....              |     |                              |         |

1) Working days means incumbency period during the irrigation year. 2) Mandays for O & M of irrigation & non irrigation to be decided proportion to water use irrigation & non irrigation

**Column No. 20 of BM Proforma : Annual irrigation potential created ( I.C.A. ) on canal (Irr Pot ICA)**

(Attach command plan showing the Reaches in dift. columns)

It is to be worked out by creating information in the following table.

**Left Bank Canal/Right Bank Canal**

| Sr. No.         | Branch/ Dy./ Minor/ DO No. | Section | Off taking ch. (Km.) | CCA (Ha) | ICA (Ha) | Design reaches in Km. |                |                | Actual irrigated area (ha) * |        |      |
|-----------------|----------------------------|---------|----------------------|----------|----------|-----------------------|----------------|----------------|------------------------------|--------|------|
|                 |                            |         |                      |          |          | Head                  | Middle         | Tail           | Head                         | Middle | Tail |
| 1               | 2                          | 3       | 4                    | 5        | 6        | 7                     | 8              | 9              | 10                           | 11     | 12   |
| 1               | Dy.1                       |         |                      |          |          | ..... to .....        | ..... to ..... | ..... to ..... |                              |        |      |
| So on           |                            |         |                      |          |          |                       |                |                |                              |        |      |
|                 |                            |         |                      |          |          |                       |                |                |                              |        |      |
| Total = *** (I) |                            |         |                      |          |          | Total = ****(II)      |                |                | =** (III) =**(IV)            |        |      |

**Annual irrigation potential created ( I.C.A.) on canal (Irr Pot ICA) =Total (\*\*\*\*\* I ) for (LBC + RBC)**

**Column No. 21,22 & 23 of BM Proforma = 1/3 x Total (I) for( LBC + RBC)**

\* Actual Irrigated area on a reach shall be the sum of area under standing irrigated crops in kharif, rabi & Hot weather on canal in that reach.

**Column No. 24 of BM Proforma = Total \*\*\*\*\*(II) for (LBC + RBC)**

**Column No. 25 of BM Proforma = Total \*\*\*\*\*(III) for (LBC + RBC)**

**Column No. 26 of BM Proforma = Total \*\*\*\*\*(IV) for (LBC + RB**

**CHAPTER-6**  
**BENCHMARKING OF**  
**WATER AND LAND MANAGEMENT INSTITUTE (WALMI), AURANGABAD**  
**( 2005 – 06 )**

**1.0 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.

**1.1 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.

**2.0 BENCHMARKING OF WALMI**

**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

## **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.

## **2.3 Qualitative Performance**

The overall quality of institute's activities are 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)

## **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

## **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

## **3.0 ASSESSMENT OF PERFORMANCE OF WALMI (YEAR 2001 – 2006)**

### **(i) Strength of teaching staff**

The strength of teaching staff is constant in last five years. Number of deputationist has increased while core faculty is decreased due to retirement of core faculty members. The existence of sizeable core faculty is one of the vital factors of this

institute's strength and performance; hence efforts are being done to recruit the core faculty.

**(ii) Annual training workload (trainee days)**

Achievement in last five years is more than the planned training workload except for the year 2001 - 02 where actual training workload was little lower than the planned training workload because of no induction course was conducted though planned. The assessed annual training workload of the institute is about 45000 trainee days whereas the average planning of the last five years is 28509, and average achieved is 31478. This is because of the faculty strength being lower than the sanctioned strength.

**(iii) Annual training workload of long term courses (participants)**

The number of participants for LTC is more than planned except the year 2002-03. This is because of poor response from the participants working in irrigation management in 2002 – 2003.

**(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. In the year 2002-03, the achievement is comparatively less because of no response for sponsoring five courses on demand.

**(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 in the range of 3.85 to 4.1, which indicates that overall quality of training as excellent.

**(vi) Research activities**

There is a improvement over last year. Research studies are now accelerated so that experience gained during these studies will be shared through lectures, presentation of case studies in training courses.

**(vii) Revisions & Development of publications**

This can not be assessed exactly on yearly basis. The revision & No. of new publication is lowest this year as most of the publications were revised in previous year.

**(viii) Papers / Articles presented & published (state, national & international level)**

The numbers are in increasing order and is highest during the year 2003 – 04 in comparison to other years. The faculties are being motivated in this regard. There is substandard increase in articles over last year.

**(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. This includes the expenditure on establishment and maintenance of institute's estate. The average cost of training is expected to be 2000 per trainee day. This year the cost is higher as more number of the courses are organized under MWSIP Programme and also infrastructure improvement has been taken up.

**(x) Central assistance for training programme**

There is a substantial achievement during the year 2004 – 05. Actual disbursement of this year is not available.

**(xi) Referencing WALMI Library**

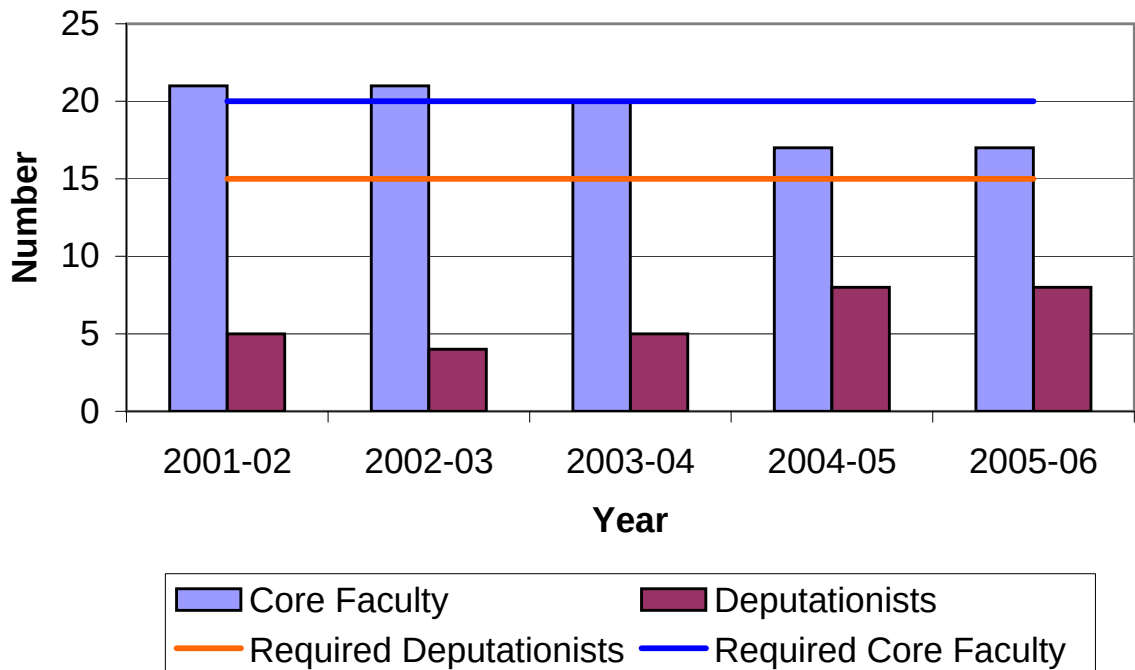
This indicates that use of library is increasing among the faculties, training participants and visitors.

**(xii) Visitors in WALMI**

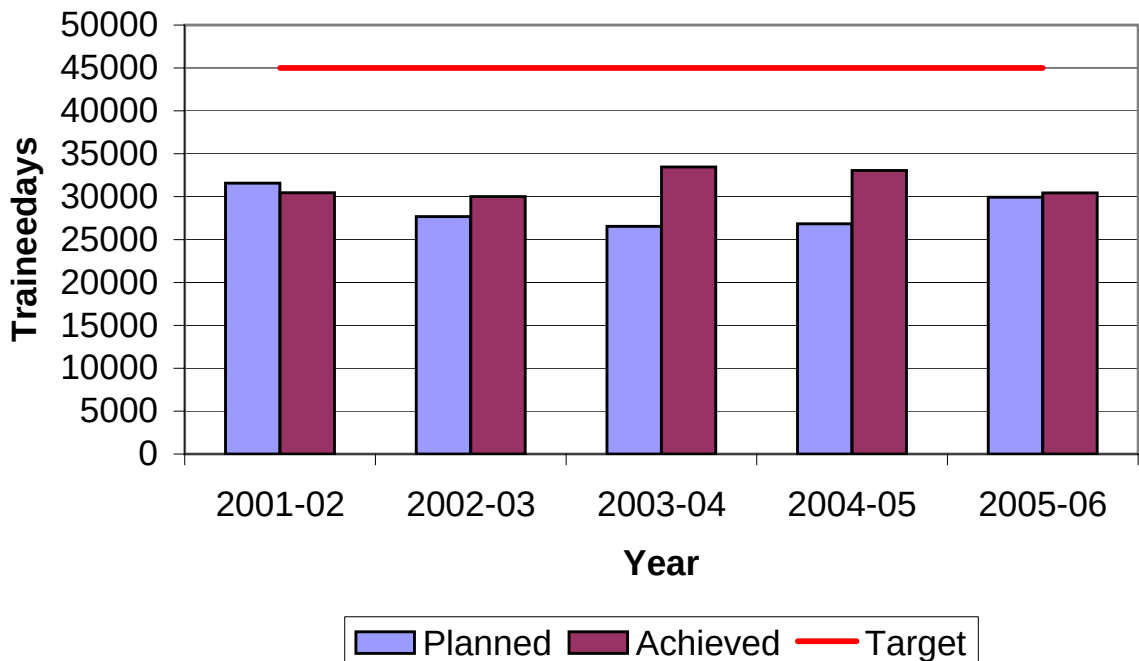
The visitors in WALMI are increasing year after year which is a good indicator for the capabilities of the WALMI. It is 5605 this year which is highest in last five years.



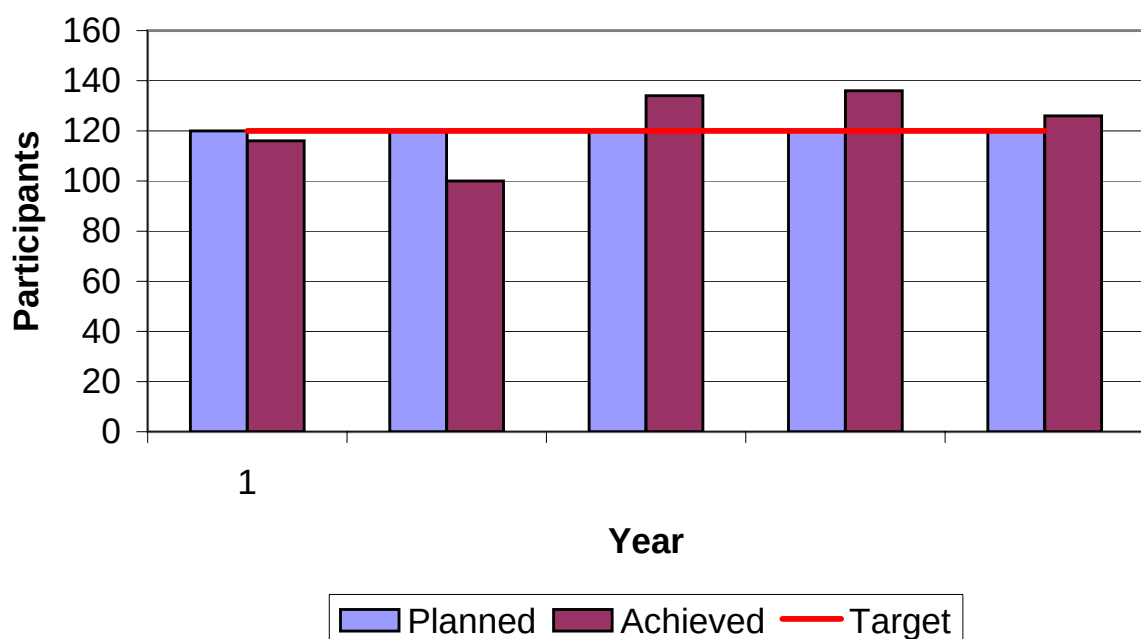
## Strength of Teaching Staff



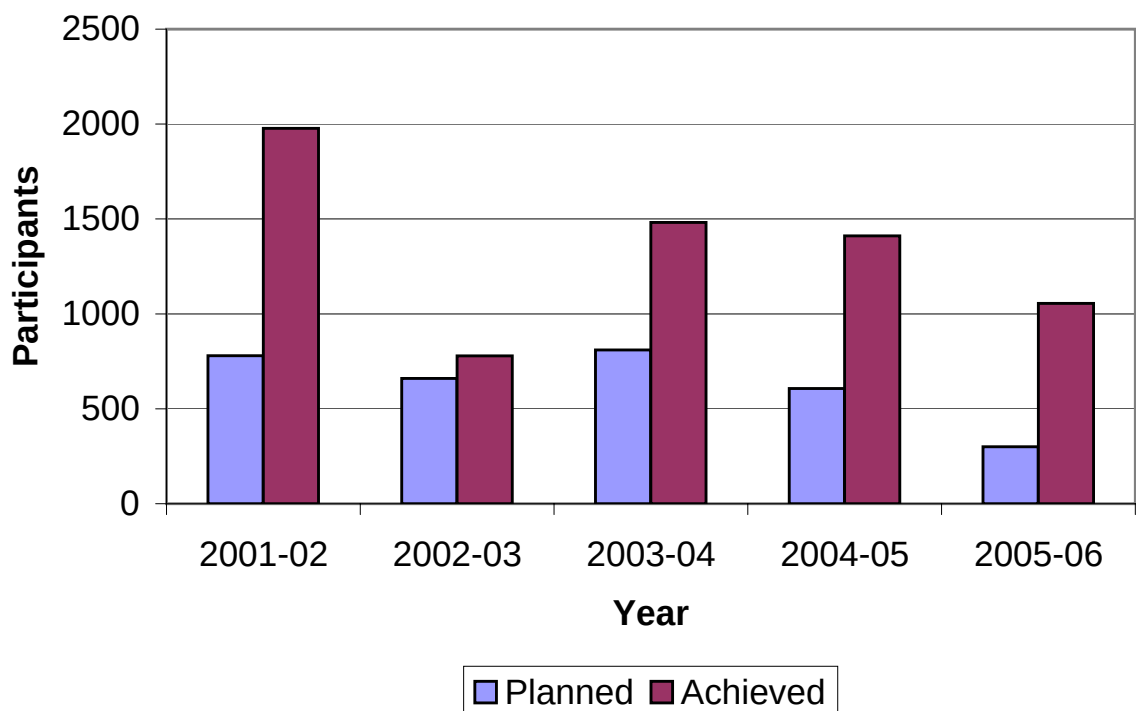
## Annual Trainee days



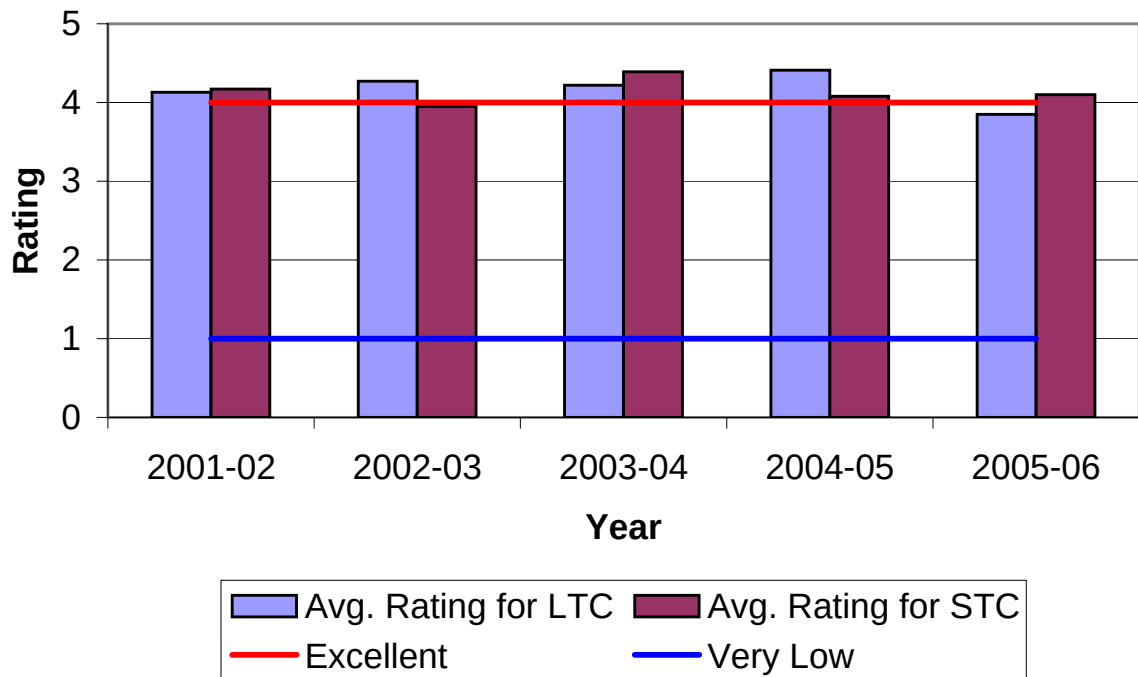
## Annual Training Workload of Long Term Courses



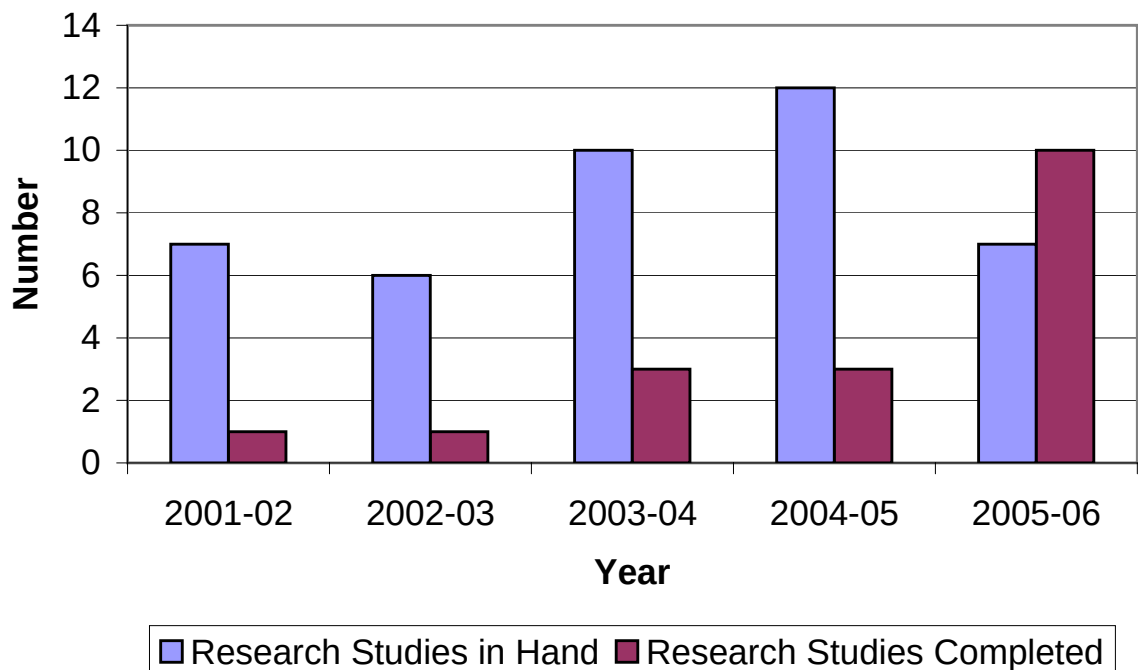
## Annual Farmers Training Workload

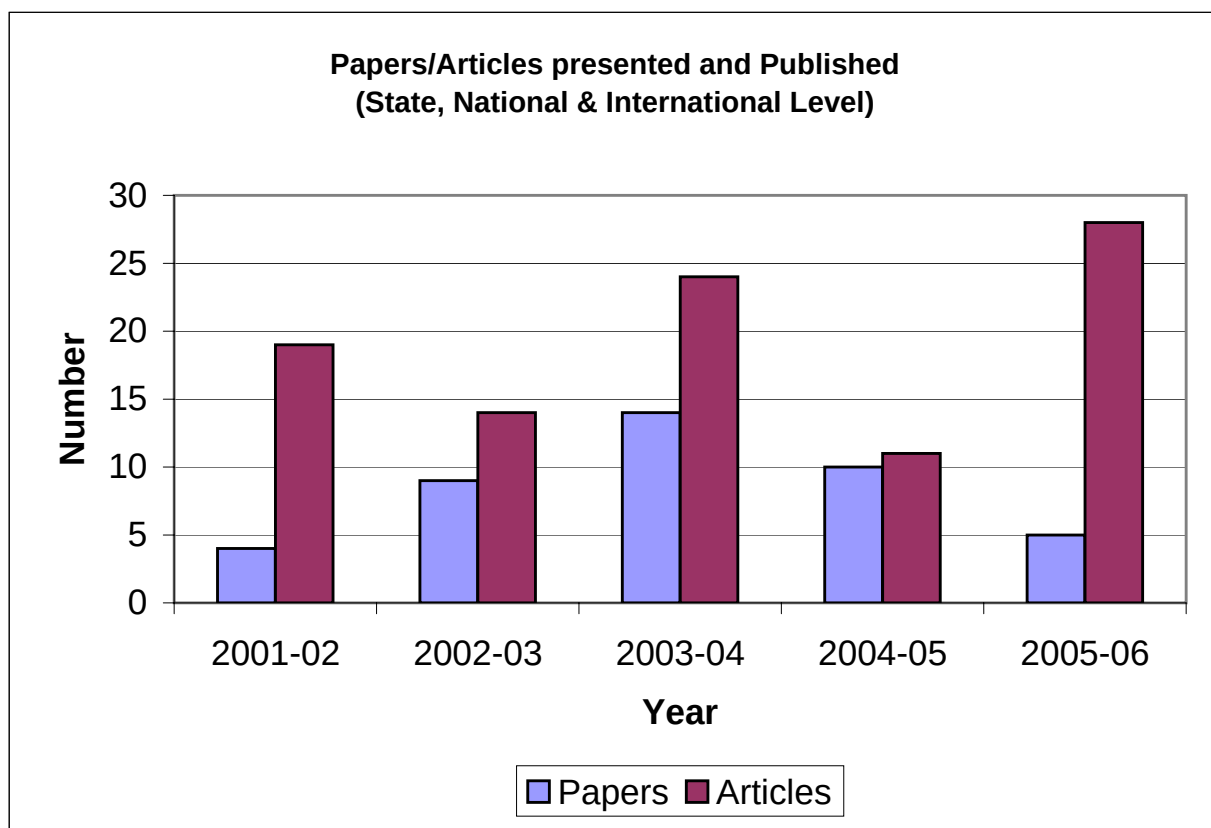
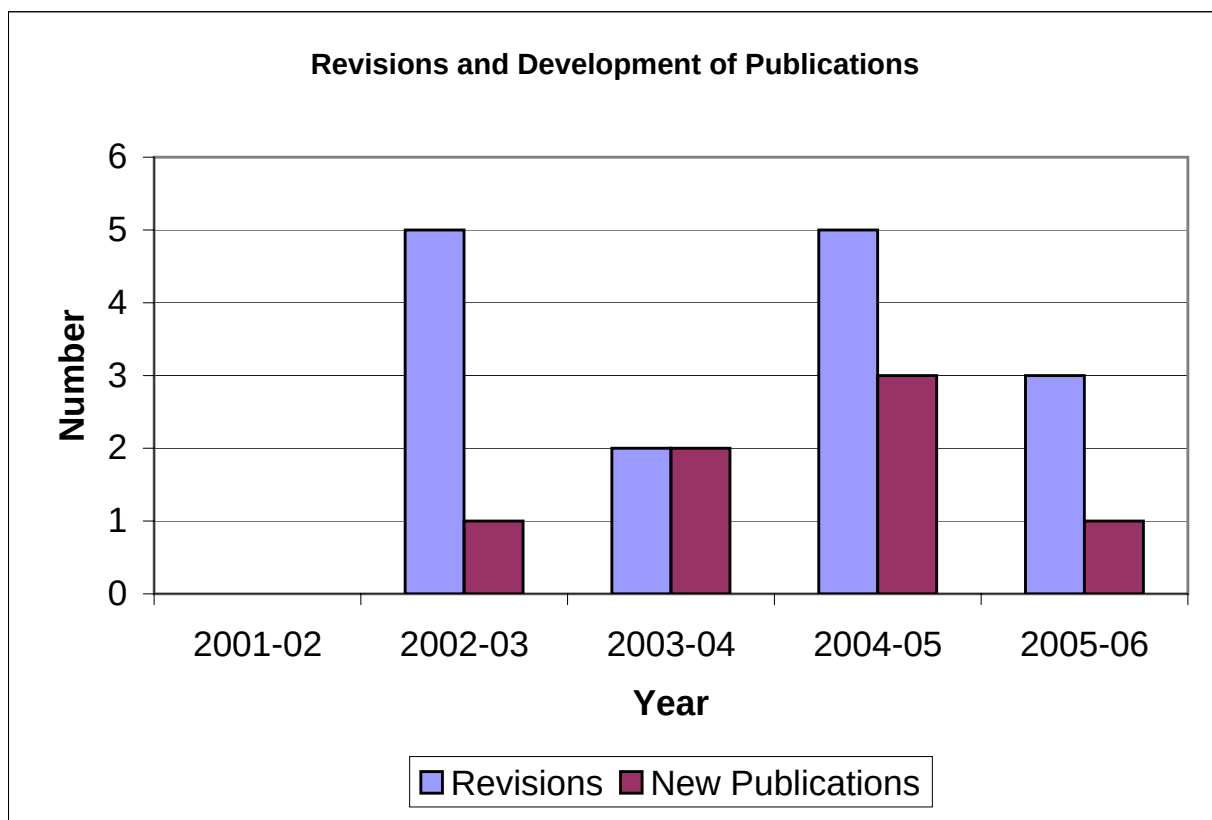


## End of Course Evaluation

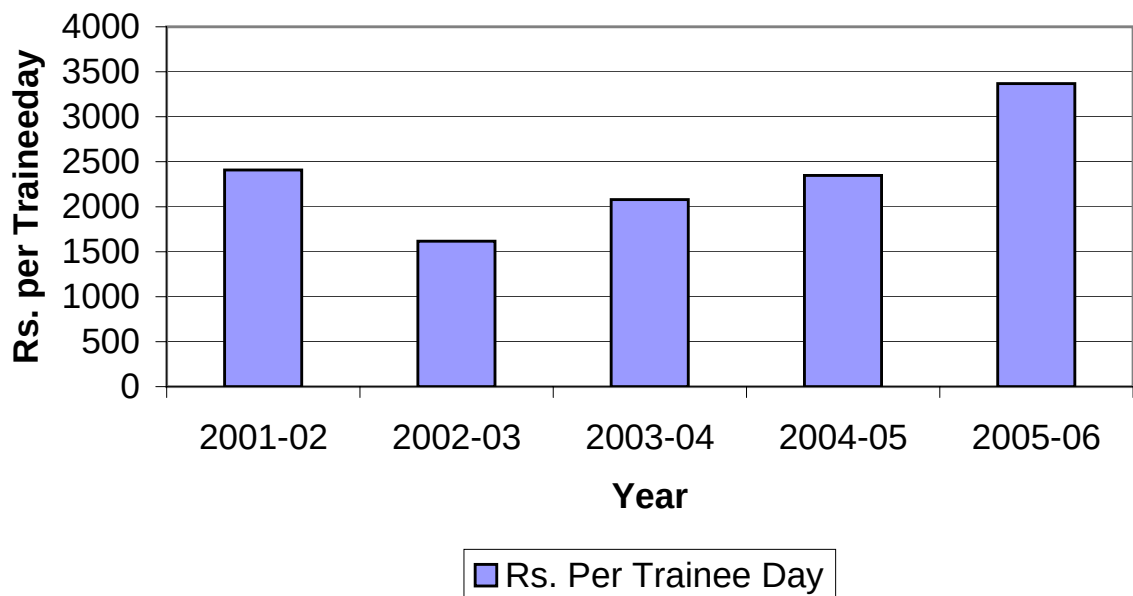


## Research Activities

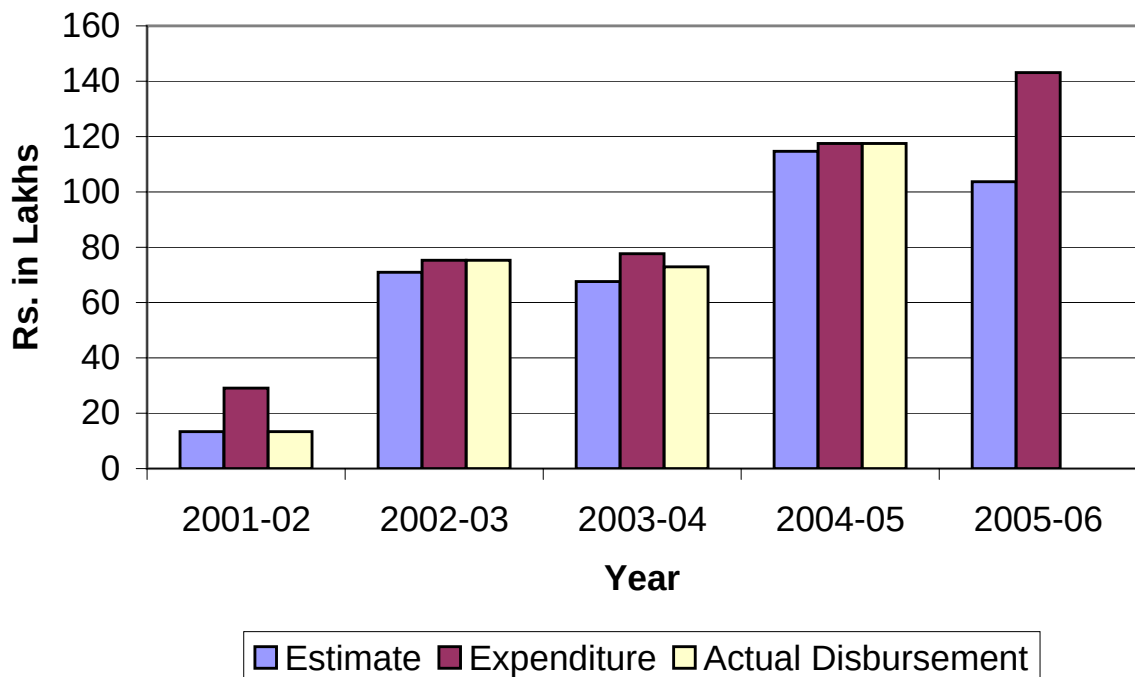


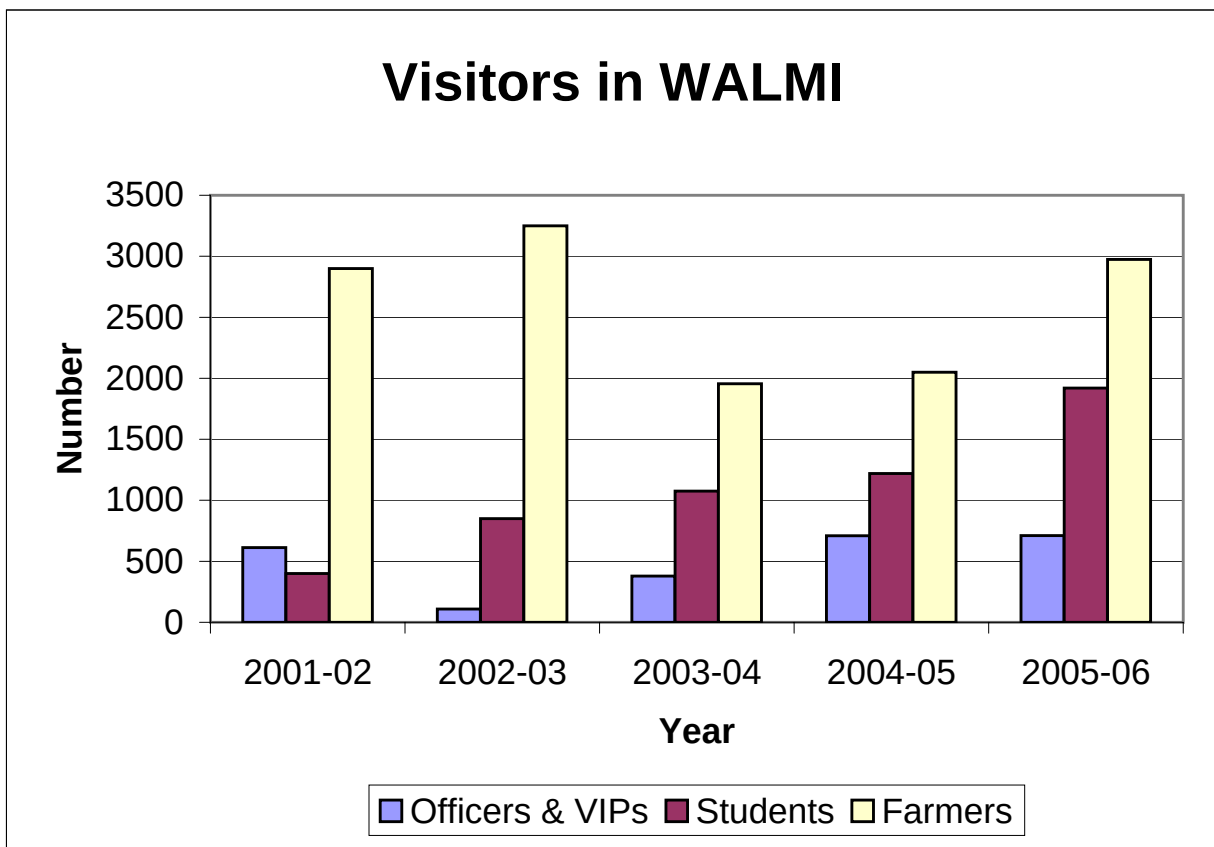
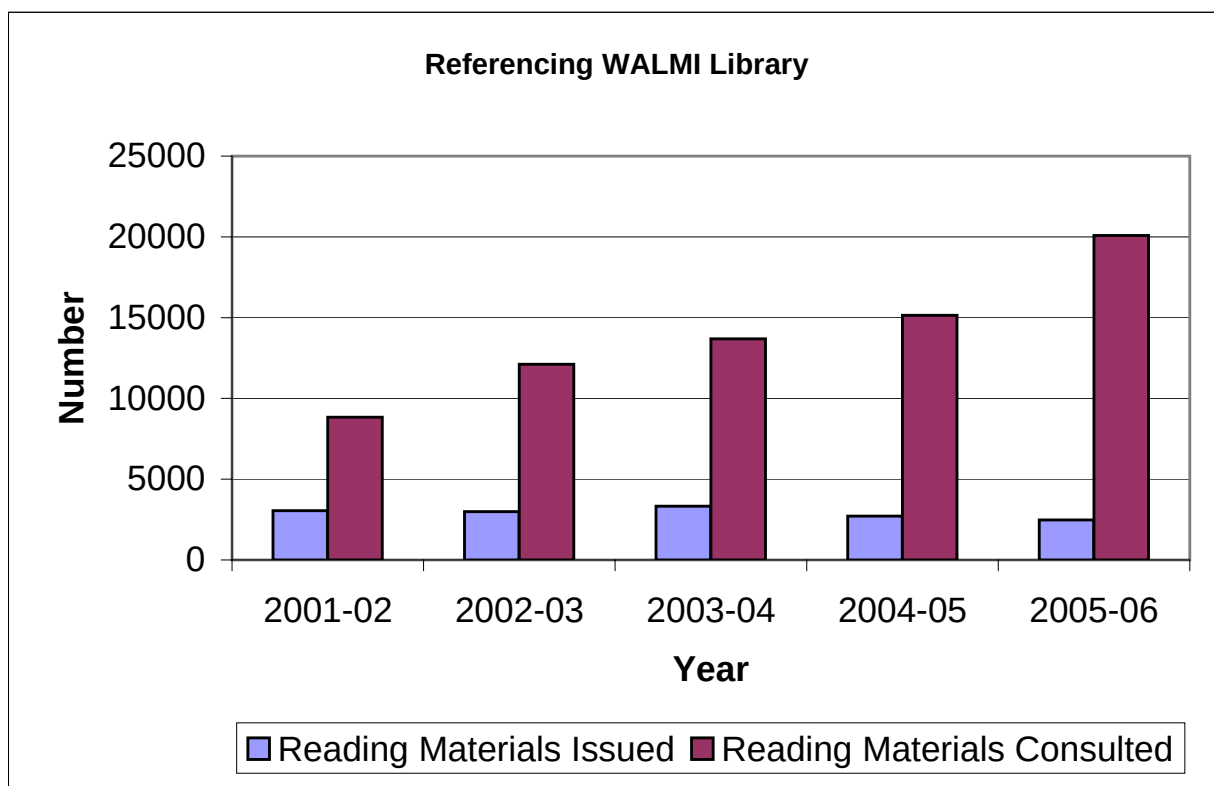


## Cost of Training Per Trainee Day



## Central Assistance for Training Programme





## ACTIVITIES UNDER MWSIP

WALMI, Aurangabad is a nodal Institute for capacity building under MWSIP. The activities of Training under MWSIP has been initiated from the year 2005-06 and different types of training programmes are organized.

| <b>Sr. No.</b> | <b>Types of Training Programme</b>                                     | <b>Level of Participant</b>        |
|----------------|------------------------------------------------------------------------|------------------------------------|
| 1              | Technical training for Middle Level Officers                           | E.E./S.D.E./A.E.-II                |
| 2              | T.O.T. for Field Level Trainers                                        | Interdisciplinary Team of Trainers |
| 3              | State level Seminar/Workshop for Officers and WUA Office bearer/Member | Member of WUA                      |
| 4              | State level Seminar for Senior Administration Officers                 | Senior Officers Of W.R.D.          |

The target and achievement of these programme during 2005-06 and 2006-07 (upto January 2007) is as below:

| <b>Year</b>                 | <b>Target</b> |                     | <b>Achievement</b> |                     |
|-----------------------------|---------------|---------------------|--------------------|---------------------|
|                             | No.of Courses | No. of Participants | No. of Courses     | No. of Participants |
| 2005-06                     | 17            | 645                 | 10                 | 486                 |
| 2006-07 (upto January 2007) | 33            | 1050                | 27                 | 678                 |