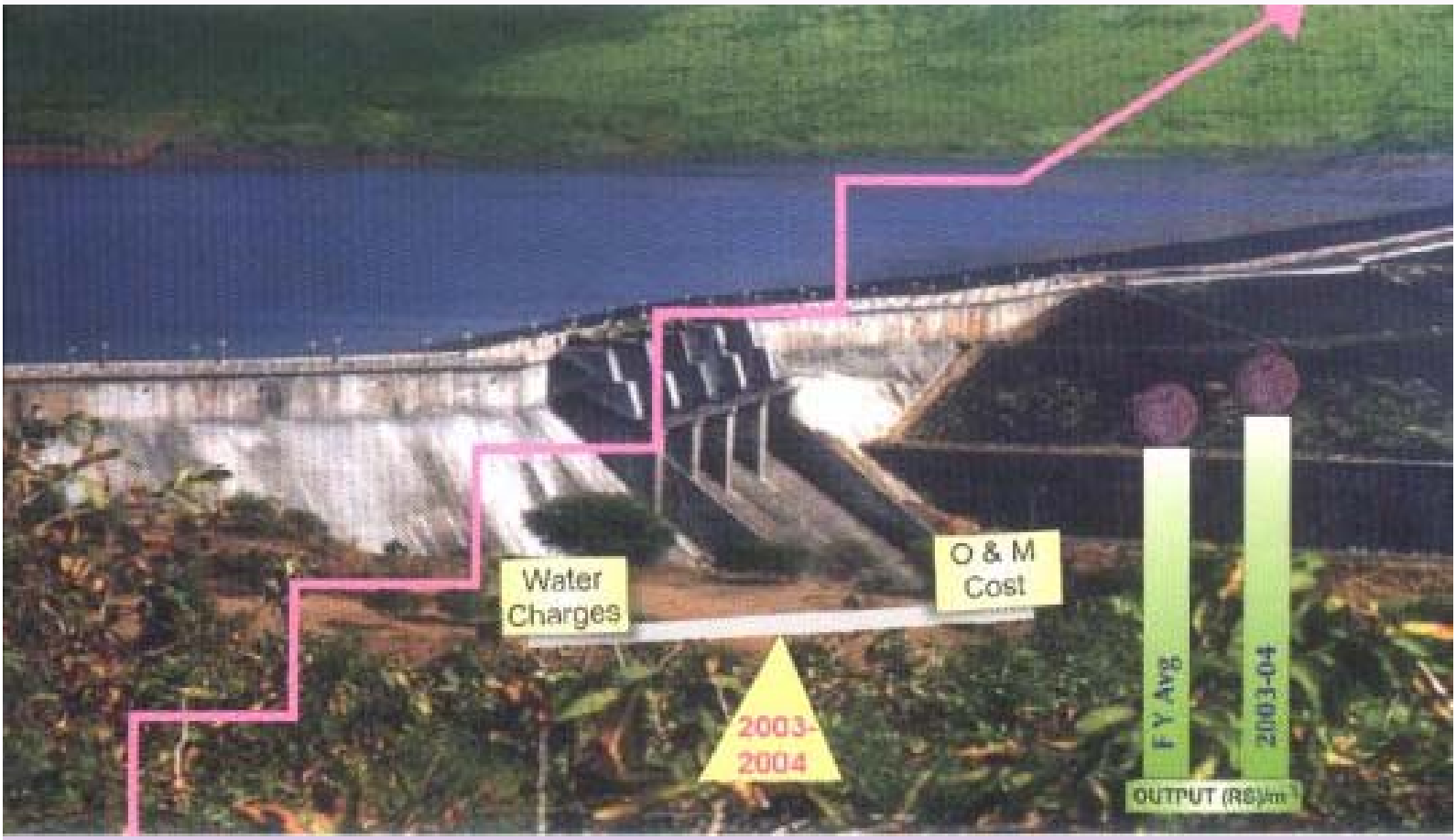
Report on
BENCHMARKING OF IRRIGATION PROJECTS IN MAHARASHTRA
2003-04



WATER RESOURCES DEPARTMENT
GOVERNMENT OF MAHARASHTRA,INDIA
MARCH 2005

REPORT ON BENCHMARKING OF IRRIGATION PROJECTS IN MAHARASHTRA 2003-04

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C O N T E N T S

FOREW0RD

Benchmarking of irrigation projects is widely accepted world over now. IPTRID, ICID, IWMI, World Bank & FAO advocate use of benchmarking for improving performance of irrigation projects. Evaluation of performance of Irrigation Projects in Australia, China, Egypt, Malaysia, Srilanka and India is being done using benchmarking as a management tool for last few years. Benchmarking is not merely performance assessment but it helps in identifying levels of performance & undertaking corrective measures.

Benchmarking in the public sector in general & the irrigation sector in particular is a more complex task as it is subject to site-specific characteristics. Benchmarking is found beneficial in following respects.

a) From management point of view
   - i) Better knowledge of system
   - ii) Better management of resources (water, manpower & finances)
   - iii) Policy making in Water Resources Development & Management

b) Service provision point of view
   - i) Efficiency, transparency & accountability to users
   - ii) Commitment to excellence in service provision

c) User point of view
   - i) Develop confidence about the service
   - ii) Enhance agricultural production
   - iii) Effective participation in management of irrigation projects

This is the third consecutive report on Benchmarking of Irrigation projects in the State. Comments received on previous reports are considered while preparing this report.

In addition to performance evaluation, the report provides data of 49 major projects in respect of twelve indicators.

Benchmarking has further disseminated to middle & lower levels of administration & evaluation of performance is being carried out at respective levels.

Benchmarking is considered as an on going process and it has now become the part of strategic management of the department. The department through its experience of last two years could identify best performing circles & healthy competition is taking place between irrigation management circles for improvement in their performance.

It would be worthwhile to mention the efforts taken by Dr. S. M. Belsare, Under Secretary WRD, GOM, G. V. Vyawahare & P. V. Mannikar Executive Engineers, MWIC and their colleagues who have taken whole hearted efforts in preparing this report.

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

Comments & suggestions on this report would be highly appreciated.

S.V. Sodal
Secretary (CAD)

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 & Ariculture Organisation
FY Avg	Five years average
GCA	Gross Command Area
GOI	Government of India
GOM	Government of Maharashtra
ha	Hectare
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	Million Cubic metre
Mha	Million Hectare
mm	Millimetre
Mm^3	Million Cubic Metre
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
PLBC	Paithan Left Bank Canal
PRBC	Paithan Right Bank Canal
PWD	Public Works Department
Sq km	Square Kilometre
State Tar	State target
WALMI	Water And Land Management Institute, Aurangabad
WRD	Water Resources Department
WUA	Water Users' Association
AIC Akola	Akola Irrigation Circle, Akola
AIC Aurangabad	Aurangabad Irrigation Circle, Aurangabad
BIPC Buldhana	Buldhana Irrigation Project Circle, Buldhana
BIPC Parli	Beed Irrigation Project Circle, Parli Vaijanath
CADA A'bad	Command Area Development Authority, Aurangabad

CIPC Chandrapur	Chandrapur Irrigation Project Circle, Chandrapur
KIC Kolhapur	Kolhapur Irrigation Circle, Kolhapur
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
OIC Osmanabad	Osmanabad Irrigation Circle, Osmanabad
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 Yavatmal	Yavatmal Irrigation Circle, Yavatmal

Chapter-1
Preface

1.1 Introduction

Maharashtra occupies main portion of the Indian Sub-continent. The geographical location of Maharashtra is bounded between latitude 16.4^o to 22.1^o N and longitude 72.6^o to 80.9^o 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, Chhattisgadh on east and Andhra Pradesh, Karnataka and Goa in south.

1.2 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[1] 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).

[1] Khandesh includes Dhule, Nandurbar and Jalgaon districts.

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

1.2.1 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 -

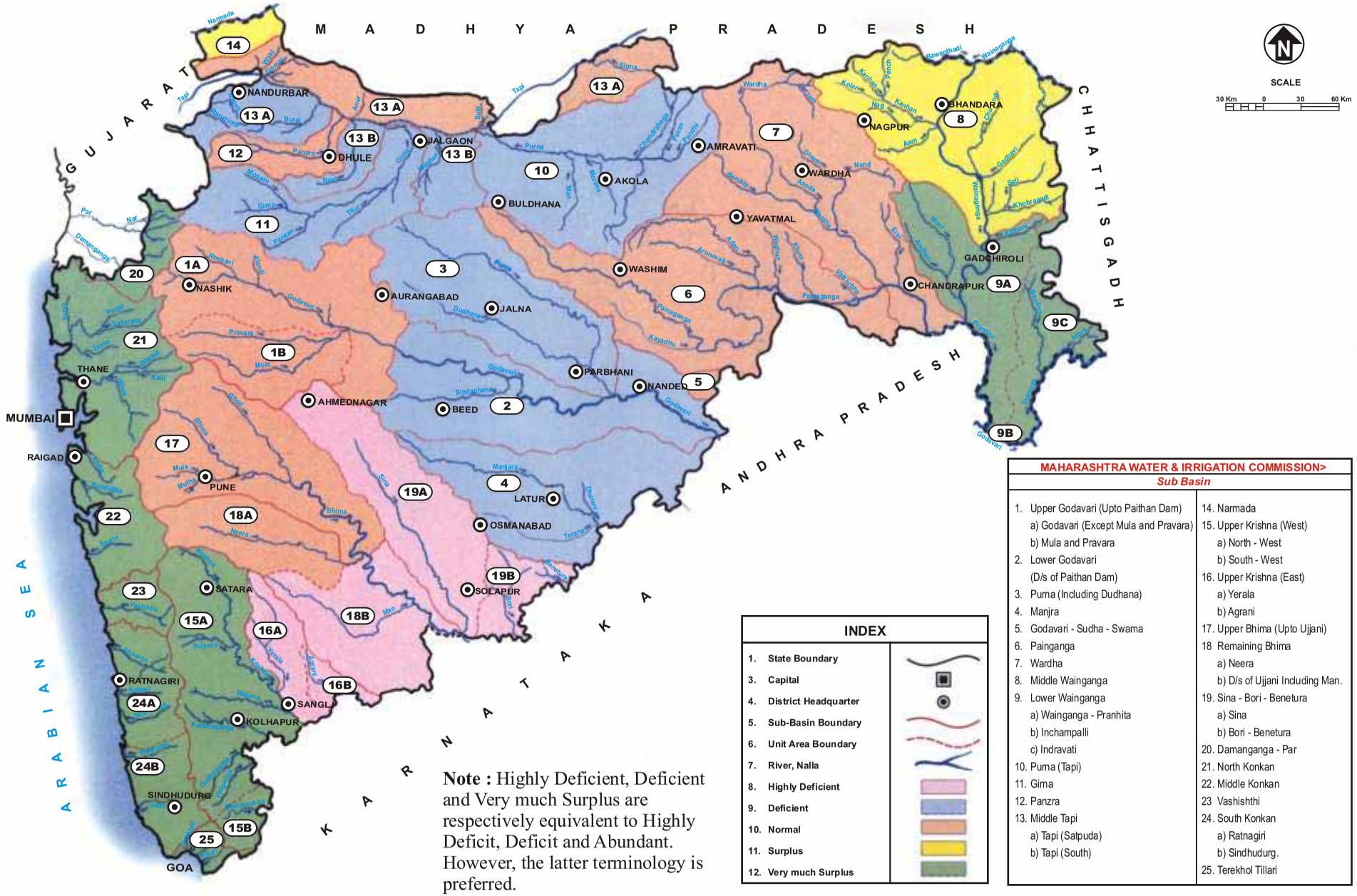
'To adopt an integrated and multi-sectoral approach to the water resources planning, development and management on a sustainable basis taking river basin/sub basin as a unit.'

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.

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.

INDEX

1. State Boundary
3. Capital
4. District Headquarter
5. Sub-Basin Boundary
6. Unit Area Boundary
7. River, Nalla
8. Highly Deficient
9. Deficient
10. Normal
11. Surplus
12. Very much Surplus

MAHARASHTRA WATER & IRRIGATION COMMISSION>

Sub Basin

1. Upper Godavari (Upto Paithan Dam)
   a) Godavari (Except Mula and Pravara)
   b) Mula and Pravara
2. Lower Godavari (D/s of Paithan Dam)
3. Purna (Including Dudhana)
4. Manjra
5. Godavari - Sudha - Swama
6. Painganga
7. Wardha
8. Middle Wainganga
9. Lower Wainganga
   a) Wainganga - Pranhita
   b) Inchampalli
   c) Indravati
10. Purna (Tapi)
11. Girna
12. Panzra
13. Middle Tapi
    a) Tapi (Satpuda)
    b) Tapi (South)
14. Narmada
15. Upper Krishna (West)
    a) North - West
    b) South - West
16. Upper Krishna (East)
    a) Yerala
    b) Agrani
17. Upper Bhima (Upto Ujjani)
18. Remaining Bhima
    a) Neera
    b) D/s of Ujjani Including Man.
19. Sina - Bori - Benetura
    a) Sina
    b) Bori - Benetura
20. Damanganga - Par
21. North Konkan
22. Middle Konkan
23. Vashishthi
24. South Konkan
    a) Ratnagiri
    b) Sindhudurg.
25. Terekhol Tillari

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
		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^3)	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.

1.3 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.

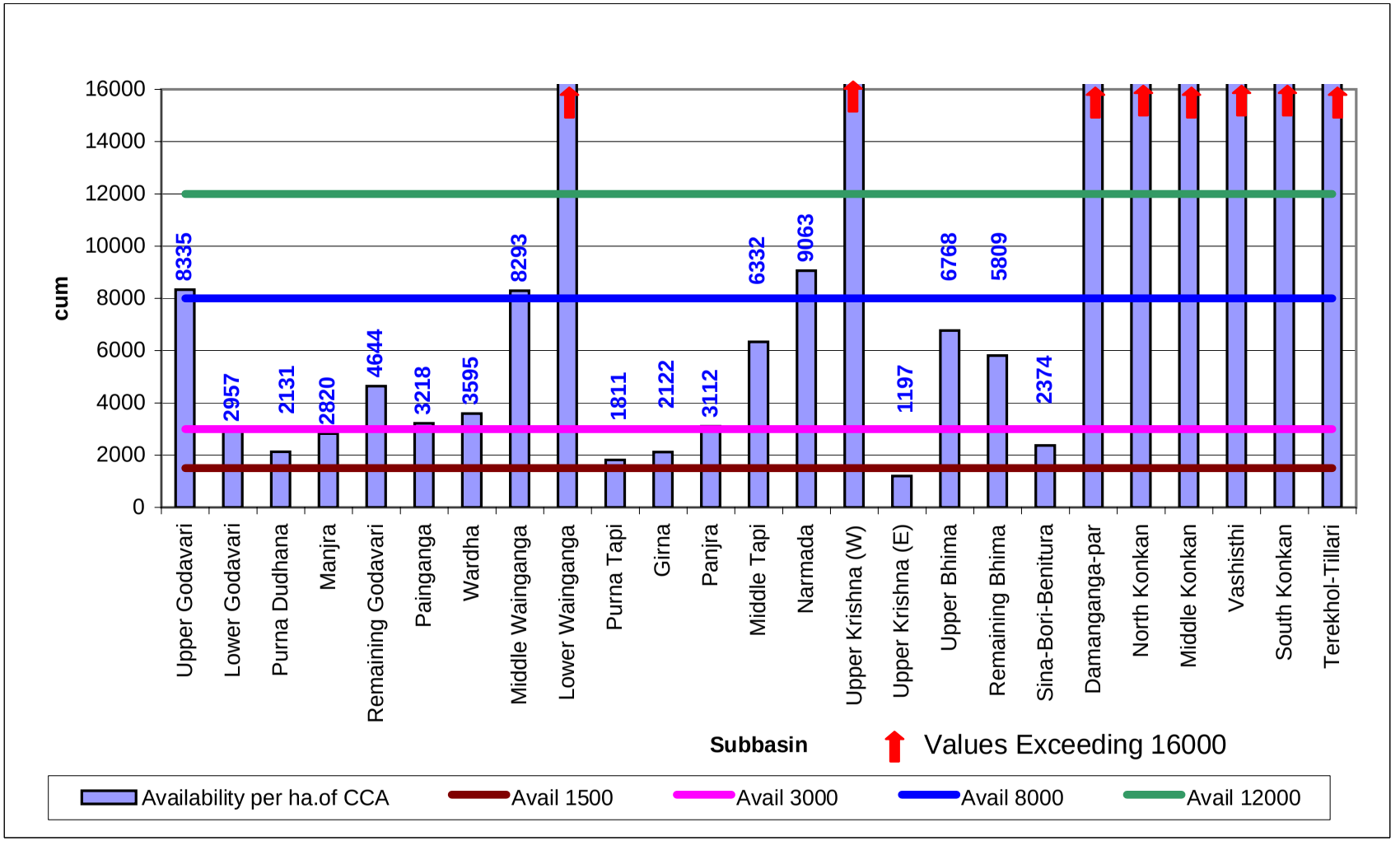
1 The coastal districts of Konkan experience heavy rains but mild winter. The weather, however, is mostly humid throughout the year.

The maximum and minimum temperatures here range between 27^0C and 40^0C and 14^0C to 27^0C 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 26^0C to 39^0C and the minimum temperature between 8^0C to 23^0C. The relative humidity is 81% to 99 % in August and only 20% to 39% in March.

3 The eastern part of the above four districts together with Ahmednagar, Sangli, Solapur, Aurangabad, Jalna, Beed and Osmanabad districts fall under the rain shadow of Sahyadri Mountains and therefore the beginning and end of the rainy season is quite uncertain in these parts. The rainfall is also meagre. The climate is extreme. The summer temperature is high (maximum temperature 36^0C to 41^0C) but winter temperature is low (minimum temperature. 10^0C to 16^0C). The relative humidity in August is between 82% to 84% but only 19% to 26% in April. The rainfall

Water Availability per ha of Culturable Area



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 (39^0C to 43^0C) and minimum winter temperature is found to be 12^0C to 15^0C. 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 (39^0C to 45^0C) while it is cooler in winter as compared to other regions (12^0C to14^0C).

1.4 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. Some more information about physiography and Agro-climatic zones is given in Appendix XIV.

1.4.1 Rainfall during 2003-04

The State received rains from South West monsoon from 16th June 2003, late by 9 days. The proportion of rainfall received during the period from 16th June to 31st October 2003 was as low as 90.3% of State's normal rainfall. As per IMD standards; in 8 districts, it was deficient (41 to 80%) out of 33 districts in the State (excluding

Mumbai city & Mumbai suburb). In 18 districts it was 81 to 100%, whereas in 7 districts it was above 100% of the normal. As per the standards specified by IMD, out of 353 talukas in the State, in 16 talukas the rainfall received was scanty (upto 40% of normal), in 127 talukas it was deficient (between 41% to 80%) whereas in 45 talukas it was excess - (i.e.20% or more above normal). The regionwise breakup of 143 talukas which received rainfall upto 80% of normal, was as follows:-

Region	No. of talukas
Central Maharashtra (Nashik & Pune Divisions)	68
Vidarbha	36
Marathwada	29
Konkan	10

The steep downfall in the rainfall of State since last three years, consequently affected the groundwater as well as surface water potential of the projects.

Thus, the overall picture of the rainfall received during this monsoon (2003-04) in the State was not at all satisfactory.

1.5 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 3.863 Mha irrigation potential using surface water resources by 2003 through 52 major, 206 medium and 2445 state sector minor irrigation projects. Besides 53 major, 212 medium, 885 State Sector minor projects and 22 lift irrigation projects are under construction in the State. The total investment in the irrigation sector up to March 2003 is around Rs. 300 billion. The ultimate irrigation potential, through surface water and ground water resources, has been estimated as 12.6 Mha.

1.6 Irrigation Development Corporations

The Government of Maharashtra has established 5 Irrigation Development Corporations during 1996-98 with a view to complete the irrigation projects in a time bound manner and not to allow them to linger on for want of funds. These corporations have also been entrusted with the responsibility of giving impetus and commissioning command area development projects, hydroelectric schemes, flood control measures and other associated works. The corporations of the State have been entrusted with the responsibility through five different basin-specific acts. Following are these corporations:

- Maharashtra Krishna Valley Development Corporation
- Vidarbha Irrigation Development Corporation
- Tapi Irrigation Development Corporation

- Konkan Irrigation Development Corporation
- Godavari Marathwada Irrigation Development Corporation

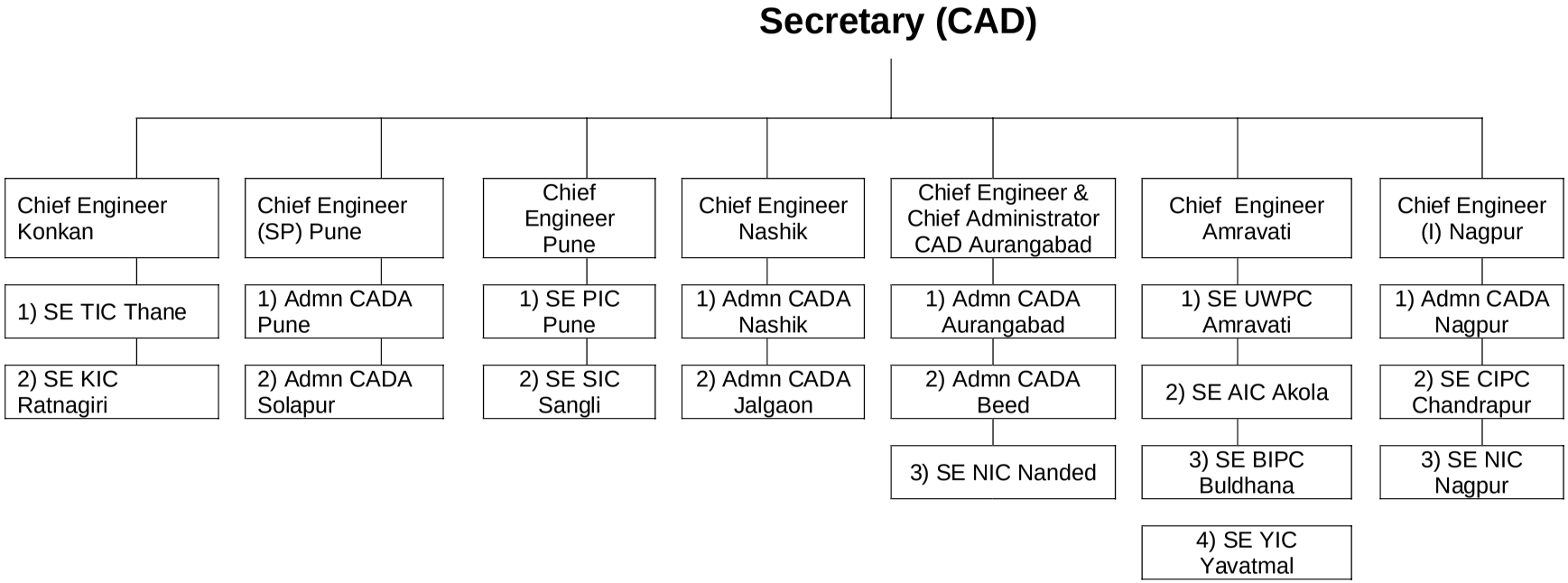
The corporations are headed by Executive Director of the rank of Secretary of the Department and are authorised to raise funds from public investment for construction / completion of the projects. In order to meet the O & M expenditure the corporations are delegated with powers of fixing the water rates.

1.7 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 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.

All the regional Chief Engineers & Chief Administrator are under the control of Irrigation Development Corporations or directly under control of GOM. Though the Irrigation Development corporations are autonomous bodies, they are bound to observe the policy decisions of the Government in public interest. 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.

Organisation Chart of Irrigation Management



1.8 Performance Evaluation of Irrigation Projects

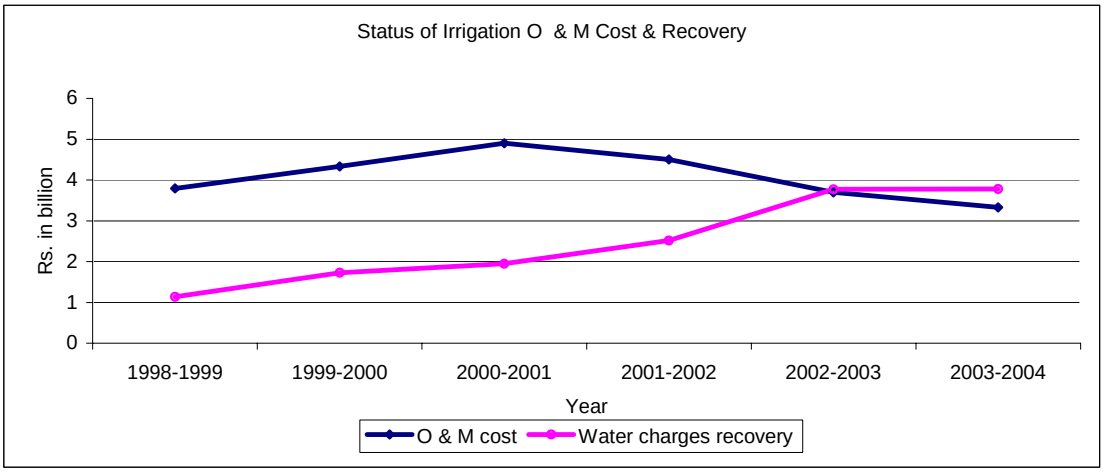
The PWD Handbook Chapter 25 on Irrigation & Irrigation Management gives comprehensive procedures for data collection, analysis, evaluation & monitoring the performance of Irrigation Projects. Evaluation and monitoring the performance of irrigation projects is mainly based on six main parameters:

1. Irrigation potential created and utilised
2. Season-wise and total annual irrigated area
3. Water use efficiency
4. Recovery of irrigation water charges
5. Crop yields
6. Socio-Economic Survey – Once in five years.

1.9 Recovery Of Water Charges

For efficient performance of irrigation system, it is necessary that the system should be self-sustainable. The water rates for irrigation and non-irrigation should be such that annual water charges accrued should meet the yearly O & M expenditure fully. In addition, capital costs should be partly covered. Accordingly GOM has revised the water rates (w.e.f. September 2001) in such a way that they meet 100% O&M cost and some portion of interest on capital borrowed for water sector infrastructure. In addition, there is an in-built provision of 15% increase in the water rates every year. But the water rates for Irrigation and Non-Irrigation effective for the year 2002-03 are continued from 01/07/2004 for 2003-04 i.e. there is no increase in the water rates this year. The water rates for three different seasons are included as Appendix XV.

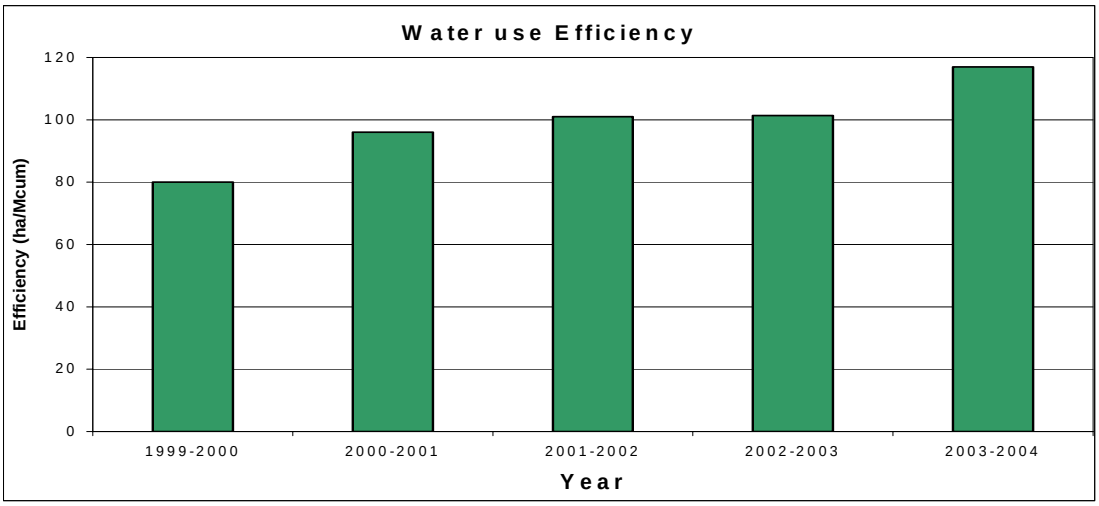
The expenditure on irrigation management including establishment charges for the year 2002-03 and 2003-04 was Rs. 3700 million and Rs. 3330 million respectively. Whereas the total recovery of the water charges pertaining to irrigation and non irrigation water use was Rs. 3775 million and Rs. 3776 million respectively. Thus, it can very well be concluded that the expenditure on irrigation management is 100% met through recovery of water charges. It will be very clear from the graph drawn below :



1.10 Water Use Efficiency

It is of utmost importance to use water more efficiently to cater to the needs of a large population. Water use efficiency is a key parameter to be monitored and evaluated. Water use efficiency is a function of agro-climatic conditions, status of irrigation system, soil type, cropping pattern, participation of farmers, irrigation practices etc. Thus efforts are to be made to improve water use efficiency, to achieve more irrigation and crop yield per unit of water.

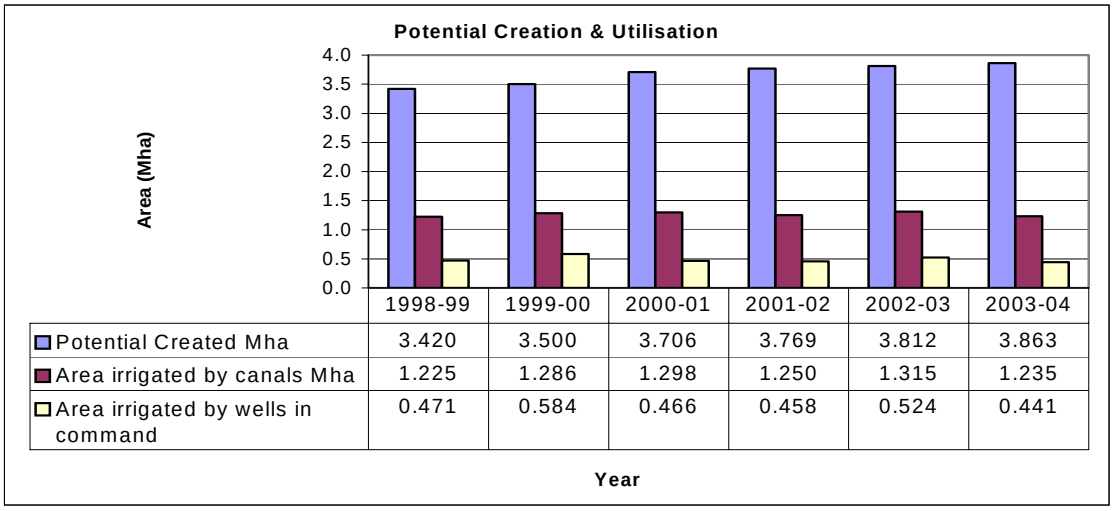
The useful storage achieved in all Major, Medium and Minor (State sector) reservoirs in the State as on 15th October 2003, was 16941 Mcum. Out of the total, water used for irrigation was 10569 Mcum. On account of water use for irrigation, 1.235 Mha area on canals was irrigated whereas irrigation on wells was 0.441 Mha. The total area irrigated by these two



sources together was 1.676 Mha. The water use efficiency comes to 117 ha/ Mm^3 for the canal irrigation, which is significantly higher than that for the year 2002-03. It can definitely be said that this value is a satisfactory and target achieving one.

1.11 Present Status of Irrigation Utilisation:

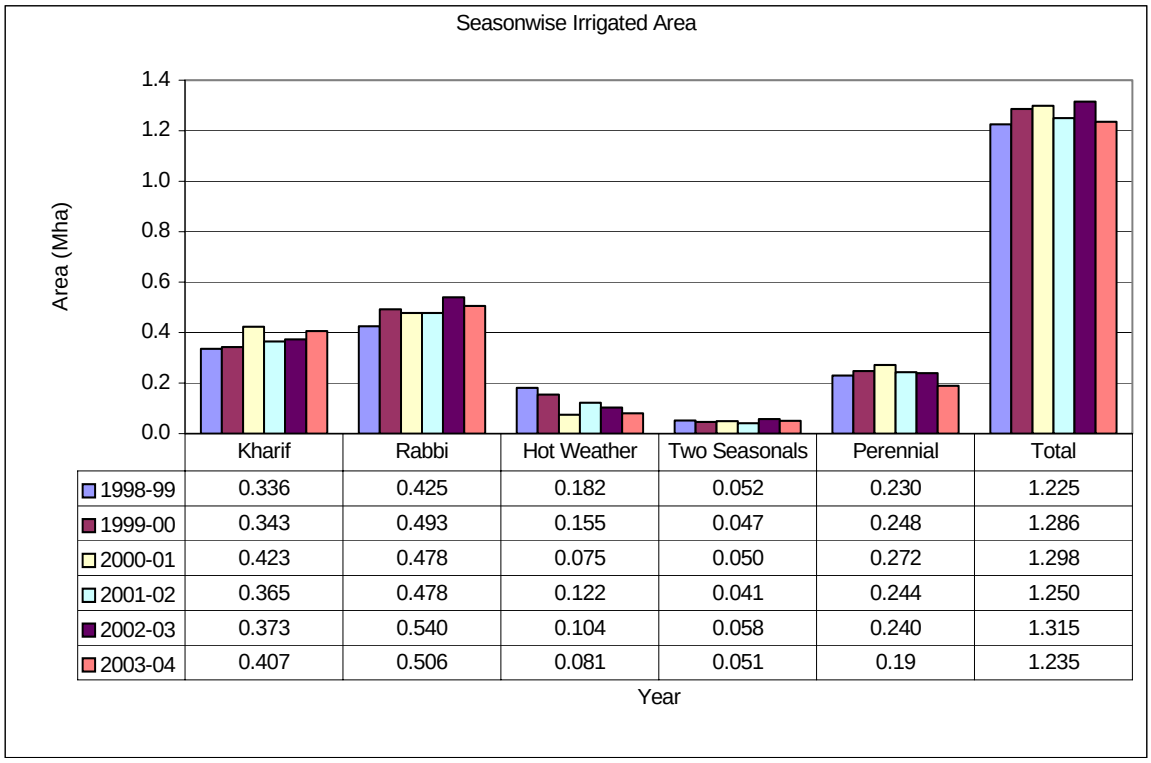
In spite of various measures taken so far, there is a gap between potential created and utilised.



	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04
Potential Created Mha	3.420	3.500	3.706	3.769	3.812	3.863
Area irrigated by canals Mha	1.225	1.286	1.298	1.250	1.315	1.235
Area irrigated by wells in command	0.471	0.584	0.466	0.458	0.524	0.441

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) Taking more percentage of crops that require more water like paddy and sugarcane iv) Thin & scattered irrigation resulting in low efficiency v) Low utilisation during kharif (Rainy) season vi) Reduction in storage capacity due to silting vii) Poor/approximate assessment of the irrigated area in the command viii) Non accounting of irrigated area outside the command (influence area) ix) Poor maintenance of the infrastructure due to financial constraints x) Non participation of beneficiaries.



	Kharif	Rabbi	Hot Weather	Two Seasonals	Perennial	Total
1998-99	0.336	0.425	0.182	0.052	0.230	1.225
1999-00	0.343	0.493	0.155	0.047	0.248	1.286
2000-01	0.423	0.478	0.075	0.050	0.272	1.298
2001-02	0.365	0.478	0.122	0.041	0.244	1.250
2002-03	0.373	0.540	0.104	0.058	0.240	1.315
2003-04	0.407	0.506	0.081	0.051	0.19	1.235

Year wise potential created and corresponding season-wise irrigated area during last 5 years are shown in the above figures.

1.12 Water Users' Associations

Maharashtra is pioneer in implementing Participatory Irrigation Management (PIM) through Water Users' Associations. PIM will not only result in effective and efficient operation and management of irrigation systems but also result in cost saving. State Government is keen to expand farmers' participation in irrigation management.

The GOM has taken a policy decision on 23rd July, 2001 on formation of Water Users' Associations and handing over the management of the entire irrigation potential created to the WUAs. In case of projects under construction, no work on construction of minors will be taken up unless WUA is formed. By the end of 2001-02 in all 283 WUA were in full operation with operational area of 101.00 thousand hectares. In addition to this, 281 WUAs have come into operation, by the end of 2003-04. As a result, at the end of 2003-04, total 564 WUAs were in operation, which covered an area of 165.00 thousand hectares. Besides this, the number of WUAs, which have been registered and entered into agreement, was 158, covering an area

of about 56.15 thousand hectares. By the end of 2001-02, the number of registered WUAs was 414, which increased to 1009 by end of 2003-04. It is proposed to cover an area of 359.4 thousand hectares by these 1009 WUAs.

It is observed that ,

1. An appreciable increase in irrigated area has taken place in the area under water users' associations.
2. They use water economically; irrigate more area with unit quantum.
3. They gain concession by paying water charges in time.
4. Majority of the organisations accrue profit by systematically accomplishing water management.
5. They use water during hot weather season by achieving saving in water distribution in *Rabi* season.

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 Background

Based on experience it was decided to carry out benchmarking of almost all major & medium and few minor irrigation projects in the State for the year 2002-03. Total 254 projects from 25 circles were selected for benchmarking exercise. There were 11 performance indicators considered in the analysis. This year (2003-04) 261 projects are selected for benchmarking with 12 performance indicators. A new indicator “Assessment Recovery Ratio” for Irrigation and Non Irrigation uses separately is introduced this year.

A State level workshop was held at WALMI, Aurangabad on 28-29 December 2004, wherein draft of benchmarking report 2003-04 was presented and discussed with field officers before finalising the same. It has brought forward important observations and suggestions which has helped in finalising this report. An international forum on this subject was held on 19th & 20th January 05 at WALMI Aurangabad.

This is the third consecutive report of benchmarking of irrigation projects in the State with 261 projects and 12 indicators. The region wise number of projects selected for benchmarking during 2003-04 is as follows.

Sr. No	Region	Number of Irrigation Projects			Total number of projects
		Major	Medium	Minor	
1	Konkan	4	2	9	15
2	Vidarbha	13	47	23	83
3	Marathwada	9	37	16	62
4	North Maharashtra	11	23	10	44
5	Western Maharashtra	12	34	11	57
	Total	**49**	**143**	**69**	**261**

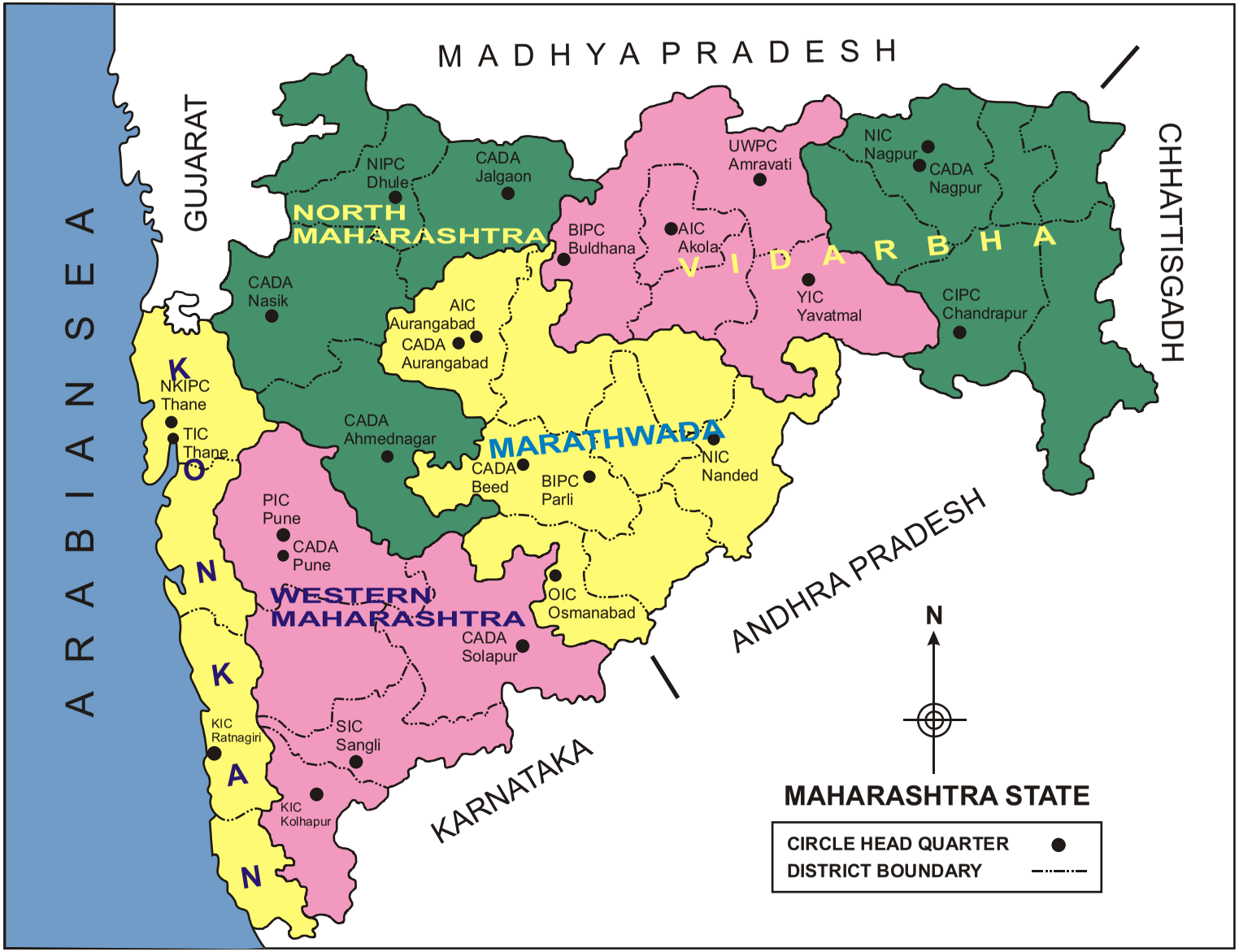
2.2 Experience in Benchmarking of Irrigation Projects

The projects selected are of major, medium and minor category and from various regions of State representing various agro-climatic zones. The benchmarking exercise has provided a systematic approach for understanding how the projects from similar sub basins are performing relative to others. The best performing practices are identified and reasons for lower performance are found out. The remedial measures are also planned and will be implemented accordingly.

2.3 About this report

Following 12 indicators are selected for benchmarking in 2003-04 grouped in different key activity areas.

MAP SHOWING LOCATION OF IRRIGATION CIRCLES



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

Environmental Aspects

10 Land Damage Index

Social Aspects

11 Equity Performance

Additional Indicator

12 Assessment Recovery Ratio

A. Irrigation

B. Non Irrigation

2.3.1 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).
- Data is collected in spread sheet and analysed in MWIC office.
- Drafts of report and indicator wise performance were sent to project in-charge for comments.
- Final report was discussed in a State level workshop.
- The report was reviewed before publication.

For better monitoring and looking to the number of projects the analysis is carried out considering irrigation circle as a unit and projects therein with similar plan groups of sub basins. There are 25 irrigation circles in the State, locations of which are shown in enclosed map. Performance of projects in a circle against each indicator is collective performance as given in the Appendices. Data of 49 Major projects is enclosed as Appendix-XVI and that of medium and minor

projects under these circles is available with GOM. If somebody desires to know the details, those can be made available.

- Ranking of circles in different plan groups is done by arranging the performance for 2003-04 in ascending order.
- Collective performance of projects under a circle is found out for each indicator.
- Based on performance for 2003-04, indicatorwise average performance is foundout for the circles under consideration, setting aside the exceptionally high/low values.
- State targets for each indicator as decided during 2002-03 are reviewed and revised wherever necessary. These are based on studies and past performance and shown on the graphs. It is obvious that climate, geographical, social conditions etc. 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. However each circle will be defining its own targets considering peculiarity of its area. **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 & reasons for the same for each indicator comparing with State target are noted. Efforts will have to be directed towards improving the performance.
- 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 25 in each graph, for example for major projects category, there are only 18 circles.
- At a glance evaluation of performance of all circles with respect to each indicator is also given.
- There are 2445 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.

2.4 Overview Of Irrigation Projects

For getting an idea about major and medium projects selected for benchmarking, an overview showing details such as sub basin, storage, command area, crops grown etc. is enclosed as Appendix XIII.

2.4.1 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 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 practice to use water saved in Kharif and Rabi season for Hot weather or Perennial crops.

2.4.2 Crops Irrigated

The crops grown vary significantly between projects. The main crops grown in project command are sorghum, wheat, gram, sunflower, maize, L. S. cotton, vegetables, groundnut, sugarcane, banana, paddy etc.

2.4.3 Management of Systems

The irrigation systems are constructed and mostly managed by government. Operation and maintenance of irrigation projects is looked after by irrigation divisions which are administratively controlled by circle office. GOM has taken policy decision to supply water for irrigation through Water Users' Associations only. Accordingly the bill is prepared by the Government for the same. Water Users' Associations are formed in command areas of irrigation projects and irrigation management of area under their jurisdiction is transfered to them. Recently, a major project Waghad in North Maharashtra region is handed over to Federation of WUAs for management.

Chapter 3
Performance Indicators

3.0 As stated earlier, Chapter 2 of this report provides an idea about the five key activities, mentioned below.

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

3.1 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 an year divided by the irrigated area 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^3/ha in case of major and medium projects and 6667 m^3/ha is set for minor projects.

Results of the study are given in Appendix-I.

3.1.2 Potential Utilised & Created

This is the ratio of potential utilised (area irrigated) to created irrigation potential of the project.

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

The results are given in Appendix-II.

3.2 Agricultural Productivity

In Maharashtra, 70% 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.

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 output in agriculture on which service provider has control. Therefore to have an idea about trend of production in the command, this indicator has been adopted. The yield data of various crops is collected through 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 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. State target is set as Rs. 30000/ha in case of major & medium projects and Rs. 25000/ha in case of minor projects.

Results are shown in Appendix-III.

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).

Results are given in Appendix-IV.

3.3 Financial Performance

It is vital for any system to be self-sustainable that at least O & M expenditure 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 to encourage efficient use. Presently the practice of volumetric supply is in use for WUAs and other uses such as domestic and industrial use. Now it is made mandatory to supply water for irrigation through WUAs only.

The indicators chosen for financial performance are given below.

1) Cost Recovery Ratio.
2) Total O & M Cost per unit area
3) Revenue per unit water supplied.
4) Total O & M Cost per unit Volume of Water Supplied.
5) Mandays for O & M per unit area.

3.3.1 Cost Recovery Ratio

It is the ratio of recovery of water charges to the cost of providing the service. 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.

Results of analysis are shown in Appendix-V

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 during the year.

Generally, the O & M cost per unit area should be as minimum as possible. More the O & M cost, lesser will be the cost recovery ratio.

The Govt. of Maharashtra has prescribed yearly O & M norms of Rs. 250/-ha., excluding establishment cost. The staff engaged in management of irrigation system is CRT staff and it is permanent. The expenditure on them is chargeable to the project, irrespective of whether there is less or more irrigation. The total O & M cost is increased in projects where there is less irrigation. The total O & M cost with establishment cost per unit area works out to Rs.700/ha and it is considered as State target.

The results are given in Appendix-VI.

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. The results of study are given in Appendix-VII.

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 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 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 of CRT, Work-charged and daily rated staff engaged in management of the system divided by area irrigated. It is always advisable to have optimum number of mandays for O & M. But with fixed establishment of CRT, 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.

The comparative analysis given in Appendix-IX shows mandays for O & M per unit area.

3.4 Environmental Aspects

3.4.1 Land Damage Index

Land damage index is expressed as percentage of land damaged to irrigation potential created.

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.

The results are given in Appendix-X.

3.5 Social Aspects

3.5.1 Equity Performance

Most of the schemes are gravity systems with canals and distribution system. The canal system is divided in to head, middle & tail reach equally with reference to length of canal. Equity performance means ratio of area irrigated to projected irrigable area in head, middle and tail reach expressed as percentage. This indicator gives clear picture as to whether the irrigation facility is provided equitably to head, middle & tail reach farmers or otherwise.

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 reach. The results are shown in Appendix-XI.

3.6 New Indicator

3.6.1 Assessment Recovery Ratio

This indicator is split up into two components viz

a) Irrigation

b) Non Irrigation

In case of irrigation use, there are arrears of water charges in many projects due to some or other reason. One of the reasons being postponement of recovery during draught years.

It is the ratio of recovery of water charges during 2003-04 and assessment in 2002-03 for irrigation as well as non irrigation uses.

The purpose of introducing this indicator is to check whether the water charges assessed during a year are totally recovered or not. For this indicator, arrears are not considered.

The results are shown in Appendix XII (A) and XII (B).

Note : State targets for each indicator are decided based on studies and past experience. The details are given in Appendix-XVII.

Chapter 4

Observations & Conclusions

4.1 Observations

I) Annual Irrigation Water Supply per unit Irrigated Area

Major Projects

Water use per unit area in TIC Thane (abundant plan group) is more owing to paddy crop, field to field irrigation & light soils.

Annual irrigation water supply per unit irrigated area is reduced in almost all circles except projects in CADA Jalgaon (deficit plan group), UWPC Amravati (normal plan group) and KIC Kolhapur (abundant plan group). In case of NIC Nanded (deficit) the annual irrigation water supply per unit irrigated area is less than State Target. This is attributable to Vishnupuri Project-a major lift irrigation scheme on Godavari. In CADA Aurangabad, the water supply is substantially reduced both in deficit & normal plan group, owing to reduction in perennial crops.

The performance of AIC Akola (deficit) during 2003-04 was very good.

Medium Projects

Water use per unit irrigated area increased in AIC Akola, CADA Nagpur (deficit), CADA Ahmednagar, NIC Nanded, AIC Akola, NIPC Dhule & CADA Nagpur (Normal).

Water use per unit area in CADA Nagpur was 10256 m^3/ha, which is more than past maximum.

Projects in CADA Solapur (highly deficit), CADA Ahmednagar, CADA Aurangabad and OIC Osmanabad (deficit), AIC Aurangabad, CADA Solapur, OIC Osmanabad (normal) and TIC Thane (abundant) had no water available for irrigation.

The performance of AIC Aurangabad, BIPC Parali, NIC Nanded (Deficit) and PIC Pune (Normal) during 2003-04 was very good.

Minor Projects

Values of annual water supply per unit area in case of BIPC Parli (deficit) and KIC Ratnagiri, KIC Kolhapur & NKIPC Thane (abundant) are found to be increased over FY average.

CADA Pune & YIC Yavatmal (Normal) have considerably reduced the water use as compared to FY average.

The performance of CADA Nashik & CADA Pune (Normal) during 2003-04 was good.

Water use values of zero and below State target indicate lesser availability of water.

II) Potential Created and Utilised

Major Projects

The projects under CADA Jalgaon (normal) & those under CIPC Chandrapur (normal as well as abundant) could utilise the created irrigation potential fully. However, three circles from deficit, six from normal and one each from surplus & abundant plan groups have improved their performance compared to last FY average.

The performance of AIC Akola, CADA A'nagar, CADA Jalgaon, CIPC Chandrapur, PIC Pune (All normal), CADA Nagpur (surplus) and CADA Pune & CIPC Chandrapur (abundant) during 2003-04 was very good.

Only 494 ha. in one project could be irrigated out of 120520 ha in four projects in CADA Beed (deficit) resulting the value as negligible.

Average performance of all the projects in abundant plan group have crossed the State target.

Medium Projects

CADA Jalgaon (deficit & normal), CIPC Chandrapur (normal, surplus & abundant) CADA Nagpur (surplus) could achieve the State target.

The performance of CADA Jalgaon, CIPC Chandrapur (normal), CADA Nagpur, CIPC Chandrapur (surplus) and CIPC Chandrapur (abundant) during 2003-04 was very good.

Minor Projects

Improvement in performance is observed in most cases of all plan groups over FY average except CADA Jalgaon (deficit) and KIC Kolhapur (abundant).

The performance of seven circles in different plan groups during 2003-04 was very good as they could achieve the State target.

III) Output per unit Irrigated Area

Major Projects

Five circles each in deficit & normal plan group, one from surplus and two from abundant plan group have improved their performance over FY average. CADA Jalgaon (deficit & normal) & UWPC Amravati (normal) have improved remarkably over FY average.

The performance of NIPC Dhule (deficit), CADA Aurangabad, CADA Jalgaon, CADA Nashik, CADA Solapur UWPC Amravati circles from normal and KIC Kolhapur & TIC Thane circles from abundant plan group was very good as they have crossed the State target during 2003-04.

Medium Projects

The output per unit area for AIC Akola & CADA Jalgaon (deficit) and CADA Jalgaon (normal) is remarkably increased over FY average. CADA Nagpur, CADA Jalgaon (deficit) and YIC Yavatmal (normal) had output more than their respective past maximum values.

The performance of OIC Osmanabad (highly deficit), AIC Akola, CADA Jalgaon & NIPC Dhule (deficit), CADA Jalgaon, CADA Nashik & PIC Pune (normal),

CIPC chandrapur (surplus), CIPC Chandrapur, KIC Kolhapur, KIC Ratnagiri (abundant) during 2003-04 was very good.

Minor Projects

It is interesting to note that six circles in deficit plan group show increase over FY average whereas five circles in normal, one circle in surplus and three circles in abundant plan group had decreasing trend over FY average.

Seven circles from different plan groups could cross the State target.

The performance of AIC Akola, BIPC Buldhana, BIPC Parali, CADA Aurangabad (Deficit), CADA Nashik (Normal), KIC Ratnagiri & NKIPC Thane during 2003-04 was very good.

IV) Output per unit Irrigation Water Supply

Major Projects

Excepting UWPC Amravati (deficit) CIPC Chandrapur & CADA Pune (normal) and CADA Pune & KIC Kolhapur (abundant) all circles have shown improvement over FY average.

The performance of NIC Nanded, NIPC Dhule (deficit), CADA Aurangabad, CADA Jalgaon, CADA Pune (normal), CIPC Chandrapur, KIC Kolhapur (abundant) during 2003-04 was very good.

Medium Projects

OIC Osmanabad (highly deficit), AIC Akola, NIPC Dhule & CADA Jalgaon (deficit), YIC Yavatmal, CADA Nashik, PIC Pune & CADA Jalgaon (normal), CADA Nagpur & CIPC Chandrapur (surplus) and CIPC Chandrapur (abundant) have achieved the State target surpassing the FY average. Their performance during 2003-04 was very good.

YIC Yavatmal (normal) and CIPC Chandrapur (surplus) have crossed their past maximum value.

Average performance of circles in deficit, normal and surplus planning groups was above the State target.

Minor Projects

Six circles each from deficit & normal and two from abundant plan group show increasing trend over FY average.

The performance of AIC Akola, BIPC Buldhana, BIPC Parli & CADA Aurangabad (deficit), CADA Nagpur, CADA Nashik, NIC Nanded, (normal), and KIC Ratnagiri (abundant) during 2003-04 was very good as these circles have crossed the State target.

V) Cost Recovery Ratio

Major Projects

The performance of four circles in deficit, seven in normal, one in surplus and three in abundant plan group during 2003-04 was very good as these circles are having cost recovery ratio more than one. This is because of special drive taken for recovery of water charges, especially the arrears thereof.

Performance of TIC Thane (abundant) is remarkably high.

Medium Projects

BIPC Parli, AIC Akola, OIC Osmanabad and BIPC Buldhana (deficit), NIC Nanded, PIC Pune and CIPC Chandrapur (normal) could achieve the State target. Therefore, the performance of these circles during 2003-04 is very good. CADA Jalgaon, CADA Aurangabad, CADA Nagpur (deficit), YIC Yavatmal, CADA Nashik (normal) though could not achieve the State target have set highest-ever achievement.

Minor Projects

Six circles each from deficit & normal, one from surplus and three from abundant plan group show rising trend over FY average.

The performance of AIC Akola (deficit) and CIPC Chandrapur (normal) during 2003-04 was very good.

VI) Total O & M Cost per unit Area

Major Projects

All circles in surplus and abundant plan groups have improved over FY average except CADA Aurangabad, AIC Akola, CADA Jalgaon & CADA Beed (deficit) and CADA Solapur, YIC Yavatmal, CIPC Chandrapur all the remaining circles in normal.

Total O&M cost per unit area in case of projects in CADA Beed (deficit) is exceptionally high due to non availability of water in three out of four projects and nominal irrigation in four projects.

Similarly the performance of NIPC Dhule (deficit), NIC Nagpur (normal), KIC Kolhapur (abundant) during 2003-04 was very good.

Medium Projects

CADA Jalgaon, CADA Nagpur, AIC Aurangabad, NIPC Dhule, NIC Nanded (deficit), CADA Jalgaon, CIPC Chandrapur, NIC Nanded, CADA Nashik (normal), CIPC Chandrapur (surplus) and KIC Ratnagiri, CIPC Chandrapur (abundant) have brought down the O&M cost sizably. The performance of AIC Aurangabad, BIPC Buldhana, CADA Jalgaon, CADA Nagpur (deficit), CADA Jalgaon, CIPC Chandrapur (normal), CADA Nagpur (Surplus) during 2003-04 was very good.

O&M cost per unit area appears to be zero against some circles, the as the ratio is less than one.

Values for OIC Osmanabad and PIC Pune (highly deficit) are very high owing to lesser area under irrigation due to non availability of water.

Minor Projects

CADA Aurangabad and AIC Akola (deficit) and CADA Nashik (normal) have considerably reduced the O&M cost over FY average.

In case of KIC Kolhapur (abundant) the O&M cost has increased by more than 8 times the FY average due to very less area under irrigation (21 Ha) & increased O&M cost.

The average performance of circles in deficit & normal plan groups was near to State target.

The performance of CADA Solapur (Highly deficit), BIPC Buldhana, CADA Ahmednagar, CADA Jalgaon (Deficit), NIC Nanded, NIPC Dhule, OIC Osmanaba, AIC Akola, CADA Nashik, CIPC Chandrapur , PIC Pune, YIC Yavatmal (Normal), CADA Nagpur (Surplus) and CIPC Chandrapur (Abundant) during 2003-04 was very good.

VII) Total O & M Cost per unit of Water Supplied

Major projects

Three circles in deficit, four circles in normal, one in surplus and three in abundant plan group have improved their performance over FY average. However, the performance of CADA Jalgaon, NIPC Dhule, UWPC Amravati (deficit), AIC Akola, CADA Ahmednaar, CADA Aurangabad, CADA Jalgaon, CADA Nashik, CADA Pune, CADA Solapur, NIC Nagpur, PIC Pune, UWPC Amravati (normal), CADA Nagpur (surplus), CADA Pune, CIPC Chandrapur, KIC Kolhapur, TIC Thane during 2003-04 was very good.

CADA Beed (deficit) has shown exceptionally high rise in value over FY average, owing to non availability of water.

Medium projects

The values for projects in CADA Solapur and PIC Pune (highly deficit) are exceptionally high owing to lesser availability of water for irrigation. Except CADA Solapur, OIC Osmanabad and PIC Pune (highly deficit), AIC Akola, BIPC Parli, OIC Osmanabad (deficit), CADA Nagpur, CADA Nashik, CIPC Chandrapur, NIPC Dhule, YIC Yavatmal (normal), CADA Nagpur, CIPC Chandrapur (surplus), CIPC Chandrapur (abundant) all other circles in different plan groups performed very good in 2003-04.

Minor Projects

Total O&M cost per unit of water supplied is increased in case of CADA Nagpur (normal) and KIC Kolhapur (abundant). The performance of all the remaining circles except AIC Akola (Deficit), CADA Nagpur, CADA Pune, NIC Nanded (Normal), KIC Kolhapur & KIC Ratnagiri (Abundant) during 2003-04 was very good.

VIII) Revenue per unit of Water Supplied

Major Projects

All the circles have improved their performance over FY average except CIPC Chandrapur and UWPC Amravati (normal).

The performance of CADA Beed (deficit), CADA Nashik, CADA Jalgaon (normal) and TIC Thane (abundant) during 2003-04 was very good, as they have crossed the State target.

Medium Projects

Revenue per unit of water supplied in OIC Osmanabad, PIC Pune and CADA Solapur (highly deficit) and OIC Osmanabad (deficit) is more than the State target. Therefore, these circles full under “Very good” criteria during the year 2003-04.

No circle in normal, surplus, abundant plan group could achieve the State target in spite of more availability of water than that of deficit and highly deficit plan groups.

It is observed that the State target can be achieved where the non irrigation use is predominant.

Minor Projects

In case of AIC Akola (deficit), it is observed that the performance is “Very good” value of revenue per unit of water supplied for 2003-04 has substantially increased and crossed the State target.

IX) Mandays for O & M per unit Area

Major Projects

Eight circles from different plan groups could achieve the State target. The performance of UWPC Amravati (deficit), CIPC Chandrapur (normal), NIC Nagpur, PIC Pune, CADA Nagpur (surplus), CADA Pune. CIPC Chandrapur & KIC Kolhapur (abundant) during 2003-04 was very good.

The values for NIPC Dhule, TIC Thane & CADA Jalgaon circles being less than 1, have appeared as zero.

The value of CADA Beed is exceptionally high owing to non availability of water.

Medium projects

The values for PIC Pune & OIC Osmanabad (highly deficit) are exceptionally high owing to lesser availability of water for irrigation.

AIC Aurangabad & NIC Nanded (deficit), CADA Ahmednagar, CADA Nashik, NIC Nanded & NIPC Dhule (Normal) have improved their performance over FY average. The per formance of CADA Solapr (Highly deficit), BIPC Buldhana, CADA Ahemadnagar, CADA Aurangabad, CADA Nagpur, NIPC Dhule, OIC Osmanabad (Deificit), AIC Akola, AIC Aurangabad, CADA Jalgaon, CADA Solapur, CIPC Chandrapur, OIC Osmanabad (Normal), CADA Nagpur, CIPC Chandrapur (Surplus) & KIC Kolhapur, TIC Thane (Abundant) during 2003-04 was very good.

Some circles are having zero values owing to non availability of water for irrigation.

Minor Projects

NIC Nanded & CADA Aurangabad (deficit) have successfully brought down mandays per unit of area from twelve to four & five respectively. Except BIPC Parali, CADA Aurangabad, NIC Nanded (Deficit), CADA Nashik, NIC Nanded, PIC Pune, YIC Yavatmal (Normal) KIC Kolhapur, KIC Ratnagiri, NKIPC Thane (Abundant) the performance of all the remaining circles was very good during 2003-04.

In case of KIC Kolhapur the value has risen from seven to seventeen due to lesser area under irrigation.

X) Land Damage Index

Major Projects

There is an improvement in the performance of AIC Akola (deficit), CIPC Chandrapur, CADA Nashik & PIC Pune of normal plan group, CADA Nagpur of surplus plan group over FY average.

Land damage is observed for the first time in CADA Aurangabad (normal) and KIC Kolhapur (abundant) plan group this year.

Medium Projects

Except AIC Aurangabad (Deficit) & AIC Akola (Normal) the performance of all the circles in various plan groups during 2003-04 was very good.

OIC Osmanabad and AIC Aurangabad (deficit) have improved over FY average, whereas an increase in land damage is observed in projects in AIC Akola (normal)

Minor Projects

No land damage is found in any minor project.

XI) Equity Performance

Major Projects

The performance of CADA Ahmednagar (normal) was good, as this circle could distribute available water for irrigation in head, middle and tail reaches quite equitably and have shown improvement in their performance over FY average.

Medium Projects

No circle could supply the irrigation water equitably to head, middle and tail reach farmers. The peformance of circles in all the plan groups fall under the catagory fair.

Minor Projects

XII A) Assessment Recovery Ratio (Irrigation)

Major Projects

Only circles AIC Akola & NIPC Dhule (deficit) and AIC Akola (normal) could achieve the State target of 1. In case of other circles the water charges for irrigation use could not be recovered fully, due to scarcity conditions in the State.

Medium Projects

The performance of AIC Akola, NIPC Dhule (deficit) and AIC Akola (normal) during 2003-04 was very good as they could achieve the State target.

Minor Projects

The water charges could not be recovered fully due to scarcity conditions in the year 2002-03. Therefore, no substantial rise has been observed during 2003-04 in the values for this indicator.

XII B) Assessment Recovery Ratio (Non Irrigation)

Major Projects

The performance of six circles (UWPC Amravati, AIC Akola & CADA Aurangabad from deficit, YIC Yavatmal & AIC Akola from normal & TIC Thane from abundant plan group) during 2003-04 was very good as they could achieve the State target & four circles (NIPC Dhule from deficit, PIC Pune & UWPC Amravati from normal & CADA Nagpur from surplus plan group) were near to State target.

Medium Projects

The performance of only one circle Viz. CADA Nagpur (deficit, normal, surplus) during 2003-04 was very good as it could recover the charges for non-irrigation use fully. AIC Akola (deficit), PIC Pune & CIPC Chandrapur (normal) were near to State target.

Minor Projects

YIC Yavatmal & TIC Thane have improved their performance over FY average & achieved the State target.

CADA Jalgaon, AIC Akola & PIC Pune will have to take special drive to improve their performance.

4.2 Conclusions:

This is third successive report on benchmarking of irrigation projects in Maharashtra. With consistent efforts at Government as well as field level, the benchmarking initiative has now become an integral part of performance evalution process of irrigation projects. As State has varied agro-climatic conditions, for comparison of circles on equal footing, grouping of circles is made on basis of plan group of sub-basins which has similar characteristics of rainfall, climate etc.

The following conclusions can be made from the experience gained so far.

1) Irrigation projects under each circle from similar sub-basins are grouped together for comparing their performance which is found to be more appropriate.

2) The benchmarking has helped in identifying the performance gap between different circles in the specified plan groups, which has helped in locating areas for improvement.

3) The circles have initiated actions in order to minimise the gap in comparison with better performing circles and State targets.

4) This initiative has helped in developing healthy competition amongst irrigation circles.

5) Training and capacity building of officers and staff involved in the process has helped in consolidating the Benchmarking process.

6) Benchmarking coupled with water auditing has helped in validation of data and improving the quality of the data base.

7) Benchmarking as a management tool has contributed in improving performance of irrigation projects in the State.

Evaluation of performance of Irrigation Circles (Service Providers)

Indicator	Catagory	State Target	Performance for 2003-04			
			Fair	Moderate	Good	Very Good
I- Annual Irrigation Water Supply per unit irrigated area	Major & Medium	7692	< 5384 or > 10000	5384 to 6538 or 8846 to 10000	6538 to 7307 or 8077 to 8846	7307 to 8077
	Minor	6667	< 4667 or > 8667	4667 to 5667 or 7667 to 8667	5667 to 6333 or 7000 to 7667	6333 to 7000
II-Potential Utilised and Created	All Projects	0.6	< 0.42	0.42 to 0.51	0.51 to 0.6	> 0.6
III- Output per unit irrigated area	Major & Medium	30000	< 21000	21000 to 25000	25000 to 30000	> 30000
	Minor	25000	<17500	17500 to 21250	21250 to 25000	> 25000
IV- Output per unit irrigation water supply	Major & Medium	3.9	< 2.73	2.73 to 3.32	3.32 to 3.9	> 3.90
	Minor	3.75	< 2.63	2.63 to 3.19	3.19 to 3.75	> 3.75
V- Cost Recovery ratio	All Projects	1	< 0.7	0.7 to 0.85	0.85 to 1	> 1
VI- Total O & M cost per unit area	All Projects	700	> 910 or < 500	805 to 910	700 to 805	500 to 700
VII- Total O & M cost per unit water supplied	All Projects	0.22	> 0.22	0.19 to 0.22	0.15 to 0.19	< 0.15
VIII- Revenue per unit of water supplied	All Projects	0.25	< 0.18	0.18 to 0.21	0.21 to 0.25	> 0.25
IX- Mandays for O & M per unit area	All Projects	3	> 3.9 or = 0	3.45 to 3.9	3 to 3.45	> 0 & < 3
X- Land Damage Index	All Projects	0	> 2	1 to 2	0 to 1	< 0
XII-A Assessment of recovery (Irrigation)	All Projects	1	< 0.7	0.7 to 0.85	0.85 to 1	= 1
XII-B Assessment of recovery (Non Irrigation)	All Projects	1	< 0.7	0.7 to 0.85	0.85 to 1	= 1

i) Please see Appendix-XVII for details of State target values.

ii) In case of equity, the performance can be judged on the basis of distribution of available water in Head,Middle & Tail reach equitably. The evaluation for indicator No. XI Equity performance have been given in Appendix XVII

Major Project

At a glance evaluation of performance of Irrigation Circles (Service providers) for 2003-04												
Plan Group	Circle	Indicator Number										
		I	II	III	IV	V	VI	VII	VIII	IX	X	XII Irr	XII NI
Deficit	AIC Akola	VG	F	G	G	F	F	M	F	F	VG	VG	VG
	CADA Aurangabad	M	F	F	F	VG	F	G	G	F	F	F	VG
	CADA Beed	F	F	F	F	VG	F	F	VG	F	F	F	F
	CADA Jalgaon	F	F	F	F	VG	F	VG	F	F	VG	F	F
	NIC Nanded	M	G	G	VG	F	F	M	F	F	M	F	F
	NIPC Dhule	F	M	VG	VG	VG	VG	VG	M	F	VG	VG	G
	UWPC Amravati	G	G	F	F	M	F	VG	F	VG	VG	F	VG
Normal	AIC Akola	M	VG	F	F	VG	M	VG	F	F	VG	VG	VG
	CADA Ahmednagar	G	VG	F	F	M	G	VG	F	F	M	F	F
	CADA Aurangabad	M	G	VG	VG	F	F	VG	F	F	G	F	F
	CADA Jalgaon	F	VG	VG	VG	VG	F	VG	VG	F	VG	F	F
	CADA Nashik	F	G	VG	F	VG	F	VG	VG	F	F	M	M
	CADA Pune	M	G	G	VG	F	G	VG	F	F	VG	F	F
	CADA Solapur	F	F	VG	G	VG	FF	VG	F	F	F	F	M
	CIPC Chandrapur	F	VG	F	F	F	F	F	F	VG	F	F	F
	NIC Nagpur	F	F	F	F	VG	VG	VG	G	VG	F	F	F
	PIC Pune	F	VG	M	F	VG	G	VG	G	VG	F	F	G
	UWPC Amravati	F	F	VG	F	VG	G	VG	F	F	VG	F	G
	YIC Yavatmal	M	F	F	F	F	F	G	F	F	VG	F	VG
Surplus	CADA Nagpur	G	VG	M	M	VG	M	VG	F	VG	F	F	G
Abundant	CADA Pune	F	VG	F	G	VG	F	VG	F	VG	F	F	F
	CIPC Chandrapur	F	VG	G	VG	F	F	VG	F	VG	VG	F	F
	KIC Kolhapur	F	G	VG	VG	VG	VG	VG	F	VG	F	F	F
	TIC Thane	F	F	VG	F	VG	F	VG	VG	F	VG	F	VG

VG = VERY GOOD, G = GOOD, M = MODERATE, F = FAIR

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

Medium Project													
At a glance evaluation of performance of irrigation circles (Serviceproviders) for 2003-04													
Plan group	Circle	Indicator number											
		I	II	III	IV	V	VI	VII	VIII	IX	X	XII Irr	XII NI
Highly Deficit	CADA Solapur	F	F	F	F	F	F	F	VG	VG	VG	M	F
	OIC Osmanabad	M	F	VG	VG	F	F	F	VG	F	VG	F	F
	PIC PUNE	M	F	F	F	F	F	F	VG	F	VG	F	F
Deficit	AIC Akola	M	F	VG	VG	VG	F	G	M	F	VG	VG	G
	AIC Aurangabad	VG	F	M	M	F	VG	VG	F	F	G	F	F
	BIPC Buldhana	M	F	F	M	VG	VG	VG	F	VG	VG	M	F
	BIPC Parli	VG	F	G	G	VG	F	G	F	F	VG	F	M
	CADA Ahmadnagar	F	F	F	F	F	F	VG	F	VG	VG	F	F
	CADA Aurangabad	F	F	F	F	M	F	VG	F	VG	VG	F	F
	CADA Jalgaon	F	VG	VG	VG	F	VG	VG	F	G	VG	M	F
	CADA Nagpur	F	F	F	F	G	VG	VG	F	VG	VG	F	VG
	NIC Nanded	VG	M	G	G	F	F	VG	F	F	VG	F	F
	NIPC Dhule	F	F	VG	VG	F	G	VG	F	VG	VG	VG	F
	OIC Osmanabad	F	F	F	F	VG	F	G	VG	VG	VG	F	F
Normal	AIC Akola	M	F	M	F	M	F	VG	F	VG	G	VG	F
	AIC Aurangabad	F	F	F	F	F	F	VG	F	VG	VG	F	F
	CADA Ahmadnagar	G	M	F	F	F	F	VG	F	F	VG	F	F
	CADA Jalgaon	F	VG	VG	VG	M	VG	VG	F	VG	VG	F	F
	CADA Nagpur	F	F	F	F	F	F	G	F	F	VG	F	VG
	CADA Nashik	M	F	VG	VG	M	F	G	F	F	VG	M	F
	CADA Solapur	F	F	F	F	F	F	VG	F	VG	VG	F	F
	CIPC Chandrapur	F	VG	F	M	VG	VG	G	G	VG	VG	F	G
	NIC Nanded	G	M	G	M	VG	G	VG	F	F	VG	F	F
	NIPC Dhule	M	F	F	F	F	F	G	F	F	VG	F	F
	OIC Osmanabad	F	F	F	F	F	F	VG	F	VG	VG	F	F
	PIC PUNE	VG	F	VG	VG	VG	F	VG	M	F	VG	F	G
	YIC Yavatmal	M	F	G	VG	F	F	F	F	F	VG	F	M
Surplus	CADA Nagpur	F	VG	F	VG	F	VG	G	F	VG	VG	F	VG
	CIPC Chandrapur	F	VG	VG	VG	F	F	F	F	VG	VG	F	F
Abundant	CIPC Chandrapur	G	VG	VG	VG	F	F	M	F	F	VG	F	F
	KIC Kolhapur	M	M	VG	G	M	F	VG	F	VG	VG	F	F
	KIC Ratnagiri	F	F	VG	F	F	F	VG	F	F	VG	F	F
	TIC Thane	F	F	F	F	F	F	VG	F	VG	VG	F	F

VG=VERY GOOD G=GOOD M=MODERATE F=FAIR

Note: The performance is very much affected by availability of water in the reservoirs, which is depdendant on rain fall in the year.

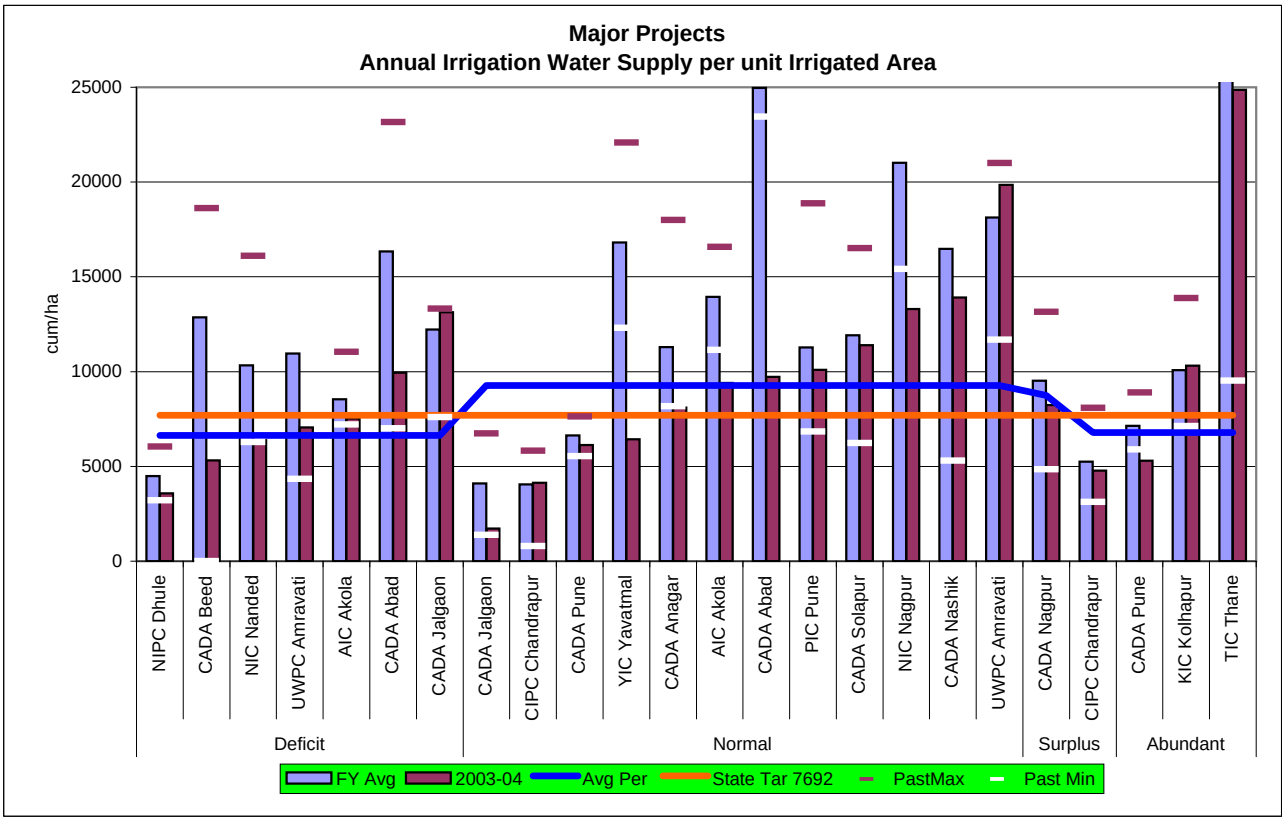
Minor Project													
At a glance evaluation of performance of irrigation circles (Serviceproviders) for 2003-04													
Plan group	Circle	**Indicator number**											
		I	II	III	IV	V	VI	VII	VIII	IX	X	XII Irr	XII NI
Highly Deficit	CADA Solapur	F	F	F	F	F	VG	VG	F	VG	VG	F	VG
Deficit	AIC Akola	G	F	VG	VG	VG	F	F	VG	VG	VG	F	F
	BIPC Buldhana	M	M	VG	VG	G	VG	VG	F	VG	VG	F	F
	BIPC Parli	F	F	VG	VG	F	M	VG	F	F	VG	F	F
	CADA Ahmadnagar	F	F	F	F	F	VG	VG	F	VG	VG	F	F
	CADA Aurangabad	F	F	VG	VG	F	G	VG	F	F	VG	F	F
	CADA Jalgaon	F	VG	F	F	F	VG	VG	F	VG	VG	F	F
	NIC Nanded	F	F	G	F	F	VG	VG	F	F	VG	F	F
	NIPC Dhule	VG	VG	M	M	G	VG	VG	F	VG	VG	F	F
	OIC Osmanabad	F	F	F	F	F	VG	VG	F	VG	VG	F	F
Normal	AIC Akola	F	F	F	F	F	VG	VG	F	VG	VG	F	F
	CADA Nagpur	F	VG	M	VG	F	F	F	F	VG	VG	G	F
	CADA Nashik	G	F	VG	VG	F	VG	VG	F	F	VG	F	F
	CADA Pune	G	F	F	VG	F	VG	VG	F	F	VG	F	F
	CIPC Chandrapur	F	VG	F	F	VG	VG	VG	F	VG	VG	F	F
	NIC Nanded	M	M	G	VG	F	F	G	F	F	VG	F	F
	PIC Pune	M	VG	F	F	F	VG	VG	F	G	VG	F	F
	YIC Yavatmal	M	F	F	F	F	VG	VG	F	F	VG	F	VG
Surplus	CADA Nagpur	F	G	F	M	G	VG	VG	F	VG	VG	F	F
Abundant	CIPC Chandrapur	G	VG	F	F	F	VG	VG	F	VG	VG	F	F
	KIC Kolhapur	F	F	M	F	F	F	F	F	F	VG	F	F
	KIC Ratnagiri	F	M	VG	VG	F	F	G	F	F	VG	F	F
	NKIPC Thane	F	F	VG	F	F	F	VG	F	F	VG	M	F
	TIC Thane	F	VG	G	F	F	F	VG	F	VG	VG	F	VG

VG=VERY GOOD, G=GOOD, M=MODERATE, F=FAIR

Note: The performance is very much affected by availability of water in the reservoirs, which is depdendant on rain fall in the year.

Appendices

Appendix-I



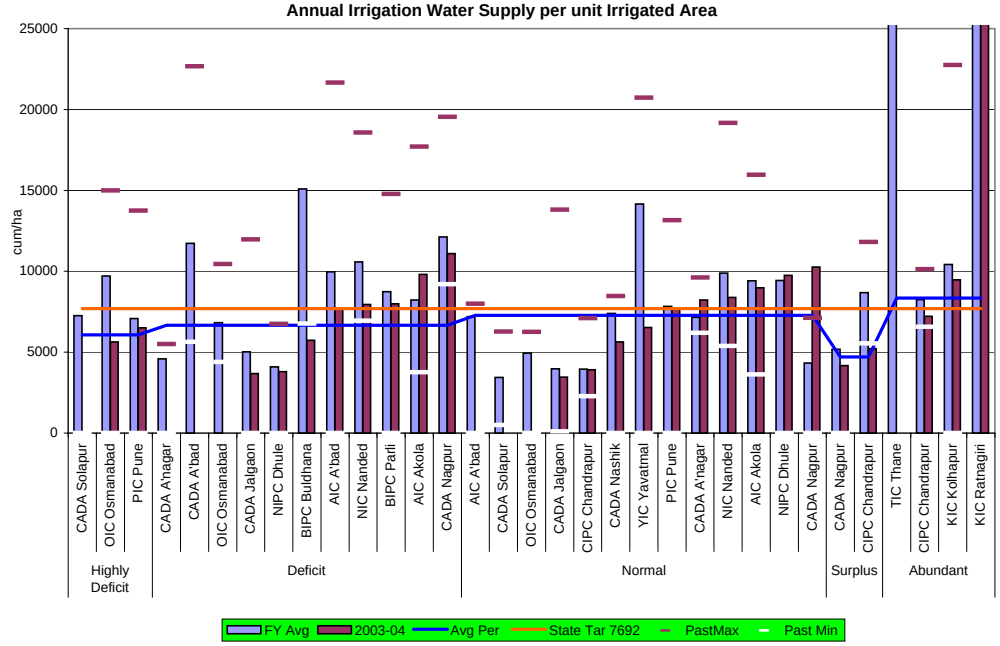
PlanGroup	Subbasin	Circle	FY Avg	2003-04	PastMax	Past Min	Avg Per
Deficit	Girna	NIPC Dhule	4486	3586	6037	3205	
	Lower Godavari & Manjra	CADA Beed	12859	5324	18612	0	
	Lower Godavari & Manjra	NIC Nanded	10323	6387	16100	6277	
	Purna Tapi	UWPC Amravati	10962	7064	25712	4339	6638
	Purna Tapi	AIC Akola	8535	7528	11048	7205	
	Lower Godavri & Purna						
	Dudhana	CADA Abad	16339	9939	23153	7013	
	Purna Tapi & Girna	CADA Jalgaon	12229	13137	13320	7588	
Normal	Middle Tapi	CADA Jalgaon	4104	1716	6733	1389	
	Wardha	CIPC Chandrapur	4047	4141	5832	796	
	Upper Bhima	CADA Pune	6637	6128	7629	5532	
	Painganga	YIC Yavatmal	16814	6438	22087	12300	
	Upper Godavari	CADA Anagar	11289	8103	17999	8173	
	Painganga	AIC Akola	13942	9402	16581	11141	
	Painganga	CADA Abad	24962	9731	28105	23449	9265
	Upper Bhima & Remaining						
	Bhima	PIC Pune	11273	10095	18875	6838	
	Remaining Bhima	CADA Solapur	11919	11397	16504	6228	
	Wardha	NIC Nagpur	21015	13302	25356	15410	
	Upper Godvari	CADA Nashik	16479	13909	36327	5300	
	Wardha	UWPC Amravati	18132	19848	21005	11682	
Surplus	Middle Wainganga	CADA Nagpur	9515	8232	13142	4842	8232
Abundant	Lower Wainganga	CIPC Chandrapur	5244	4769	8092	3118	
	Upper Krishna (W)	CADA Pune	7146	5298	8895	5894	
	Upper Krishna (W)	KIC Kolhapur	10078	10307	13871	7121	6791
	North Konkan & Middle						
	Konkan	TIC Thane	39175	24859	96380	9518	

Notes: 1) Figures in red indicate values exceeding range of graph.
2) Average performance does not include figures in blue.

Appendix-I

Medium Projects

Annual Irrigation Water Supply per unit Irrigated Area

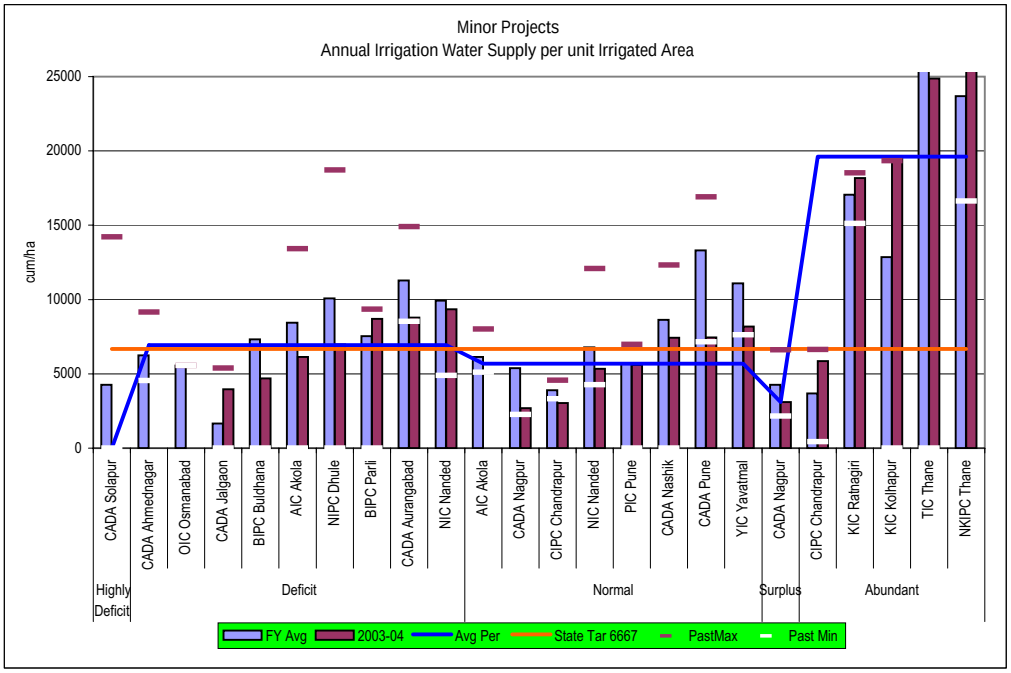


PlanGroup	Subbasin	Circle	FY Avg	2003-04	PastMax	Past Min	Avg Per
Highly Deficit	Remaining Bhina	CADA Solapur	7263	0	41379	0	6065
	Remaining Bhina	OIC Osmanabad	9719	5630	14985	0	
	Upper Krishna (E) & Remaining Bhima	PIC Pune	7077	6500	13746	0	
Deficit	Manjra	CADA A'nagar	4579	0	5503	0	6664
	Lower Godavari	CADA A'bad	11723	0	22671	5636	
	Manjra	OIC Osmanabad	6816	0	10433	4394	
	Girna	CADA Jalgaon	5032	3681	11967	0	
	Girna	NIPC Dhule	4088	3792	6752	0	
	Purna (Tapi)	BIPC Buldhana	15084	5740	35548	6758	
	Lower Godavari, Purna Dudhana, Girna	AIC A'bad	9964	7687	21667	0	
	Lower Godavari & Manjra	NIC Nanded	10579	7948	18571	6941	
	Lower Godavari & Manjra	BIPC Parli	8749	7991	14782	0	
	Purna (Tapi)	AIC Akola	8236	9811	17692	3761	
	Purna (Tapi)	CADA Nagpur	12127	11090	19549	9196	
Normal	Upper Godavari	AIC A'bad	7203	0	8000	0	7283
	Remaining Bhina	CADA Solapur	3451	0	6264	500	
	Remaining Bhina	OIC Osmanabad	4946	0	6252	0	
	Panzara & Middle Tapi	CADA Jalgaon	3985	3469	13814	103	
	Wardha	CIPC Chandrapur	3957	3926	7104	2274	
	Upper Godavari	CADA Nashik	7395	5634	8474	0	
	Painganga & Wainganga	YIC Yavatmal	14166	6530	20719	0	
	Upper Bhima & Remaining Bhima	PIC Pune	7837	7651	13162	0	
	Upper Godavari	CADA A'nagar	7169	8232	9607	6195	
	Painganga	NIC Nanded	9887	8383	19164	5377	
	Painganga	AIC Akola	9422	8986	15963	3621	
	Middle Tapi	NIPC Dhule	9435	9758	26500	0	
	Wardha & Middle Wainganga	CADA Nagpur	4329	10256	7128	0	
Surplus	Middle Wainganga	CADA Nagpur	5173	4179	59960	0	4698
	Middle Wainganga	CIPC Chandrapur	8680	5218	11810	5530	
Abundant	North Konkan	TIC Thane	53113	0	108879	44028	8352
	Lower Winganga	CIPC Chandrapur	8239	7222	10118	6558	
	Upper Krishna (W)	KIC Kolhapur	10420	9483	22738	0	
	Vashisthi	KIC Ratnagiri	71899	51625	96115	45759	

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

2) Average performance doesnot include figures in blue.

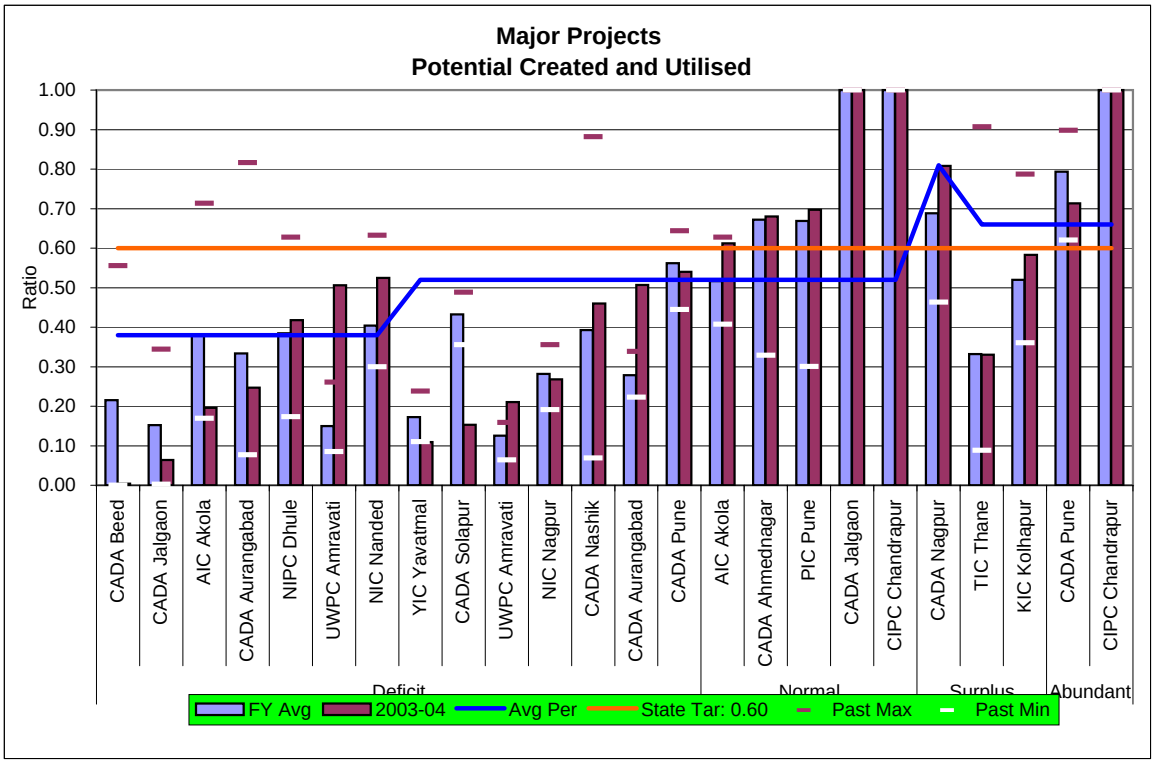
Appendix-I



PlanGroup	Subbasin	Circle	FY Avg	2003-04	PastMax	Past Min	Avg Per
Highly Deficit	Sina-Bori-Benetura	CADA Solapur	4257	0	14210	0	0
Deficit	Manjra	CADA Ahmednagar	6250	0	9149	4540	
	Manjra	OIC Osmanabad	5556	0	5556	5556	
	Girna	CADA Jalgaon	1667	3969	5383	0	
	Purna Dudhana & Purna Tapi	BIPC Buldhana	7328	4693	46400	0	
	Purna Dudhana & Purna Tapi	AIC Akola	8451	6128	13426	0	6944
	Girna	NIPC Dhule	10075	6982	18718	0	
	Manjra	BIPC Parli	7537	8694	9355	0	
	Lower Godavari	CADA Aurangabad	11279	8792	14900	8529	
	Lower Godavari, Purna Dudhana & Manjra	NIC Nanded	9920	9350	26194	4898	
Normal	Painganga	AIC Akola	6141	0	8000	5096	
	Wardha	CADA Nagpur	5381	2692	27368	2251	
	Wardha	CIPC Chandrapur	3901	3039	4571	3325	
	Remaining Godavari & Painganga	NIC Nanded	6793	5339	12072	4259	
	Upper Bhima & Remaining Bhima	PIC Pune	5712	5600	6982	0	5677
	Upper Godavari	CADA Nashik	8630	7429	12308	0	
	Upper Bhima	CADA Pune	13298	7451	16897	7143	
	Painganga	YIC Yavatmal	11081	8190	25222	7618	
Surplus	Middle Wainganga	CADA Nagpur	4257	3101	6621	2156	3101
Abundant	Lower Wainganga	CIPC Chandrapur	3687	5856	6641	440	
	Vaishisthi	KIC Ratnagiri	17046	18172	18526	15111	
	Uppwer Krishna (W)	KIC Kolhapur	12846	19476	19333	0	
	North Konkan & Middle Konkan	TIC Thane	27700	24866	82857	0	19612
	North Konkan & Middle Konkan	NKIPC Thane	23681	29688	32122	16621	

Notes: 1) Figures in red indicate values exceeding range of graph.
2) Average performance doesnot include figures in blue.

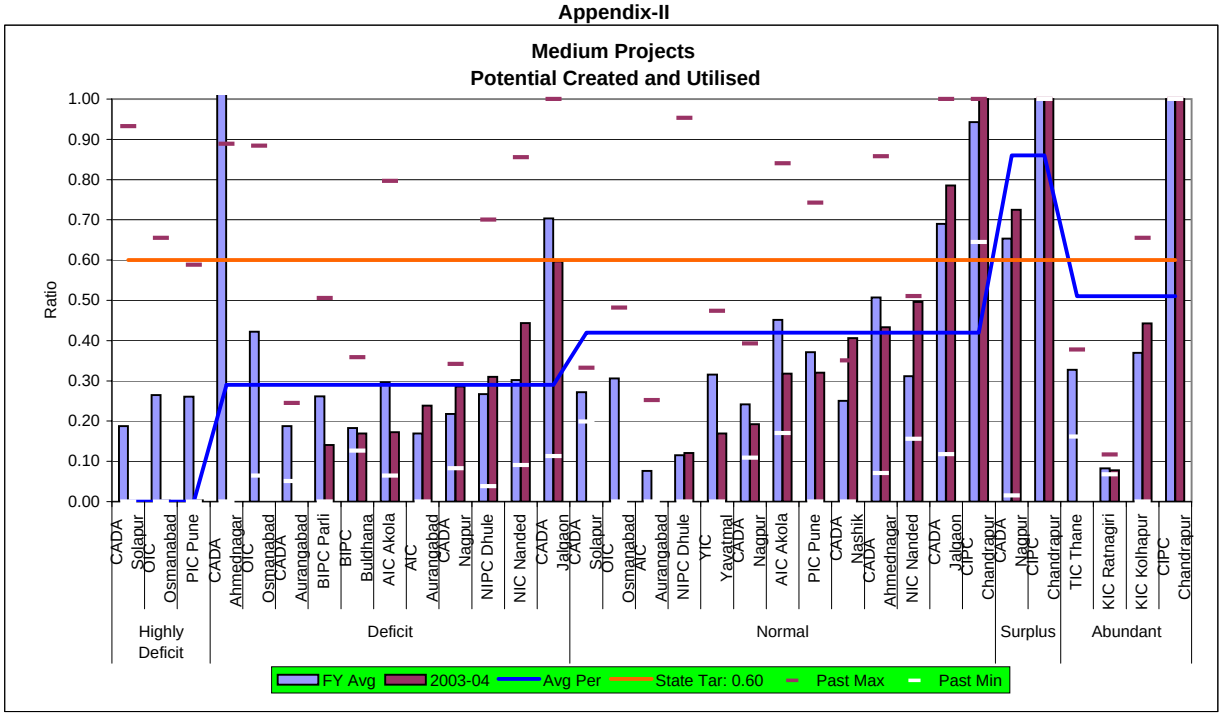
Appendix-II



PlanGroup	Subbasin	Circle	FY Avg	2003-04	Past Max	Past Min	Avg Per
Deficit	Lower Godavari & Manjra	CADA Beed	0.22	0.00	0.56	0.00	0.38
	Purna Tapi & Girna	CADA Jalgaon	0.15	0.06	0.34	0.00	
	Purna Tapi	AIC Akola	0.38	0.20	0.71	0.17	
	Lower Godaari & Purna Dudhana	CADA Aurangabad	0.33	0.25	0.82	0.08	
	Girna	NIPC Dhule	0.38	0.42	0.63	0.17	
	Purna Tapi	UWPC Amravati	0.15	0.51	0.26	0.09	
	Lower Godavari & Manjra	NIC Nanded	0.40	0.52	0.63	0.30	
Normal	Painganga	YIC Yavatmal	0.17	0.11	0.24	0.11	0.52
	Remaining Bhima	CADA Solapur	0.43	0.15	0.49	0.36	
	Wardha	UWPC Amravati	0.13	0.21	0.16	0.06	
	Wardha	NIC Nagpur	0.28	0.27	0.36	0.19	
	Upper Godavari	CADA Nashik	0.39	0.46	0.88	0.07	
	Painganga	CADA Aurangabad	0.28	0.51	0.34	0.22	
	Uppper Bhima	CADA Pune	0.56	0.54	0.64	0.44	
	Painganga	AIC Akola	0.52	0.61	0.63	0.41	
	Upper Godavari	CADA Ahmednagar	0.67	0.68	1.00	0.33	
	Upper Bhima & Remaining Bhima	PIC Pune	0.67	0.70	1.00	0.30	
	Middle Tapi	CADA Jalgaon	1.00	1.00	1.00	1.00	
	Wardha	CIPC Chandrapur	1.00	1.00	1.00	1.00	
Surplus	Middle Wainganga	CADA Nagpur	0.69	0.81	1.00	0.46	0.81
Abundant	North Konkan & Middle Konkan	TIC Thane	0.33	0.33	0.91	0.09	0.66
	Upper Krishna (W)	KIC Kolhapur	0.52	0.58	0.79	0.36	
	Upper Krishna (W)	CADA Pune	0.79	0.71	0.90	0.62	
	Lower Wainganga	CIPC Chandrapur	1.00	1.00	1.00	1.00	

Note: Average performance doesnot include figures in blue.

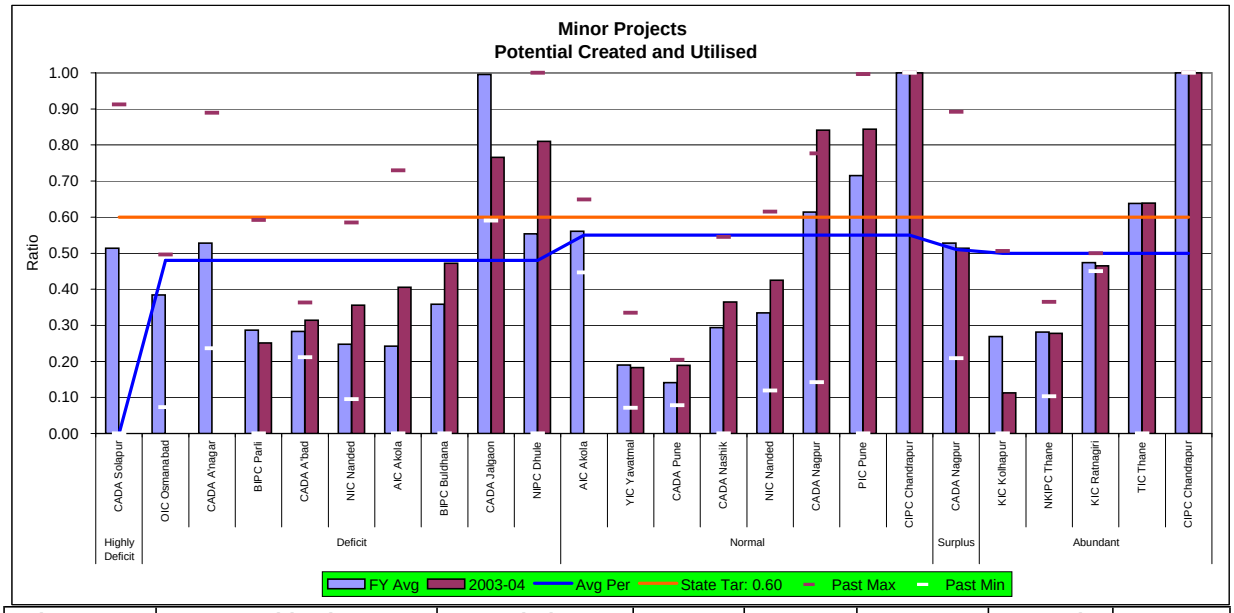
Appendix-II



PlanGroup	Subbasin	Circle	FY Avg	2003-04	Past Max	Past Min	Avg Per
Highly Deficit	Sina-Bori-Benetura	CADA Solapur	0.19	0.00	0.93	0.00	
	Sina-Bori-Benetura	OIC Osmanabad	0.26	0.00	0.66	0.00	0.00
	Upper Krishna (E) Sina-Bori-Benetura	PIC Pune	0.26	0.00	0.59	0.00	
Deficit	Manjra	CADA Ahmednagar	1.00	0.00	0.89	0.00	
	Manjra	OIC Osmanabad	0.42	0.00	0.88	0.06	
	Lower Godavari	CADA Aurangabad	0.19	0.00	0.24	0.05	
	Lower Godavari & Manjra	BIPC Parli	0.26	0.14	0.51	0.00	
	Purna (Tapi)	BIPC Buldhana	0.18	0.17	0.36	0.13	
	Purna (Tapi)	AIC Akola	0.30	0.17	0.80	0.06	
	Lower Godavari , Purna Dudhana &	AIC Aurangabad	0.17	0.24	1.00	0.00	0.29
	Purna (Tapi)	CADA Nagpur	0.22	0.29	0.34	0.08	
	Girna	NIPC Dhule	0.27	0.31	0.70	0.04	
	Lower Godavari & Manjra	NIC Nanded	0.30	0.44	0.86	0.09	
	Girna	CADA Jalgaon	0.70	0.60	1.00	0.11	
Normal	Remaining Bhima	CADA Solapur	0.27	0.00	0.33	0.20	
	Remaining Bhima	OIC Osmanabad	0.31	0.00	0.48	0.00	
	Upper Godavari	AIC Aurangabad	0.08	0.00	0.25	0.00	
	Middle Tapi	NIPC Dhule	0.12	0.12	0.95	0.00	
	Painganga & Wardha	YIC Yavatmal	0.32	0.17	0.47	0.00	
	Wardha & Middle Wainganga	CADA Nagpur	0.24	0.19	0.39	0.11	
	Painganga	AIC Akola	0.45	0.32	0.84	0.17	0.42
	Upper Bhima & Remaining Bhima	PIC Pune	0.37	0.32	0.74	0.00	
	Upper Godavari	CADA Nashik	0.25	0.41	0.35	0.00	
	Upper Godavari	CADA Ahmednagar	0.51	0.43	0.86	0.07	
	Painganga	NIC Nanded	0.31	0.50	0.51	0.16	
	Panzra & Middle Tapi	CADA Jalgaon	0.69	0.79	1.00	0.12	
	Wardha	CIPC Chandrapur	0.94	1.00	1.00	0.64	
Surplus	Middle Wainganga	CADA Nagpur	0.65	0.72	1.00	0.02	0.86
	Middle Wainganga	CIPC Chandrapur	1.00	1.00	1.00	1.00	
Abundant	North Konkan	TIC Thane	0.33	0.00	0.38	0.16	
	Vashisthi	KIC Ratnagiri	0.08	0.08	0.12	0.07	0.51
	Upper Krishna (W)	KIC Kolhapur	0.37	0.44	0.65	0.00	
	Lower Wainganga	CIPC Chandrapur	1.00	1.00	1.00	1.00	

Notes: 1) Figures in red indicate values exceeding range of graph.
2) Average performance doesnot include figures in blue.

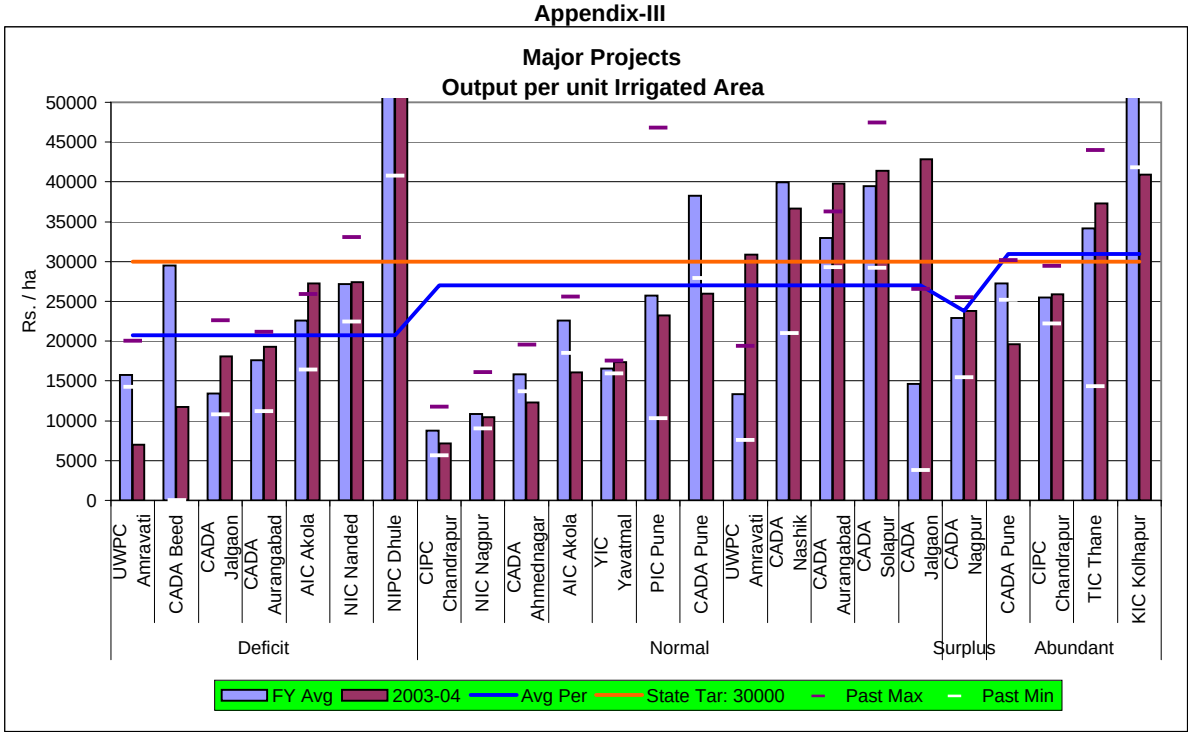
Appendix-II



PlanGroup	Subbasin	Circle	FY Avg	2003-04	Past Max	Past Min	Avg Per
Highly Deficit	Sina-Bori-Benetura	CADA Solapur	0.51	0.00	0.91	0.00	0.00
Deficit	Manjra	OIC Osmanabad	0.38	0.00	0.50	0.07	
	Manjra	CADA A'nagar	0.53	0.00	0.89	0.24	
	Manjra	BIPC Parli	0.29	0.25	0.59	0.00	
	Lower Godavari	CADA A'bad	0.28	0.31	0.36	0.21	
	Lower Godavari, Purna	NIC Nanded	0.25	0.36	0.58	0.10	
	Dudhana & Manjra						0.48
	Purna Dudhana & Purna Tapi	AIC Akola	0.24	0.41	0.73	0.00	
	Purna Dudhana & Purna Tapi	BIPC Buldhana	0.36	0.47	2.39	0.00	
	Girna	CADA Jalgaon	1.00	0.77	1.26	0.59	
	Girna	NIPC Dhule	0.55	0.81	1.00	0.00	
Normal	Painganga	AIC Akola	0.56	0.00	0.65	0.45	
	Painganga	YIC Yavatmal	0.19	0.18	0.33	0.07	
	Upper Bhima	CADA Pune	0.14	0.19	0.20	0.08	
	Upper Godavari	CADA Nashik	0.29	0.36	0.55	0.00	
	Remaining Godavari & Painganga	NIC Nanded	0.33	0.42	0.61	0.12	0.55
	Wardha	CADA Nagpur	0.61	0.84	0.78	0.14	
	Uppper Bhima & Remaining Bhima	PIC Pune	0.72	0.84	1.00	0.00	
	Wardha	CIPC Chandrapur	1.00	1.00	1.00	1.00	
Surplus	Middle Wainganga	CADA Nagpur	0.53	0.51	0.89	0.21	0.51
Abundant	Upper Krishna (W)	KIC Kolhapur	0.27	0.11	0.51	0.00	
	North Konkan & Middle Konkan	NKIPC Thane	0.28	0.28	0.36	0.10	
	Vashisthi	KIC Ratnagiri	0.47	0.47	0.50	0.45	0.50
	North Konkan & Middle Konkan	TIC Thane	0.64	0.64	1.03	0.00	
	Lower Wainganga	CIPC Chandrapur	1.00	1.00	1.00	1.00	

Notes: 1) Figures in red indicate values exceeding range of graph.
2) Average performance doesnot include figures in blue.

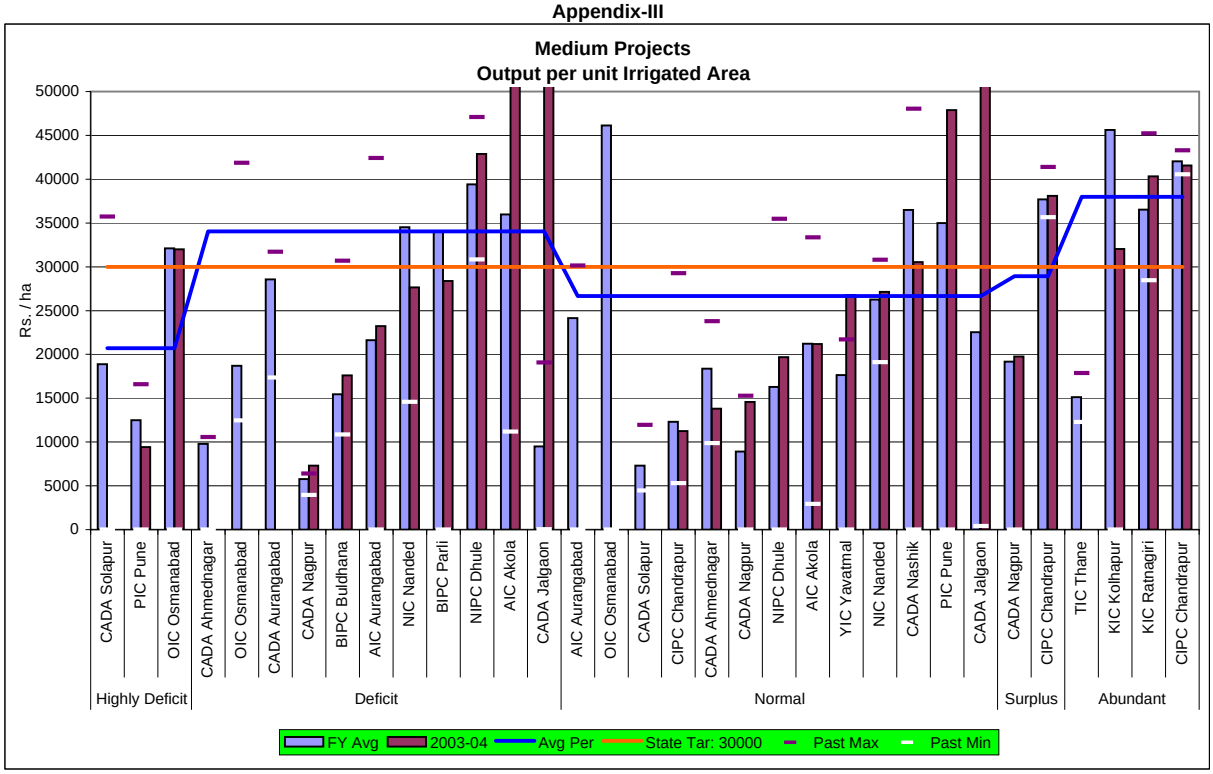
Appendix-III



PlanGroup	Subbasin	Circle	FY Avg	2003-04	Past Max	Past Min	Avg Per
Deficit	Purna Tapi	UWPC Amravati	15771	6979	20029	14203	
	Lower Godavari & Manjra	CADA Beed	29472	11706	53030	0	
	Purna Tapi & Girna	CADA Jalgaon	13460	18059	22616	10806	
	Lower Godavari & Purna Dudhana	CADA Aurangabad	17629	19257	21146	11186	20738
	Purna Tapi	AIC Akola	22567	27290	25886	16412	
	Lower Godavari & Manjra	NIC Nanded	27201	27376	33023	22466	
	Girna	NIPC Dhule	50820	54857	58043	40726	
Normal	Wardha	CIPC Chandrapur	8769	7150	11739	5650	
	Wardha	NIC Nagpur	10865	10417	16053	9013	
	Upper Godavari	CADA Ahmednagar	15853	12259	19534	13704	
	Painganga	AIC Akola	22588	16068	25524	18484	
	Painganga	YIC Yavatmal	16568	17392	17552	15916	
	Upper Bhima & Remaining Bhima	PIC Pune	25747	23205	46757	10297	26985
	Upper Bhima	CADA Pune	38233	25947	50853	27910	
	Wardha	UWPC Amravati	13304	30871	19391	7536	
	Upper Godavari	CADA Nashik	39928	36640	126149	21002	
	Painganga	CADA Aurangabad	32965	39808	36253	29246	
	Remaining Bhima	CADA Solapur	39497	41367	47432	29203	
	Middle Tapi	CADA Jalgaon	14665	42859	26506	3811	
Surplus	Middle Wainganga	CADA Nagpur	22944	23796	25463	15463	23796
Abundant	Upper Krishna (W)	CADA Pune	27240	19599	30159	25200	
	Lower Wainganga	CIPC Chandrapur	25518	25904	29413	22187	
	Upper Krishna (W)	TIC Thane	34147	37295	43940	14311	30933
	North Konkan & Middle Konkan	KIC Kolhapur	54657	40936	71116	41788	

Notes: 1) Figures in red indicate values exceeding graph.
2) Average Performance doesnot include figures in blue.

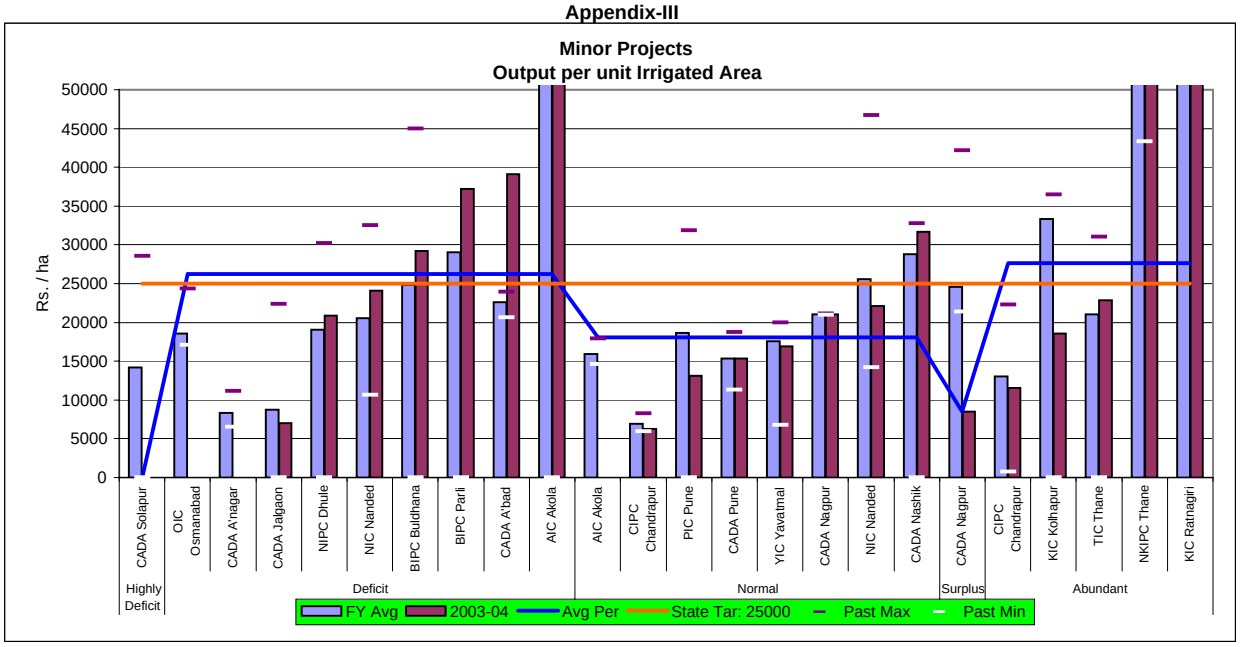
Appendix-III



PlanGroup	Subbasin	Circle	FY Avg	2003-04	Past Max	Past Min	Avg Per
Highly Deficit	Sina-Bori-Benetura	CADA Solapur	18894	0	35727	0	20713
	Upper Krishna(E) & Sina-Bori-Benetura	PIC Pune	12482	9425	16578	0	
	Sina-Bori-Benetura	OIC Osmanabad	32111	32000	53948	0	
Deficit	Manjra	CADA Ahmednagar	9792	0	10567	0	34047
	Manjra	OIC Osmanabad	18701	0	41844	12455	
	Lower Godavari	CADA Aurangabad	28569	0	31700	17338	
	Purna Tapi	CADA Nagpur	5756	7305	6385	3939	
	Purna Tapi	BIPC Buldhana	15436	17603	30665	10830	
	Lower Godavari , Purna Dudhana & Girna	AIC Aurangabad	21606	23223	42387	0	
	Lower Godavari, Manjra	NIC Nanded	34521	27665	89183	14589	
	Lower Godavari & Manjra	BIPC Parli	33975	28366	83588	0	
	Girna	NIPC Dhule	39424	42867	47060	30832	
	Purna Tapi	AIC Akola	35961	61290	133264	11177	
	Girna	CADA Jalgaon	9488	64024	19048	23	
Normal	Upper Godavari	AIC Aurangabad	24140	0	30142	0	26671
	Remaining Bhima	OIC Osmanabad	46126	0	54788	0	
	Remaining Bhima	CADA Solapur	7311	0	11928	4469	
	Wardha	CIPC Chandrapur	12316	11235	29270	5285	
	Upper Godavari	CADA Ahmednagar	18362	13794	23776	9855	
	Wardha & Middle Wainganga	CADA Nagpur	8911	14570	15253	0	
	Middle Tapi	NIPC Dhule	16290	19693	35476	0	
	Painganga	AIC Akola	21230	21200	33357	2929	
	Painganga & Wardha	YIC Yavatmal	17632	26784	21706	0	
	Painganga	NIC Nanded	26268	27121	30774	19113	
	Upper Godavari	CADA Nashik	36478	30530	48026	0	
	Upper Bhima & Remaining Bhima	PIC Pune	34975	47900	57324	0	
	Panzara & Middle Tapi	CADA Jalgaon	22534	53882	135919	397	
Surplus	Middle Wainganga	CADA Nagpur	19191	19777	51780	0	28938
	Middle Wainganga	CIPC Chandrapur	37701	38100	41386	35647	
Abundant	North Konkan	TIC Thane	15120	0	17842	12263	37968
	Upper Krishna (W)	KIC Kolhapur	45627	32024	51088	0	
	Vashishthi	KIC Ratnagiri	36520	40313	45225	28466	
	Lower Wainganga	CIPC Chandrapur	42030	41569	43282	40538	

Notes: 1) Figures in red indicate values exceeding range of graph.
2) Average performance doesnot include figures in blue.

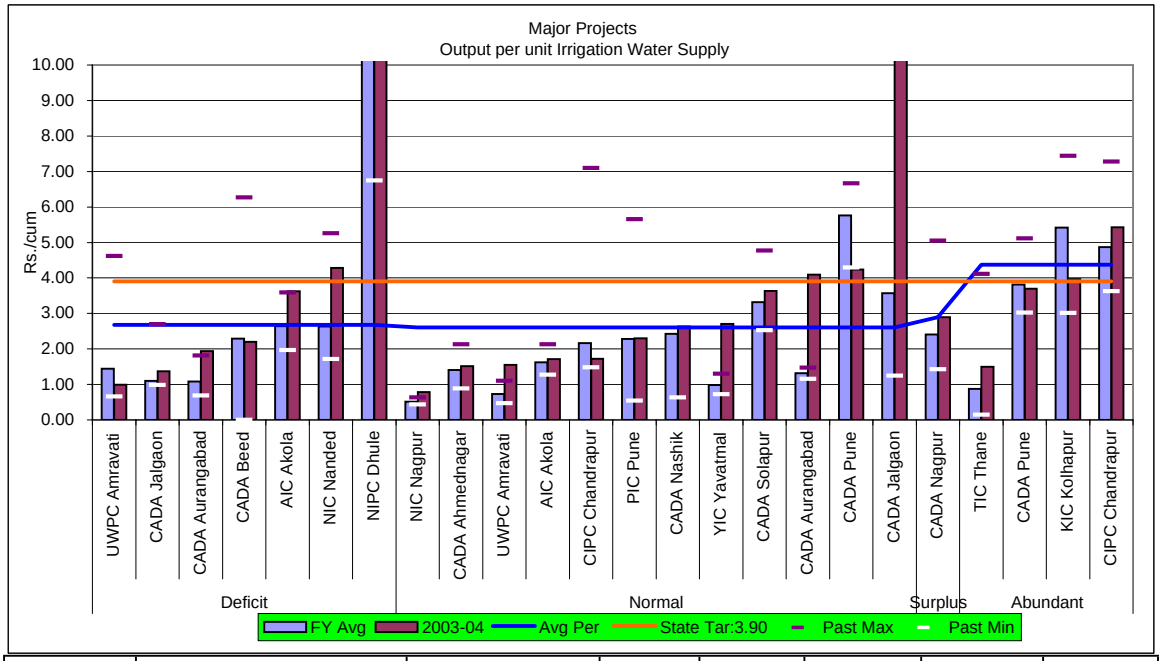
Appendix-III



PlanGroup	Subbasin	Circle	FY Avg	2003-04	Past Max	Past Min	Avg Per
Highly Deficit	Sina-Bori-Benetura	CADA Solapur	14168	0	28529	0	0
Deficit	Manjra	OIC Osmanabad	18541	0	24342	17064	
	Manjra	CADA A'nagar	8338	0	11117	6500	
	Girna	CADA Jalgaon	8731	7018	22385	0	
	Girna	NIPC Dhule	19074	20901	30169	0	
	Lower Godavari, Purna	NIC Nanded	20572	24055	32521	10672	
	Dudhana & Manjra						
	Purna Dudhana & Purna Tapi	BIPC Buldhana	24860	29187	44974	0	26242
	Manjra	BIPC Parli	29011	37216	76912	0	
	Lower Godavari	CADA A'bad	22583	39074	23929	20622	
	Purna Dudhana & Purna Tapi	AIC Akola	91407	190889	301710	0	
Normal	Painganga	AIC Akola	15898	0	17878	14634	
	Wardha	CIPC Chandrapur	6954	6291	8239	5969	
	Upper Bhima & Remaining Bhima	PIC Pune	18671	13117	31824	0	
	Upper Bhima	CADA Pune	15314	15373	18724	11313	18074
	Painganga	YIC Yavatmal	17606	16905	20000	6789	
	Wardha	CADA Nagpur	21070	21006	21160	20930	
	Remaining Godavari & Painganga	NIC Nanded	25617	22125	46660	14186	
	Upper Godavari	CADA Nashik	28802	31700	32724	0	
Surplus	Middle Wainganga	CADA Nagpur	24611	8531	42131	21368	8531
Abundant	Lower Wainganga	CIPC Chandrapur	13032	11584	22246	758	
	Upper Krishna (W)	KIC Kolhapur	33313	18571	36450	0	
	North Konkan & Middle Konkan	TIC Thane	21039	22849	31022	0	27652
	North Konkan & Middle Konkan	NKIPC Thane	61719	57604	151984	43285	
	Vashisthi	KIC Ratnagiri	95500	102312	101659	90200	

Notes: 1) Figures in red indicate values exceeding graph.
2) Average Performance doesnot include figures in blue.

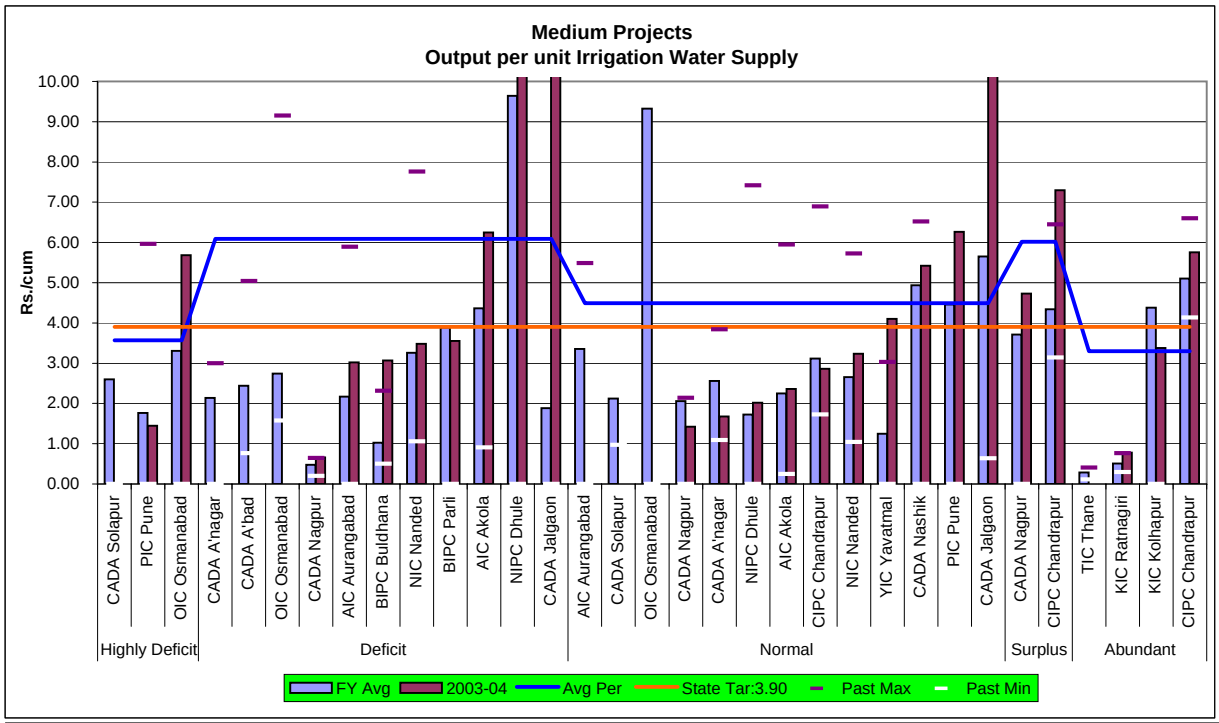
Appendix-IV



PlanGroup	Subbasin	Circle	FY Avg	2003-04	Past Max	Past Min	Avg Per
Deficit	Purna Tapi	UWPC Amravati	1.44	0.99	4.62	0.66	
	Purna Tapi & Girna	CADA Jalgaon	1.10	1.37	2.69	0.98	
	Lower Godavari & Purna Dhudhana	CADA Aurangabad	1.08	1.94	1.81	0.68	
	Lower Godavari & Manjra	CADA Beed	2.29	2.20	6.27	0.00	2.40
	Purna Tapi	AIC Akola	2.64	3.62	3.59	1.96	
	Lower Godavari I Manjra	NIC Nanded	2.63	4.29	5.26	1.72	
	Girna	NIPC Dhule	11.33	15.30	16.53	6.75	
Normal	Wardha	NIC Nagpur	0.52	0.78	0.63	0.43	
	Upper Godavari	CADA Ahmednagar	1.40	1.51	2.13	0.88	
	Wardha	UWPC Amravati	0.73	1.56	1.10	0.47	
	Painganga	AIC Akola	1.62	1.71	2.13	1.27	
	Wardha	CIPC Chandrapur	2.17	1.73	7.10	1.48	
	Upper Bhima & Remaining Bhima	PIC Pune	2.28	2.30	5.65	0.55	
	Upper Godavari	CADA Nashik	2.42	2.63	11.91	0.63	2.61
	Painganga	YIC Yavatmal	0.99	2.70	1.29	0.72	
	Remaining Bhima	CADA Solapur	3.31	3.63	4.77	2.52	
	Painganga	CADA Aurangabad	1.32	4.09	1.47	1.15	
	Upper Bhima	CADA Pune	5.76	4.23	6.67	4.29	
	Middle Tapi	CADA Jalgaon	3.57	24.98	19.09	1.24	
Surplus	Middle Wainganga	CADA Nagpur	2.41	2.89	5.05	1.43	2.89
Abundant	North Konkan & Middle Konkan	TIC Thane	0.87	1.50	4.11	0.15	
	Upper Krishna (W)	CADA Pune	3.81	3.70	5.12	3.02	4.37
	Upper Krishna (W)	KIC Kolhapur	5.42	3.97	7.44	3.01	
	Lower Wainganga	CIPC Chandrapur	4.87	5.43	7.27	3.63	

Notes: 1) Figures in red indicate values exceeding range of graph.
2) Average performance doesnot include figures in blue.

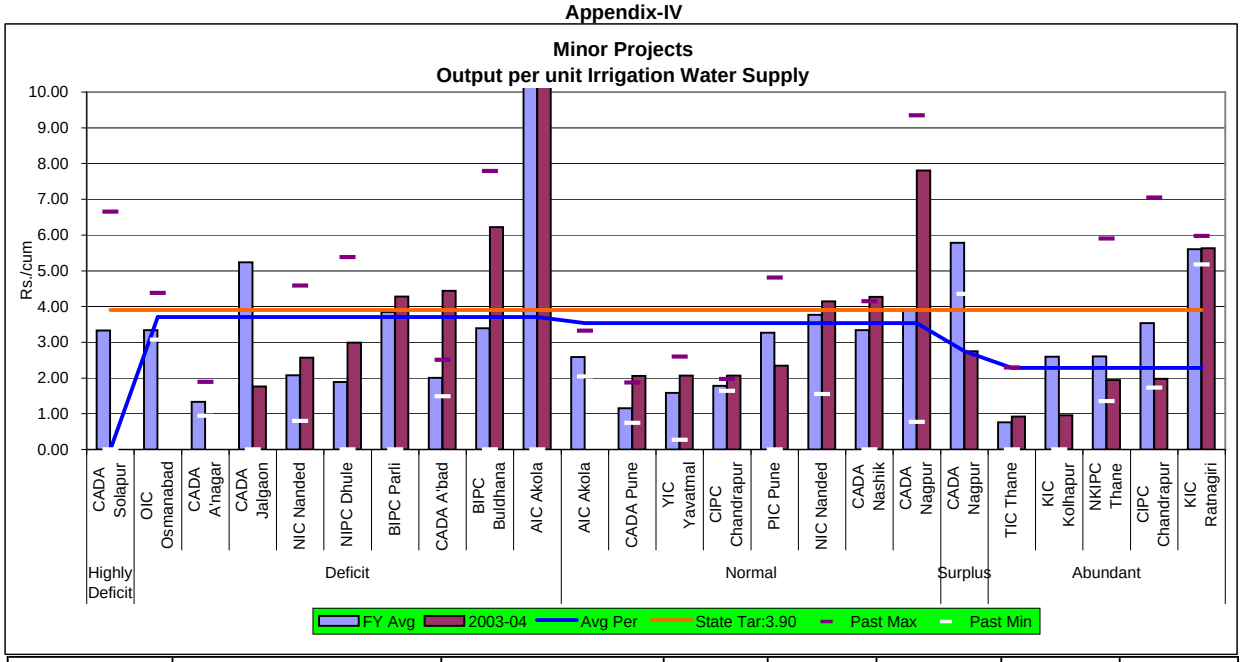
Appendix-IV



PlanGroup	Subbasin	OldCircle	FY Avg	2003-04	Past Max	Past Min	Avg Per
Highly Deficit	Sina-Bori-Benetura	CADA Solapur	2.60	0.00	57.16	0.00	3.57
	Upper Krishna (E) & Sina-Bori-Benetura	PIC Pune	1.76	1.45	5.96	0.00	
	Sina-Bori-Benetura	OIC Osmanabad	3.30	5.68	11.13	0.00	
Deficit	Manjra	CADA A'nagar	2.14	0.00	3.00	0.00	6.09
	Lower Godavari	CADA A'bad	2.44	0.00	5.04	0.76	
	Manjra	OIC Osmanabad	2.74	0.00	9.15	1.57	
	Purna Tapi	CADA Nagpur	0.47	0.66	0.65	0.20	
	Lower Godavari, Purna Dudhana& Girna	AIC Aurangabad	2.17	3.02	5.89	0.00	
	Purna Tapi	BIPC Buldhana	1.02	3.07	2.31	0.50	
	Lower Godavari & Manjra	NIC Nanded	3.26	3.48	7.76	1.06	
	Lower Godavari & Manjra	BIPC Parli	3.88	3.55	16.03	0.00	
	Purna Tapi	AIC Akola	4.37	6.25	22.56	0.91	
	Girna	NIPC Dhule	9.64	11.31	70.58	0.00	
	Girna	CADA Jalgaon	1.89	17.39	549.90	0.00	
Normal	Upper Godavari	AIC Aurangabad	3.35	0.00	5.48	0.00	4.49
	Remaining Bhima	CADA Solapur	2.12	0.00	10.24	0.97	
	Remaining Bhima	OIC Osmanabad	9.33	0.00	13.44	0.00	
	Wardha & Middle Wainganga	CADA Nagpur	2.06	1.42	2.14	0.00	
	Upper Godavari	CADA A'nagar	2.56	1.68	3.84	1.09	
	Middle Tapi	NIPC Dhule	1.73	2.02	7.42	0.00	
	Painganga	AIC Akola	2.25	2.36	5.94	0.24	
	Wardha	CIPC Chandrapur	3.11	2.86	6.89	1.72	
	Painganga	NIC Nanded	2.66	3.24	5.72	1.04	
	Painganga & Wardha	YIC Yavatmal	1.24	4.10	3.03	0.00	
	Upper Godavari	CADA Nashik	4.93	5.42	6.52	0.00	
	Upper Bhima & Remaining Bhima	PIC Pune	4.46	6.26	10.16	0.00	
	Panzara & Middle Tapi	CADA Jalgaon	5.66	15.53	58.47	0.64	
Surplus	Middle Wainganga	CADA Nagpur	3.71	4.73	18.60	0.00	6.02
	Middle Wainganga	CIPC Chandrapur	4.34	7.30	6.45	3.14	
Abundant	North Konkan	TIC Thane	0.28	0.00	0.41	0.11	3.3
	Vashishthi	KIC Ratnagiri	0.51	0.78	0.76	0.30	
	Upper Krishna(W)	KIC Kolhapur	4.38	3.38	13.45	0.00	
	Lower Wainganga	CIPC Chandrapur	5.10	5.76	6.60	4.14	

Notes: 1) Figures in red indicate values exceeding range of graph.
2) Average performance doesnot include figures in blue.

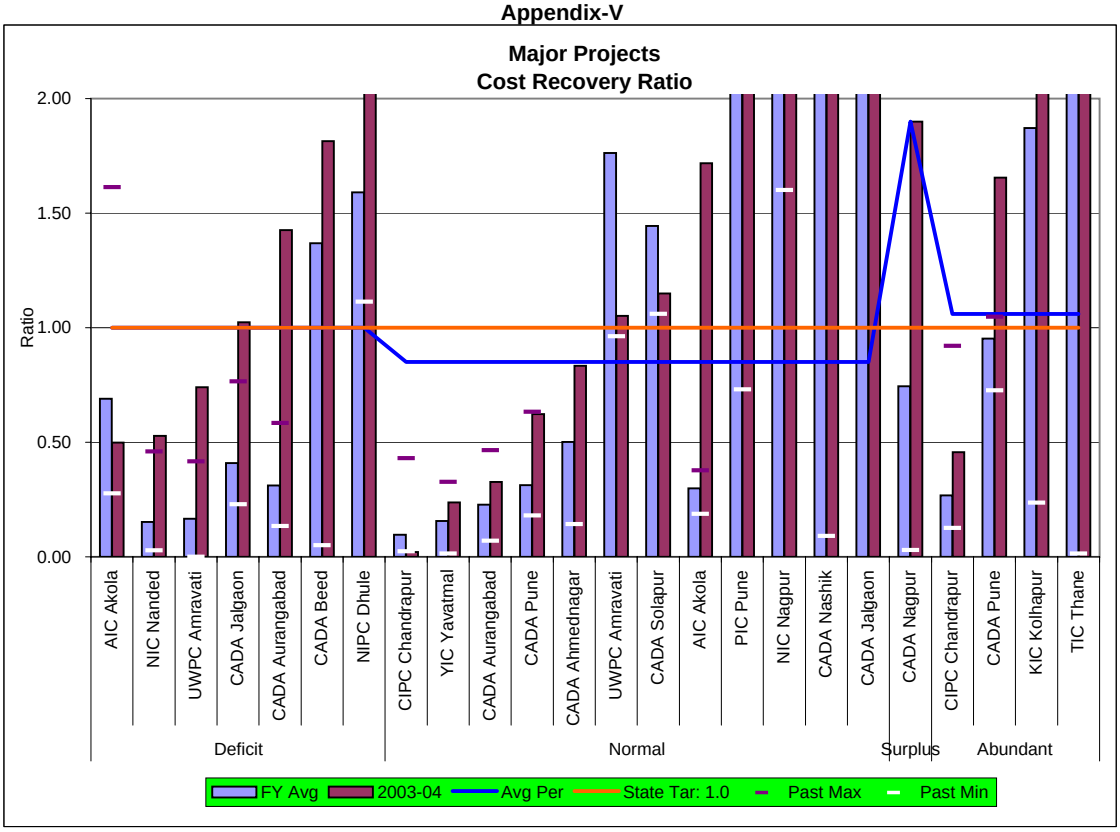
Appendix-IV



PlanGroup	Subbasin	Circle	FY Avg	2003-04	Past Max	Past Min	Avg Per
Highly Deficit	Sina-Bori-Benetura	CADA Solapur	3.33	0.00	6.66	0.00	0
Deficit	Manjra	OIC Osmanabad	3.34	0.00	4.38	3.07	
	Manjra	CADA A'nagar	1.33	0.00	1.89	0.94	
	Girna	CADA Jalgaon	5.24	1.77	51.55	0.00	
	Lower Godavari, Purna Dudhana & Manjra	NIC Nanded	2.07	2.57	4.58	0.80	
	Girna	NIPC Dhule	1.89	2.99	5.38	0.00	3.71
	Manjra	BIPC Parli	3.85	4.28	16.01	0.00	
	Lower Godavari	CADA A'bad	2.00	4.44	2.50	1.49	
	Purna Dudhana & Purna Tapi	BIPC Buldhana	3.39	6.22	7.78	0.00	
	Purna Dudhana & Purna Tapi	AIC Akola	10.82	31.15	75.12	0.00	
Normal	Painganga	AIC Akola	2.59	0.00	3.32	2.04	
	Upper Bhima	CADA Pune	1.15	2.06	1.87	0.74	
	Painganga	YIC Yavatmal	1.59	2.06	2.59	0.27	
	Wardha	CIPC Chandrapur	1.78	2.07	1.97	1.64	
	Upper Bhima & Remaining	PIC Pune	3.27	2.34	4.81	0.00	3.54
	Remaining Godavari & Painganga	NIC Nanded	3.77	4.14	10.34	1.55	
	Upper Godavari	CADA Nashik	3.34	4.27	4.15	0.00	
	Wardha	CADA Nagpur	3.92	7.80	9.34	0.77	
Surplus	Middle Wainganga	CADA Nagpur	5.78	2.75	12.02	4.35	2.75
Abundant	North Konkan & Middle Konkan	TIC Thane	0.76	0.92	2.29	0.00	
	Upper Krishna (W)	KIC Kolhapur	2.59	0.95	19.77	0.00	
	North Konkan & Middle Konkan	NKIPC Thane	2.61	1.94	5.90	1.35	2.28
	Lower Wainganga	CIPC Chandrapur	3.53	1.98	7.04	1.73	
	Vashisthi	KIC Ratnagiri	5.60	5.63	5.97	5.17	

Notes: 1) Figures in red indicate values exceeding range of graph.
2) Average performance doesnot include figures in blue.

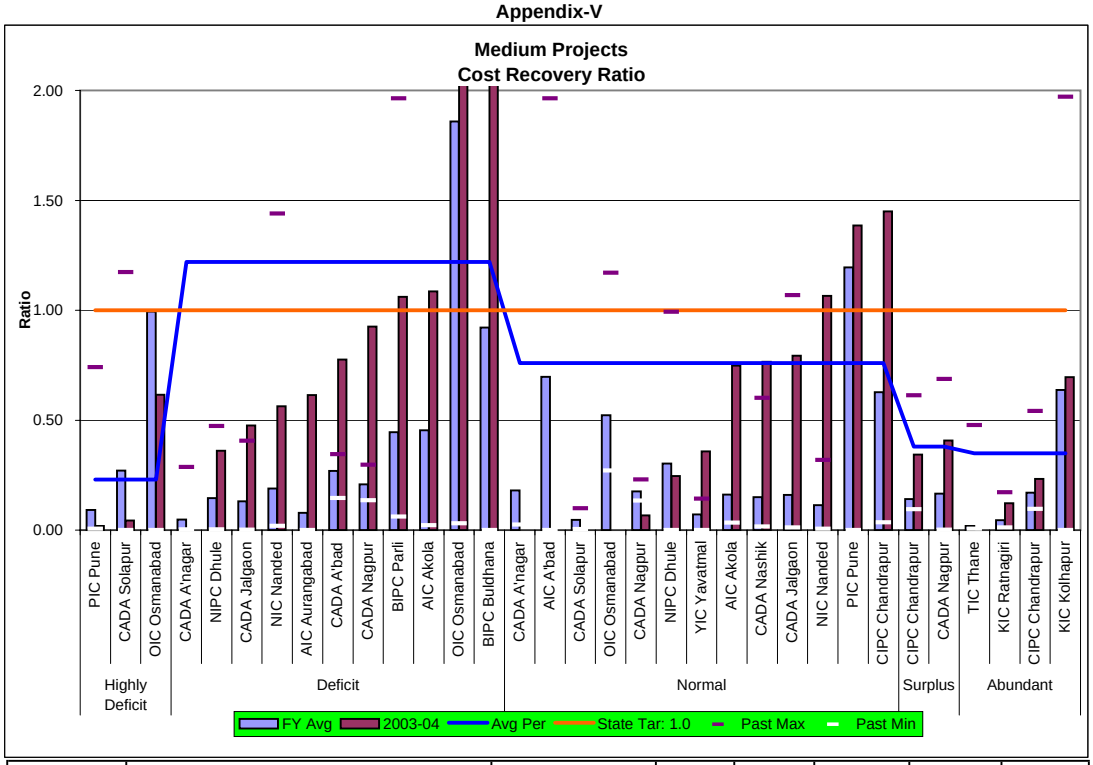
Appendix-V



PlanGroup	Subbasin	Circle	FY Avg	2003-04	Past Max	Past Min	Avg Per
Deficit	Purna Tapi	AIC Akola	0.69	0.50	1.61	0.28	
	Lower Godavari & Purna Dhudhana	NIC Nanded	0.15	0.53	0.46	0.03	
	Girna	UWPC Amravati	0.17	0.74	0.42	0.00	
	Purna Tapi & Girna	CADA Jalgaon	0.41	1.02	0.77	0.23	1.00
	Lower Godavari & Manjra	CADA Aurangabad	0.31	1.43	0.58	0.13	
	Purna Tapi	CADA Beed	1.37	1.81	12.00	0.05	
	Lower Godavari & Manjra	NIPC Dhule	1.59	3.06	2.20	1.11	
Normal	Wardha	CIPC Chandrapur	0.10	0.02	0.43	0.02	
	Painganga	YIC Yavatmal	0.16	0.24	0.33	0.01	
	Painganga	CADA Aurangabad	0.23	0.33	0.47	0.07	
	Upper Bhima	CADA Pune	0.31	0.62	0.63	0.18	
	Upper Godavari	CADA Ahmednaga	0.50	0.83	8.23	0.14	
	Wardha	UWPC Amravati	1.76	1.05	2.45	0.96	
	Remaining Bhima	CADA Solapur	1.44	1.15	2.18	1.06	0.85
	Painganga	AIC Akola	0.30	1.72	0.38	0.19	
	Upper Bhima & Remaining Bhima	PIC Pune	2.40	4.27	12.23	0.73	
	Wardha	NIC Nagpur	2.52	4.74	3.45	1.60	
	Upper Godavari	CADA Nashik	2.77	5.07	57.57	0.09	
	Middle Tapi	CADA Jalgaon	4.45	9.62	10.87	2.45	
Surplus	Middle Wainganga	CADA Nagpur	0.74	1.90	3.00	0.03	1.90
Abundant	Lower Wainganga	CIPC Chandrapur	0.27	0.46	0.92	0.13	
	Upper Krishna (W)	CADA Pune	0.95	1.66	1.05	0.73	
	Upper Krishna (W)	KIC Kolhapur	1.87	2.75	6.00	0.24	1.06
	North Konkan & Middle Konkan	TIC Thane	11.70	48.77	213.59	0.01	

Notes: 1) Figures in red indicate values exceeding range of graph.
2) Average performance doesnot include figures in blue.

Appendix-V



Plan Group	Subbasin	Circle	FY Avg	2003-04	Past Max	Past Min	Avg Per
Highly Deficit	Upper Krishna (E) & Sina-Bori-Benetura	PIC Pune	0.09	0.02	0.74	0.01	
	Sina-Bori-Benetura	CADA Solapur	0.27	0.04	1.17	0.00	0.23
	Sina-Bori-Benetura	OIC Osmanabad	0.99	0.62	4.94	0.00	
Deficit	Manjra	CADA A'nagar	0.05	0.00	0.29	0.00	
	Girna	NIPC Dhule	0.15	0.36	0.47	0.00	
	Girna	CADA Jalgaon	0.13	0.48	0.41	0.00	
	Lower Godavari & Manjra	NIC Nanded	0.19	0.56	1.44	0.02	
	Lower Godavari Purna Dudhana& Girna	AIC Aurangabad	0.08	0.61	2.01	0.00	
	Lower Godavari	CADA A'bad	0.27	0.78	0.35	0.15	1.22
	Purna Tapi	CADA Nagpur	0.21	0.93	0.30	0.14	
	Lower Godavari & Manjra	BIPC Parli	0.45	1.06	1.96	0.06	
	Purna Tapi	AIC Akola	0.45	1.09	4.66	0.02	
	Manjra	OIC Osmanabad	1.86	2.17	17.92	0.03	
	Purna Tapi	BIPC Buldhana	0.92	4.19	5.65	0.00	
Normal	Upper Godavari	CADA A'nagar	0.18	0.00	2.05	0.03	
	Upper Godavari	AIC A'bad	0.70	0.00	1.96	0.00	
	Remaining Bhima	CADA Solapur	0.05	0.00	0.10	0.00	
	Remaining Bhima	OIC Osmanabad	0.52	0.00	1.17	0.27	
	Wardha & Middle Wainganga	CADA Nagpur	0.18	0.07	0.23	0.13	
	Middle Tapi	NIPC Dhule	0.30	0.25	0.99	0.00	
	Painganga & Wardha	YIC Yavatmal	0.07	0.36	0.14	0.00	0.76
	Painganga	AIC Akola	0.16	0.75	3.50	0.03	
	Upper Godavari	CADA Nashik	0.15	0.77	0.60	0.02	
	Panzara & Middle Tapi	CADA Jalgaon	0.16	0.79	1.07	0.01	
	Painganga	NIC Nanded	0.11	1.07	0.32	0.01	
	Upper Bhima & Remaining Bhima	PIC Pune	1.19	1.39	2.70	0.00	
	Wardha	CIPC Chandrapur	0.63	1.45	8.65	0.04	
Surplus	Middle Wainganga	CIPC Chandrapur	0.14	0.34	0.61	0.10	0.38
	Middle Wainganga	CADA Nagpur	0.17	0.41	0.69	0.00	
Abundant	North Konkan	TIC Thane	0.02	0.00	0.48	0.01	
	Vashishthi	KIC Ratnagiri	0.04	0.12	0.17	0.01	0.35
	Lower Wainganga	CIPC Chandrapur	0.17	0.23	0.54	0.10	
	Upper Krishna (W)	KIC Kolhapur	0.64	0.70	1.97	0.00	

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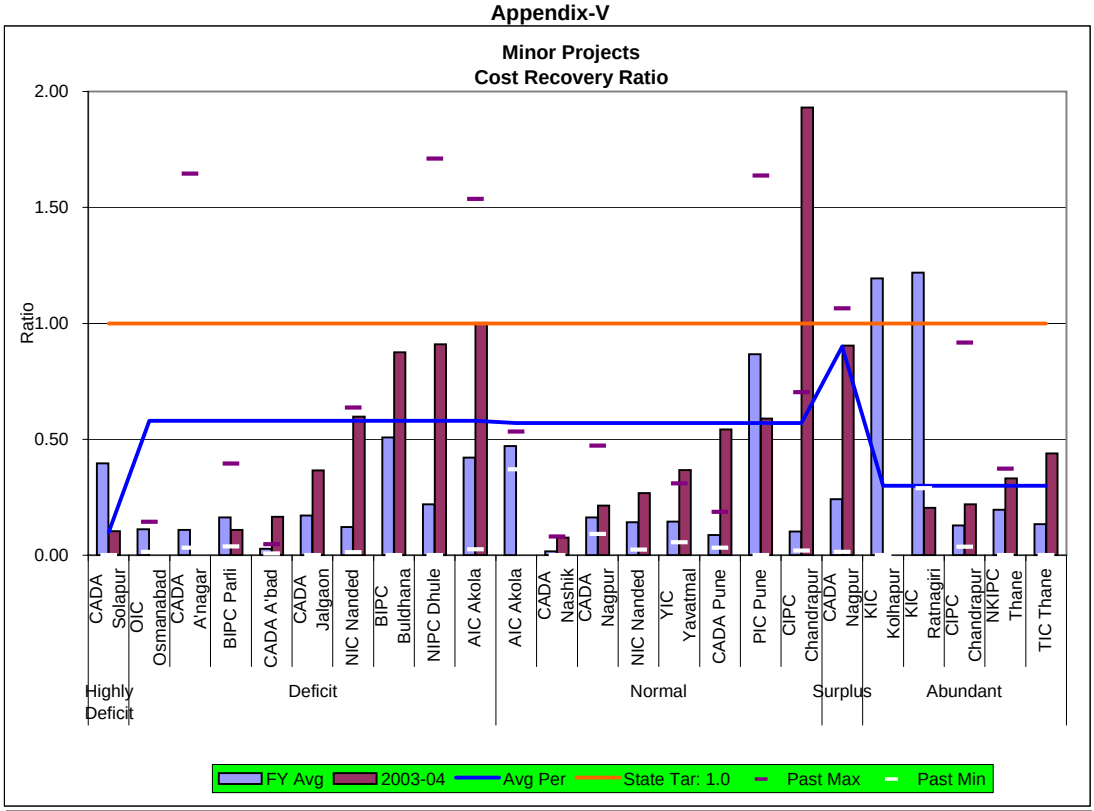
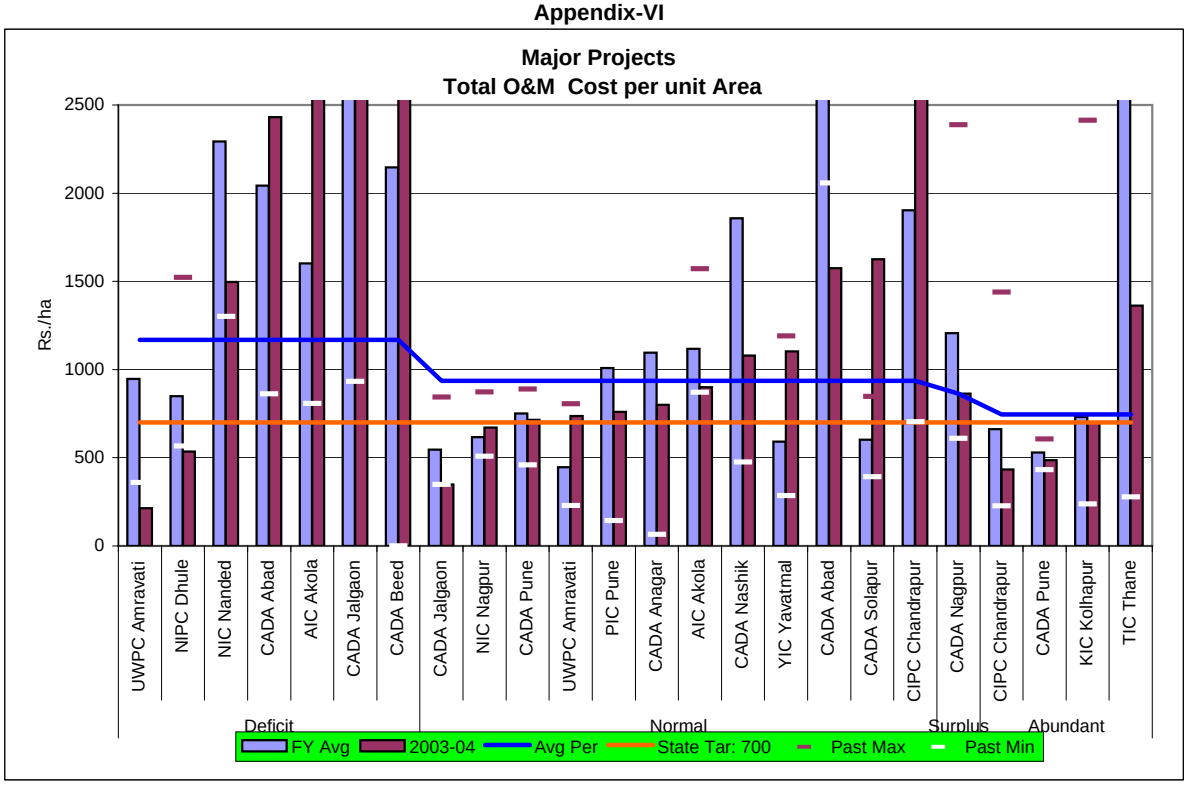
Appendix-V



PlanGroup	Subbasin	Circle	FY Avg	2003-04	Past Max	Past Min	Avg Per
Highly Deficit	Sina-Bori-Benetura	CADA Solapur	0.40	0.10	3.09	0.00	0.10
Deficit	Manjra	OIC Osmanabad	0.11	0.00	0.14	0.01	
	Manjra	CADA A'nagar	0.11	0.00	1.65	0.03	
	Manjra	BIPC Parli	0.16	0.11	0.40	0.04	
	Lower Godavari	CADA A'bad	0.03	0.17	0.05	0.01	
	Girna	CADA Jalgaon	0.17	0.37	2.78	0.00	
	Lower Godavari, Purna Dudhana, Manjra	NIC Nanded	0.12	0.60	0.64	0.01	0.58
	Purna Dudhna & Purna Tapi	BIPC Buldhana	0.51	0.88	13.00	0.00	
	Girna	NIPC Dhule	0.22	0.91	1.71	0.00	
	Purna Dudhna & Purna Tapi	AIC Akola	0.42	1.00	1.54	0.03	
Normal	Painganga	AIC Akola	0.47	0.00	0.53	0.37	
	Upper Godavari	CADA Nashik	0.02	0.08	0.08	0.00	
	Wardha	CADA Nagpur	0.16	0.21	0.47	0.09	
	Remaining Godavari & Painganga	NIC Nanded	0.14	0.27	2.54	0.02	
	Painganga	YIC Yavatmal	0.14	0.37	0.31	0.06	0.57
	Upper Bhima	CADA Pune	0.09	0.54	0.19	0.03	
	Upper Bhima & Remaining Bhima	PIC Pune	0.87	0.59	1.64	0.00	
	Wardha	CIPC Chandrapur	0.10	1.93	0.70	0.02	
Surplus	Middle Wainganga	CADA Nagpur	0.24	0.90	1.06	0.01	0.90
Abundant	Upper Krishna (W)	KIC Kolhapur	1.19	0.00	6.08	0.00	
	Vashisthi	KIC Ratnagiri	1.22	0.20	6.11	0.29	
	Lower Wainganga	CIPC Chandrapur	0.13	0.22	0.92	0.04	
	North Konkan & Middle Konkan	NKIPC Thane	0.20	0.33	0.37	0.00	0.30
	North Konkan & Middle Konkan	TIC Thane	0.13	0.44	9.00	0.00	

Notes: 1) Figures in red indicate values exceeding range of graph.
2) Average performance doesnot include figures in blue.

Appendix-VI



PlanGroup	Subbasin	Circle	FY Avg	2003-04	Past Max	Past Min	Avg Per
Deficit	Purna Tapi	UWPC Amravati	947	214	3142	360	
	Girna	NIPC Dhule	850	534	1521	567	
	Lower Godavari & Manjra	NIC Nanded	2293	1497	5572	1302	
	Lower Godavari & Purna Dudhana	CADA Abad	2042	2430	6048	861	1169
	Purna Tapi	AIC Akola	1601	2758	5007	807	
	Purna Tapi & Girna	CADA Jalgaon	2952	3515	230435	933	
	Lower Godavari Manjra	CADA Beed	2146	114081	65067	0	
Normal	Middle Tapi	CADA Jalgaon	545	349	843	349	
	Wardha	NIC Nagpur	617	672	873	508	
	Upper Bhima	CADA Pune	751	714	889	458	
	Wardha	UWPC Amravati	446	736	805	229	
	Upper Bhima & Remaining Bhima	PIC Pune	1009	761	4880	143	
	Upper Godavari	CADA Anagar	1096	799	2610	65	937
	Painganga	AIC Akola	1117	899	1571	872	
	Upper Godavari	CADA Nashik	1858	1079	21365	474	
	Painganga	YIC Yavatmal	592	1102	1190	284	
	Painganga	CADA Abad	2639	1575	3637	2058	
	Remaining Bhima	CADA Solapur	602	1625	846	393	
	Wardha	CIPC Chandrapur	1904	5915	6173	705	
Surplus	Middle Wainganga	CADA Nagpur	1207	864	2387	610	864
Abundant	Lower Wainganga	CIPC Chandrapur	662	434	1439	227	
	Upper Krishna (W)	CADA Pune	531	485	606	432	
	Upper Krishna (W)	KIC Kolhapur	731	700	2412	238	745
	North Konkan & Middle Konkan	TIC Thane	3288	1363	15439	278	

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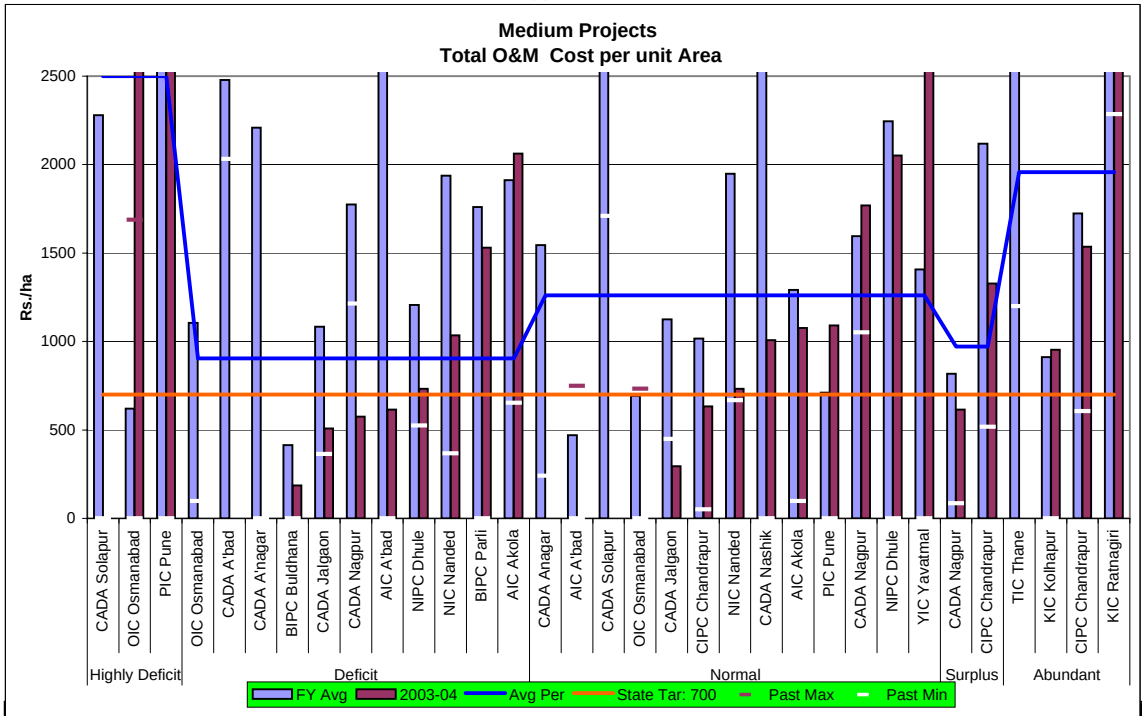
2) Average performance doesnot include figures in blue.

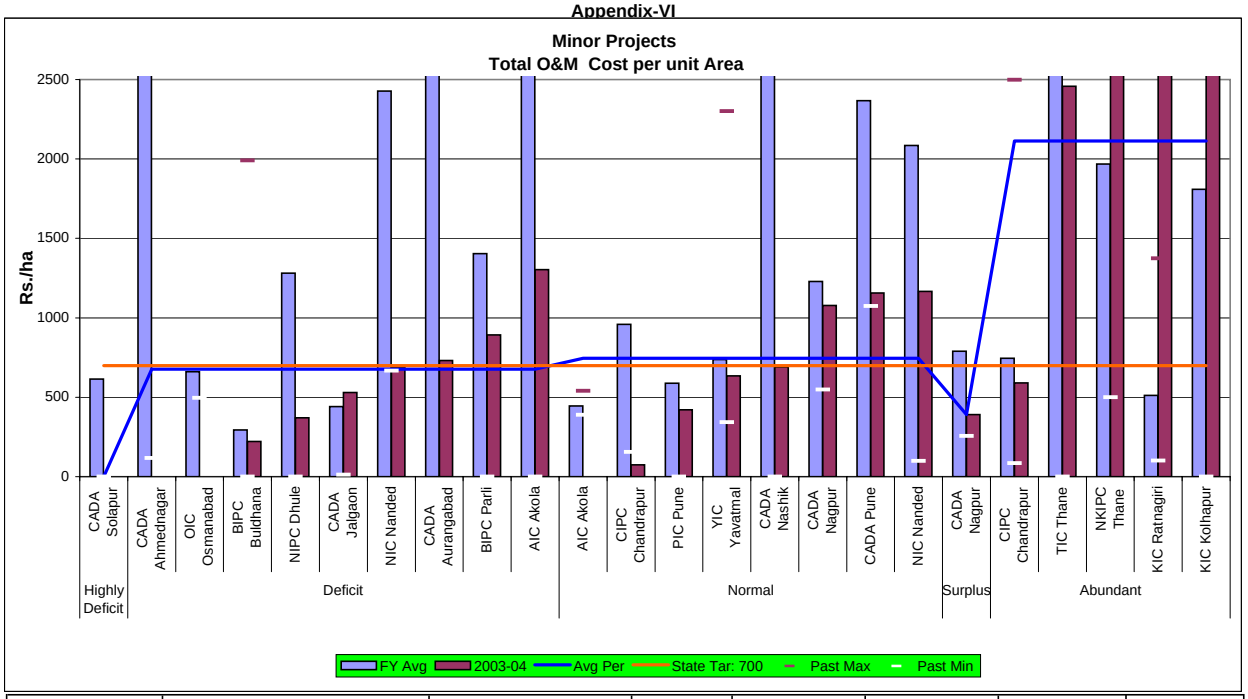
Appendix-VI



Plan Group	Subbasin	Circle	FY Avg	2003-04	Past Max	Past Min	Avg Per
Highly Deficit	Sina-Bori-Benetura	CADA Solapur	2280	0	15172	0	
	Sina-Bori-Benetura	OIC Osmanabad	621	48519	1688	0	122809
	Upper Krishna (E) & Sina-Bori=Benetura	PIC Pune	2956	197100	6721	0	
Deficit	Manjra	OIC Osmanabad	1106	0	13744	97	
	Lower Godavari	CADA A'bad	2478	0	3772	2031	
	Manjra	CADA A'nagar	2208	0	4933	0	
	Purna (Tapi)	BIPC Buldhana	415	186	3135	0	
	Girna	CADA Jalgaon	1084	509	8458	364	
	Purna (Tapi)	CADA Nagpur	1775	574	3949	1213	905
	Lower Godavari, Purna & Girna	AIC A'bad	2730	615	18566	0	
	Girna	NIPC Dhule	1207	732	6462	524	
	Lower Godavari & Manjra	NIC Nanded	1938	1035	7804	367	
	Lower Godavari & Manjra	BIPC Parli	1760	1530	9823	0	
	Purna (Tapi)	AIC Akola	1912	2063	22202	653	
Normal	Upper Godavari	CADA Anagar	1545	0	10571	240	
	Upper Godavari	AIC A'bad	471	0	748	0	
	Remaining Bhima	CADA Solapur	4191	0	9582	1710	
	Remaining Bhima	OIC Osmanabad	693	0	733	0	
	Panzara	CADA Jalgaon	1126	295	10282	448	
	Wardha	CIPC Chandrapur	1017	632	5741	50	
	Painganga	NIC Nanded	1948	733	4170	668	1261
	Upper Godavari	CADA Nashik	3541	1008	7840	0	
	Painganga	AIC Akola	1292	1076	5196	98	
	Upper Bhima & Remaining Bhima	PIC Pune	711	1091	2586	0	
	Wardha & Middle Wainganga	CADA Nagpur	1595	1769	3010	1050	
	Middle Tapi	NIPC Dhule	2244	2051	41620	0	
	Painganga & Wardha	YIC Yavatmal	1408	2696	2924	0	
Surplus	Middle Wainganga	CADA Nagpur	818	615	49525	84	971
	Middle Wainganga	CIPC Chandrapur	2118	1328	3437	518	
Abundant	North Konkan	TIC Thane	7138	0	13606	1200	
	Upper Krishna (W)	KIC Kolhapur	912	953	3074	0	1957
	Lower Wainganga	CIPC Chandrapur	1723	1536	3465	606	
	Vashisthi	KIC Ratnagiri	5517	3381	12237	2285	

Notes:1) Figures in red indicate values exceeding range of graph.
2) Average performance doesnot include figures in blue.

Appendix-VI



PlanGroup	Sub basin	Circle	FY Avg	2003-04	Past Max	Past Min	Avg Per
Highly Deficit	Sina-Bori-Benetura	CADA Solapur	613.54	0.00	6235.29	0.00	0
Deficit	Manjra	CADA Ahmednagar	2801.02	0.00	11063.22	117.42	677
	Manjra	OIC Osmanabad	660.34	0.00	2880.00	496.55	
	Purna Dudhana & Purba Tapi	BIPC Buldhana	293.19	222.40	1989.36	0.00	
	Girna	NIPC Dhule	1281.76	370.81	5425.53	0.00	
	Girna	CADA Jalgaon	441.61	529.41	5828.57	13.02	
	Lower Godavari, Purna Dudhana & Manjra	NIC Nanded	2427.66	686.94	7683.33	666.67	
	Lower Godaari	CADA Aurangabad	4301.04	731.54	7219.30	2889.53	
	Manjra	BIPC Parli	1405.07	891.79	4555.56	0.00	
	Purna Dudhana & Purna Tapi	AIC Akola	3637.45	1304.11	12105.26	0.00	
Normal	Painganga	AIC Akola	444.77	0.00	539.13	389.61	746
	Wardha	CIPC Chandrapur	957.92	75.32	2742.86	155.84	
	Upper Bhima & Remaining Bhima	PIC Pune	588.03	421.69	2985.92	0.00	
	Painganga	YIC Yavatmal	737.32	633.62	2300.00	341.98	
	Upper Godavari	CADA Nashik	2667.06	690.48	2923.57	0.00	
	Wardha	CADA Nagpur	1229.34	1076.92	5017.54	548.17	
	Upper Bhima	CADA Pune	2366.49	1156.86	4812.50	1072.73	
	Remaining Godavari & Painganga	NIC Nanded	2085.42	1166.21	5800.00	98.11	
Surplus	Middle Wainganga	CADA Nagpur	788.95	391.03	2914.97	255.81	391
Abundant	Lower Wainganga	CIPC Chandrapur	746.26	590.91	2497.25	85.16	2113
	North Konkan & Middle Konkan	TIC Thane	3079.92	2457.42	16163.93	0.00	
	North Konkan & Middle Konkan	NKIPC Thane	1968.06	2619.03	15313.23	500.00	
	Vashisthi	KIC Ratnagiri	512.66	2784.95	1373.63	100.00	
	Upper Krishna (W)	KIC Kolhapur	1808.94	15571.43	4027.78	0.00	

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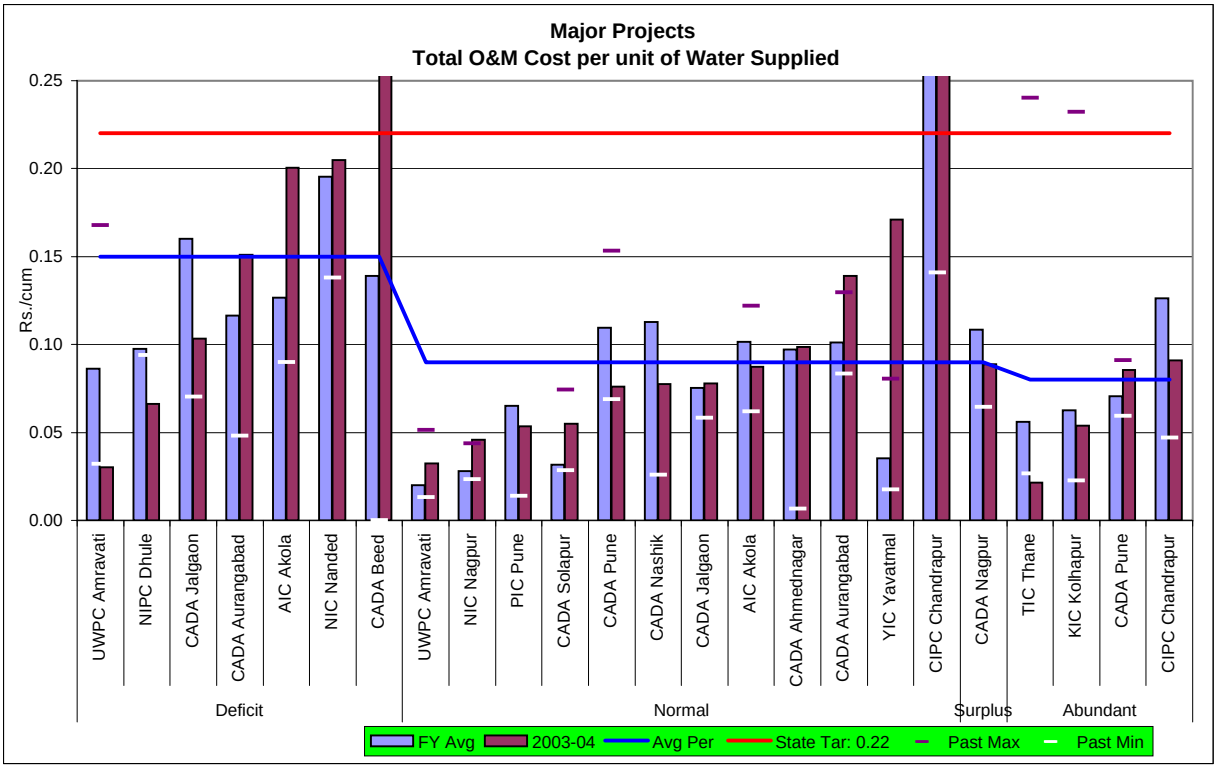
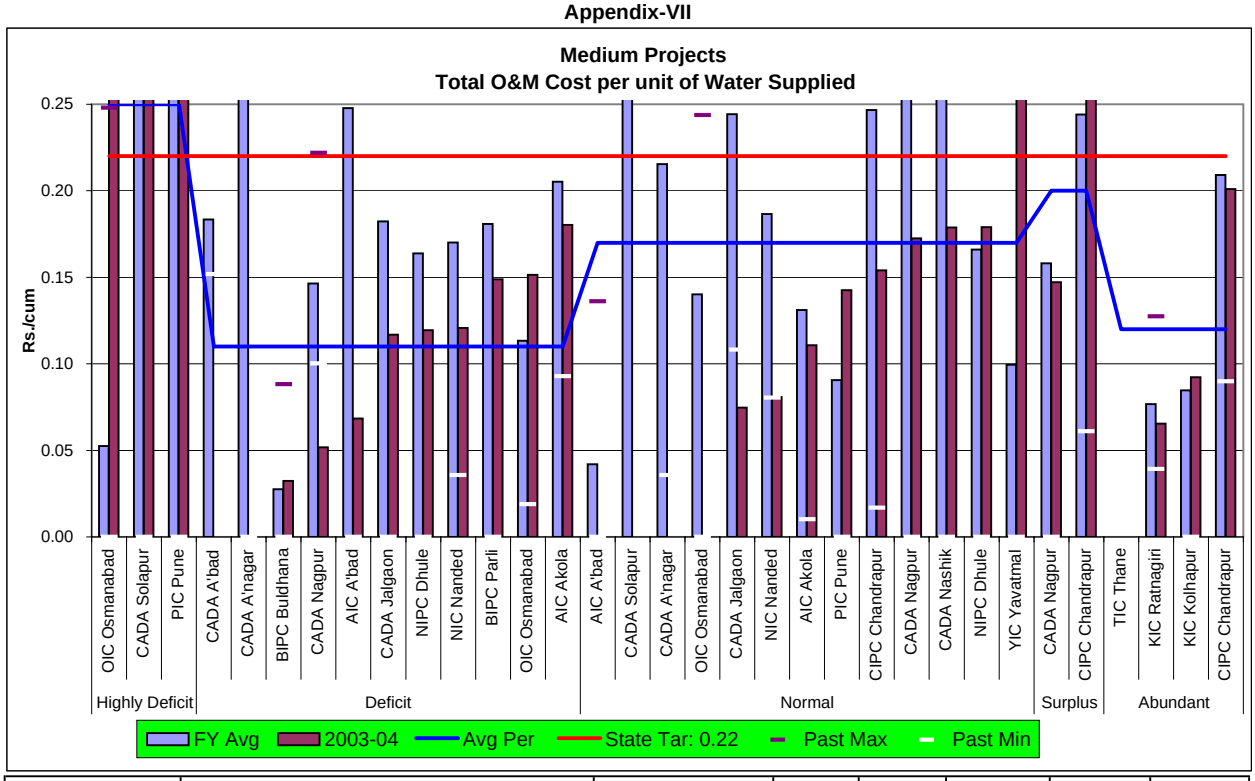
Appendix-VII



PlanGroup	Subbasin	Circle	FY Avg	2003-04	Past Max	Past Min	Avg Per
Deficit	Purna Tapi	UWPC Amravati	0.09	0.03	0.17	0.03	
	Girna	NIPC Dhule	0.10	0.07	0.44	0.09	
	Purna Tapi & Girna	CADA Jalgaon	0.16	0.10	30.37	0.07	
	Lower Godavari & Purna	CADA Aurangabad	0.12	0.15	0.86	0.05	
	Dudhana						0.13
	Purna Tapi	AIC Akola	0.13	0.20	0.51	0.09	
	Lower Godavari & Manjra	NIC Nanded	0.20	0.20	0.36	0.14	
	Lower Godavari & Manjra	CADA Beed	0.14	1.67	6.59	0.00	
Normal	Wardha	UWPC Amravati	0.02	0.03	0.05	0.01	
	Wardha	NIC Nagpur	0.03	0.05	0.04	0.02	
	Upper Bhima & Remaining	PIC Pune	0.07	0.05	0.43	0.01	
	Bhima						
	Remaining Bhima	CADA Solapur	0.03	0.06	0.07	0.03	
	Upper Bhima	CADA Pune	0.11	0.08	0.15	0.07	
	Upper Godavari	CADA Nashik	0.11	0.08	0.89	0.03	0.09
	Middle Tapi	CADA Jalgaon	0.08	0.08	0.25	0.06	
	Painganga	AIC Akola	0.10	0.09	0.12	0.06	
	Upper Godavari	CADA Ahmednagar	0.10	0.10	0.26	0.01	
	Painganga	CADA Aurangabad	0.10	0.14	0.13	0.08	
	Painganga	YIC Yavatmal	0.04	0.17	0.08	0.02	
	Wardha	CIPC Chandrapur	0.46	1.43	1.68	0.14	
Surplus	Middle Wainganga	CADA Nagpur	0.11	0.09	0.30	0.06	0.09
Abundant	North Konkan & Middle	TIC Thane	0.06	0.02	0.24	0.03	
	Konkan						
	Upper Krishna (W)	KIC Kolhapur	0.06	0.05	0.23	0.02	0.08
	Upper Krishna (W)	CADA Pune	0.07	0.09	0.09	0.06	
	Lower Wainganga	CIPC Chandrapur	0.13	0.09	0.27	0.05	

Notes: 1) Figures in red indicate values exceeding range of graph.
2) Average performance doesnot include figures in blue.

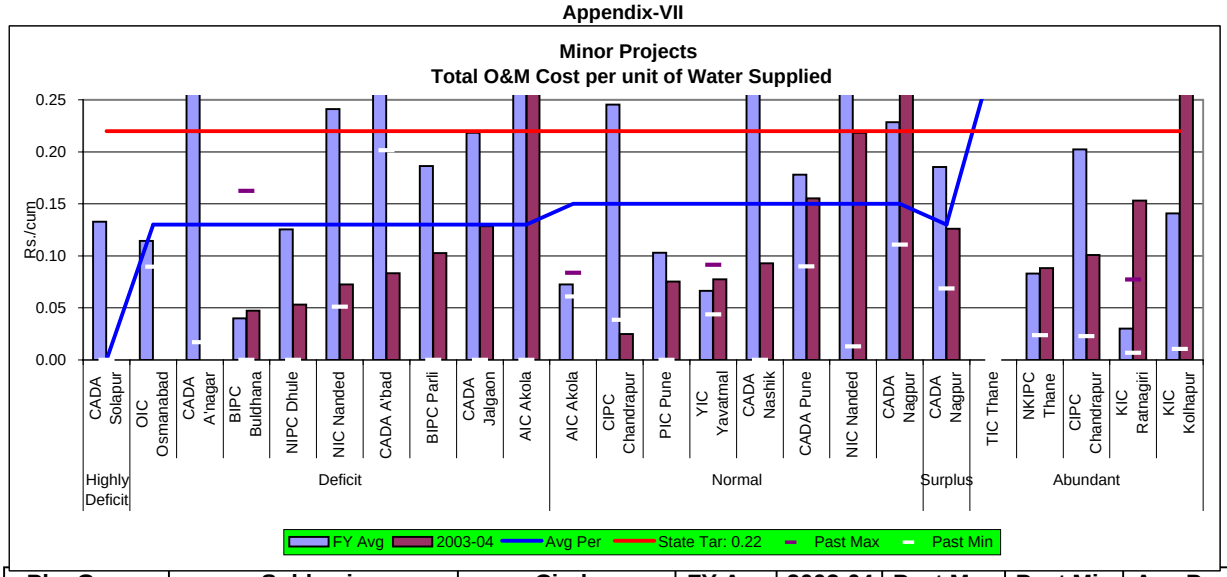
Appendix-VII



PlanGroup	Subbasin	Circle	FY Avg	2003-04	Past Max	Past Min	Avg Per
Highly Deficit	Sina-Bori-Benetura	OIC Osmanabad	0.05	0.40	0.25	0.00	
	Sina-Bori-Benetura	CADA Solapur	0.27	17.96	26.16	0.00	16.23
	Upper Krishna (E) Sina-Bori-Benetura	PIC Pune	0.42	30.32	1.04	0.00	
Deficit	Lower Godavari	CADA A'bad	0.18	0.00	0.36	0.15	
	Manjara	CADA A'nagar	0.48	0.00	0.90	0.00	
	Purna Tapi	BIPC Buldhana	0.03	0.03	0.09	0.00	
	Purna Tapi	CADA Nagpur	0.15	0.05	0.22	0.10	
	Lower Godavari, Purna Dudhana & Girna	AIC A'bad	0.25	0.07	2.82	0.00	
	Girna	CADA Jalgaon	0.18	0.12	96.23	0.00	0.11
	Girna	NIPC Dhule	0.16	0.12	5.15	0.00	
	Lower Godavari & Manjara	NIC Nanded	0.17	0.12	0.67	0.04	
	Lower Godavari & Manjara	BIPC Parli	0.18	0.15	1.43	0.00	
	Manjara	OIC Osmanabad	0.11	0.15	2.47	0.02	
	Purna Tapi	AIC Akola	0.21	0.18	5.41	0.09	
Normal	Upper Godavari	AIC A'bad	0.04	0.00	0.14	0.00	
	Remaining Bhima	CADA Solapur	1.21	0.00	3.42	0.75	
	Upper Godavari	CADA A'nagar	0.22	0.00	1.46	0.04	
	Remaining Bhima	OIC Osmanabad	0.14	0.00	0.24	0.00	
	Panzara & Middle Tapi	CADA Jalgaon	0.24	0.07	14.71	0.11	
	Painganga	NIC Nanded	0.19	0.08	0.39	0.08	
	Painganga	AIC Akola	0.13	0.11	0.71	0.01	0.17
	Upper Bhima & Remaining Bhima	PIC Pune	0.09	0.14	1.70	0.00	
	Wardha	CIPC Chandrapur	0.25	0.15	0.83	0.02	
	Wardha & Middle Wainganga	CADA Nagpur	0.37	0.17	0.85	0.00	
	Upper Godavari	CADA Nashik	0.48	0.18	0.93	0.00	
	Middle Tapi	NIPC Dhule	0.17	0.18	4.84	0.00	
	Painganga & Wardha	YIC Yavatmal	0.10	0.41	0.30	0.00	
Surplus	Middle Wainganga	CADA Nagpur	0.16	0.15	1.29	0.00	0.2
	Middle Wainganga	CIPC Chandrapur	0.24	0.25	0.38	0.06	
Abundant	North Konkan	TIC Thane	0.00	0.00	0.28	0.01	
	Vashisthi	KIC Ratnagiri	0.08	0.07	0.13	0.04	0.12
	Upper Krishna (W)	KIC Kolhapur	0.08	0.09	0.37	0.00	
	Lower Wainganga	CIPC Chandrapur	0.21	0.20	0.37	0.09	

Notes: 1) Figures in red indicate values exceeding range of graph.
2) Average performance doesnot include figures in blue.

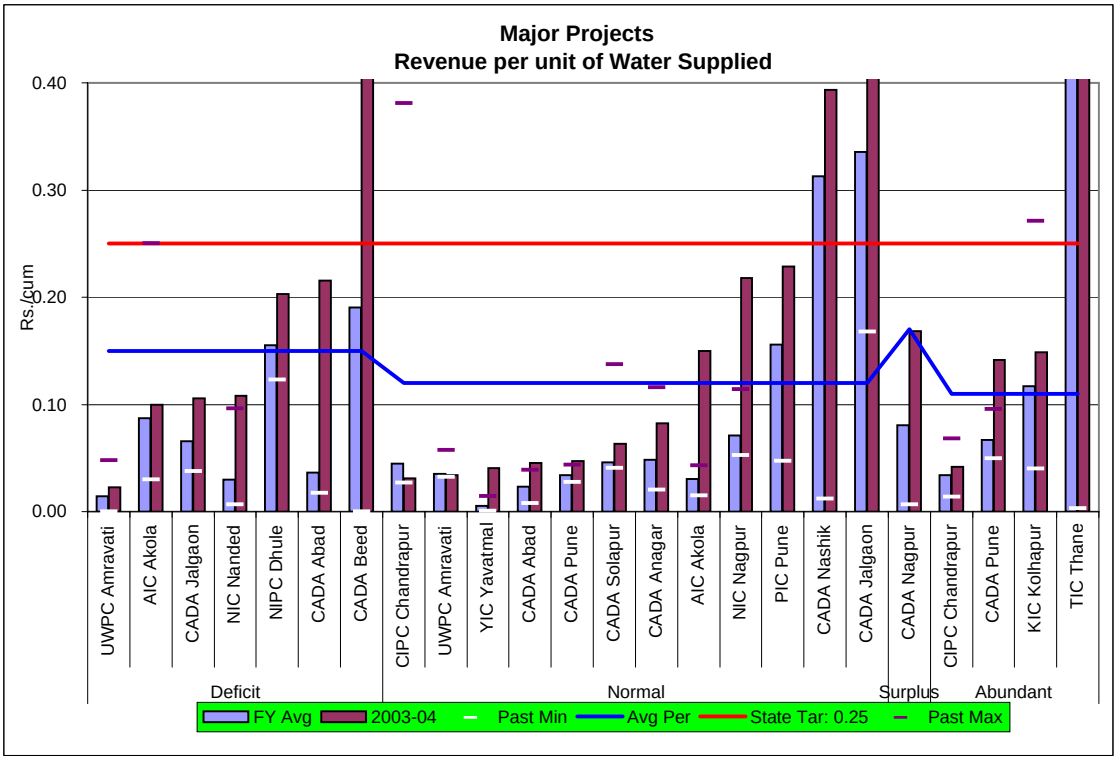
Appendix-VII



PlanGroup	Subbasin	Circle	FY Avg	2003-04	Past Max	Past Min	Avg Per
Highly Deficit	Sina-Bori-Benetura	CADA Solapur	0.13	0.00	1.09	0.00	0.00
Deficit	Manjra	OIC Osmanabad	0.11	0.00	0.52	0.09	
	Manjra	CADA A'nagar	0.45	0.00	2.44	0.02	
	Purna Dudhana & Purna Tapi	BIPC Buldhana	0.04	0.05	0.16	0.00	
	Girna	NIPC Dhule	0.13	0.05	0.59	0.00	
	Lower Godavari, Purna Dudhana & Purna Tapi	NIC Nanded	0.24	0.07	1.10	0.05	0.08
	Lower Godavari	CADA A'bad	0.38	0.08	0.57	0.20	
	Manjra	BIPC Parli	0.19	0.10	0.55	0.00	
	Girna	CADA Jalgaon	0.22	0.13	3.22	0.00	
	Purna Dudhana & Purna Tapi	AIC Akola	0.38	0.40	1.69	0.00	
Normal	Painganga	AIC Akola	0.07	0.00	0.08	0.06	
	Wardha	CIPC Chandrapur	0.25	0.02	0.75	0.04	
	Upper Bhima & Remaining Bhima	PIC Pune	0.10	0.08	0.45	0.00	
	Painganga	YIC Yavatmal	0.07	0.08	0.09	0.04	
	Upper Godavari	CADA Nashik	0.31	0.09	0.42	0.00	0.15
	Upper Bhima & Remaining Bhima	CADA Pune	0.18	0.16	0.31	0.09	
	Remaining Godavari & Painganga	NIC Nanded	0.31	0.22	0.83	0.01	
	Wardha	CADA Nagpur	0.23	0.40	0.55	0.11	
Surplus	Middle Wainganga	CADA Nagpur	0.19	0.13	0.51	0.07	0.13
Abundant	North Konkan & Middle Konkan	TIC Thane	0.00	0.00	0.80	0.00	
	North Konkan & Middle Konkan	NKIPC Thane	0.08	0.09	0.61	0.02	0.29
	Lower Wainganga	CIPC Chandrapur	0.20	0.10	1.89	0.02	
	Vashisthi	KIC Ratnagiri	0.03	0.15	0.08	0.01	
	Upper Krishna (W)	KIC Kolhapur	0.14	0.80	0.79	0.01	

Notes: 1) Figures in red indicate values exceeding range of graph.
2) Average performance doesnot include figures in blue.

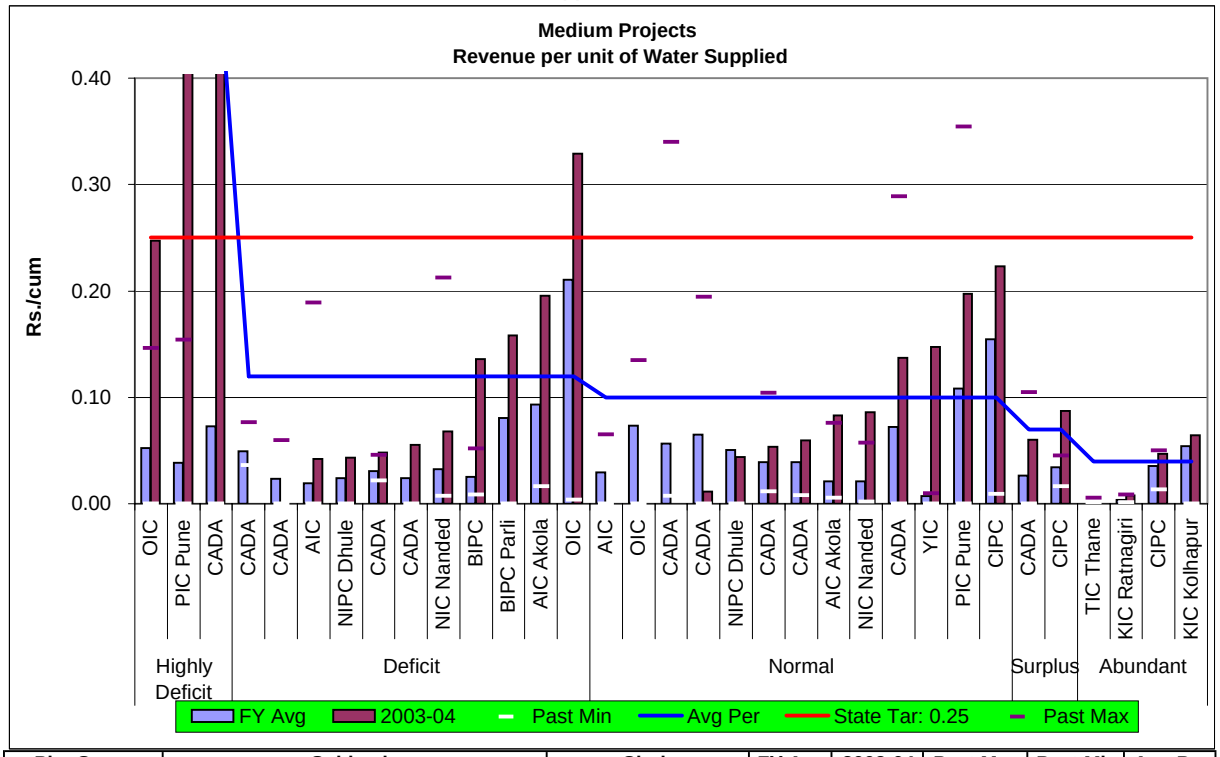
Appendix-VIII



PlanGroup	Subbasin	Circle	FY Avg	2003-04	Past Max	Past Min	Avg Per
Deficit	Purna Tapi	UWPC Amravati	0.01	0.02	0.05	0.00	0.15
	Purna Tapi	AIC Akola	0.09	0.10	0.25	0.03	
	Purna Tapi & Girna	CADA Jalgaon	0.07	0.11	11.18	0.04	
	Lower Godavari & Manzra	NIC Nanded	0.03	0.11	0.10	0.01	
	Girna	NIPC Dhule	0.16	0.20	0.78	0.12	
	Lower Godavari & Purna Dudhana	CADA Abad	0.04	0.22	0.50	0.02	
	Lower Godavari & Manzra	CADA Beed	0.19	3.02	49.08	0.00	
Normal	Wardha	CIPC Chandrapur	0.04	0.03	0.38	0.03	0.12
	Wardha	UWPC Amravati	0.04	0.03	0.06	0.03	
	Painganga	YIC Yavatmal	0.01	0.04	0.01	0.00	
	Painganga	CADA Abad	0.02	0.05	0.04	0.01	
	Upper Bhima	CADA Pune	0.03	0.05	0.04	0.03	
	Remaining Bhima	CADA Solapur	0.05	0.06	0.14	0.04	
	Upper Godavari	CADA Anagar	0.05	0.08	0.12	0.02	
	Painganga	AIC Akola	0.03	0.15	0.04	0.02	
	Wardha	NIC Nagpur	0.07	0.22	0.11	0.05	
	Upper Bhima & Remaining Bhima	PIC Pune	0.16	0.23	4.81	0.05	
	Upper Godavari	CADA Nashik	0.31	0.39	9.01	0.01	
	Middle Tapi	CADA Jalgaon	0.34	0.75	2.73	0.17	
Surplus	Middle Wainganga	CADA Nagpur	0.08	0.17	0.69	0.01	0.17
Abundant	Lower Wainganga	CIPC Chandrapur	0.03	0.04	0.07	0.01	0.11
	Upper Krishna (W)	CADA Pune	0.07	0.14	0.10	0.05	
	Uppper Krishna (W)	KIC Kolhapur	0.12	0.15	0.27	0.04	
	North Konkan & Middle Konkan	TIC Thane	0.66	1.05	12.23	0.00	

Notes: 1) Figures in red indicate values exceeding range of graph.
2) Average performance doesnot include figures in blue.

Appendix-VIII



PlanGroup	Subbasin	Circle	FY Avg	2003-04	Past Max	Past Min	Avg Per
Highly Deficit	Sina-Bori-Benetura	OIC Osmanabad	0.05	0.25	0.15	0.00	
	Upper Krishna (E) Sina-Bori-Benetura	PIC Pune	0.04	0.56	0.15	0.00	0.53
	Sina-Bori-Benetura	CADA Solapur	0.07	0.77	1.61	0.00	
Deficit	Lower Godavari	CADA Aurangabad	0.05	0.00	0.08	0.04	
	Manjra	CADA Ahmednagar	0.02	0.00	0.06	0.00	
	Lower Godavari & Manjra	AIC Aurangabad	0.02	0.04	0.19	0.00	
	Girna	NIPC Dhule	0.02	0.04	0.86	0.00	
	Purna Tapi	CADA Nagpur	0.03	0.05	0.05	0.02	
	Girna	CADA Jalgaon	0.02	0.06	1.05	0.00	0.12
	Lower Godavari & Manjra	NIC Nanded	0.03	0.07	0.21	0.01	
	Purna Tapi	BIPC Buldhana	0.03	0.14	0.05	0.01	
	Lower Godavari & Manjra	BIPC Parli	0.08	0.16	0.47	0.00	
	Purna Tapi	AIC Akola	0.09	0.20	1.12	0.02	
	Manjra	OIC Osmanabad	0.21	0.33	7.77	0.00	
Normal	Upper Godavari	AIC Aurangabad	0.03	0.00	0.07	0.00	
	Remaining Bhima	OIC Osmanabad	0.07	0.00	0.13	0.00	
	Remaining Bhima	CADA Solapur	0.06	0.00	0.34	0.01	
	Wardha & Middle Wainganga	CADA Nagpur	0.07	0.01	0.19	0.00	
	Middle Tapi	NIPC Dhule	0.05	0.04	1.06	0.00	
	Upper Godavari	CADA Ahmednagar	0.04	0.05	0.10	0.01	
	Panzara & Middle Tapi	CADA Jalgaon	0.04	0.06	1.36	0.01	0.10
	Painganga	AIC Akola	0.02	0.08	0.08	0.01	
	Painganga	NIC Nanded	0.02	0.09	0.06	0.00	
	Upper Godavari	CADA Nashik	0.07	0.14	0.29	0.00	
	Painganga & Wardha	YIC Yavatmal	0.01	0.15	0.01	0.00	
	Upper Bhima & Remaining Bhima	PIC Pune	0.11	0.20	0.35	0.00	
	Wardha	CIPC Chandrapur	0.15	0.22	1.77	0.01	
Surplus	Middle Wainganga	CADA Nagpur	0.03	0.06	0.10	0.00	0.07
	Middle Wainganga	CIPC Chandrapur	0.03	0.09	0.05	0.02	
Abundant	North Konkan	TIC Thane	0.00	0.00	0.01	0.00	
	Vaishisthi	KIC Ratnagiri	0.00	0.01	0.01	0.00	0.04
	Lower Wainganga	CIPC Chandrapur	0.04	0.05	0.05	0.01	
	Upper Krishna (W)	KIC Kolhapur	0.05	0.06	0.44	0.00	

Notes: 1) Figures in red indicate values exceeding range of graph.
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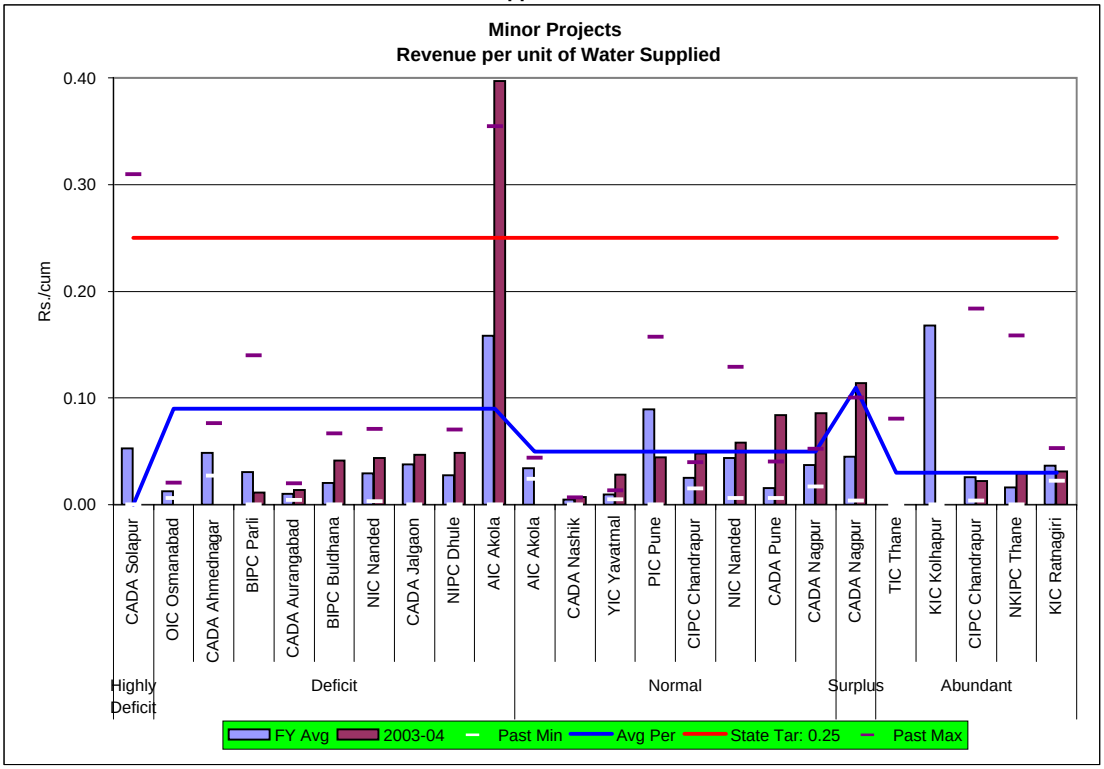
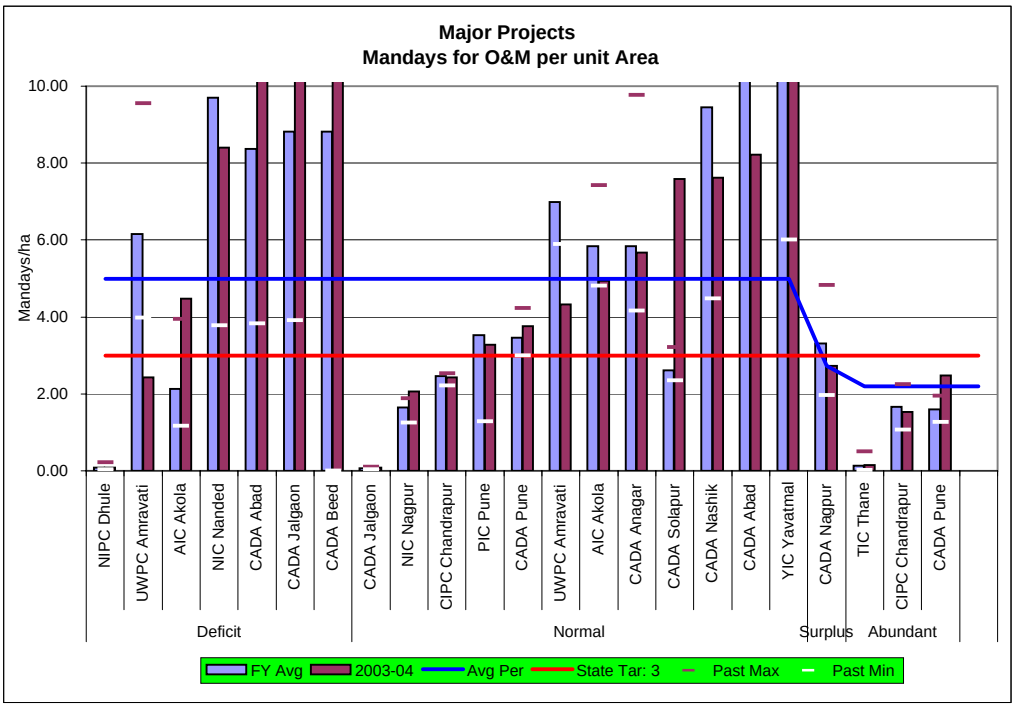
Appendix-VIII



PlanGroup	Subbasin	Circle	FY Avg	2003-04	Past Max	Past Min	Avg Per
Highly Deficit	Sina-Bori-Benetura	CADA Solapur	0.05	0.00	0.31	0.00	0.00
Deficit	Manjra	OIC Osmanabad	0.01	0.00	0.02	0.01	
	Manjra	CADA Ahmednagar	0.05	0.00	0.08	0.03	
	Manjra	BIPC Parli	0.03	0.01	0.14	0.00	
	Lower Godavari	CADA Aurangabad	0.01	0.01	0.02	0.00	
	Purna Dudhana & Purna Tapi	BIPC Buldhana	0.02	0.04	0.07	0.00	
	Lower Godavari, Purna Dudhana & Manjra	NIC Nanded	0.03	0.04	0.07	0.00	0.09
	Girna	CADA Jalgaon	0.04	0.05	1.38	0.00	
	Girna	NIPC Dhule	0.03	0.05	0.07	0.00	
	Purna Dudhana & Purna Tapi	AIC Akola	0.16	0.40	0.35	0.00	
Normal	Painganga	AIC Akola	0.03	0.00	0.04	0.02	
	Upper Godavari	CADA Nashik	0.00	0.01	0.01	0.00	
	Painganga	YIC Yavatmal	0.01	0.03	0.01	0.00	
	Upper Bhima & Remaining Bhima	PIC Pune	0.09	0.04	0.16	0.00	
	Wardha	CIPC Chandrapur	0.03	0.05	0.04	0.01	0.05
	Remaining Godavari & Painganga	NIC Nanded	0.04	0.06	0.13	0.01	
	Upper Bhima	CADA Pune	0.02	0.08	0.04	0.01	
	Wardha	CADA Nagpur	0.04	0.09	0.05	0.02	
Surplus	Middle Wainganga	CADA Nagpur	0.04	0.11	0.10	0.00	0.11
Abundant	North Konkan & Middle Konkan	TIC Thane	0.00	0.00	0.08	0.00	
	Upper Krishna (W)	KIC Kolhapur	0.17	0.00	1.26	0.00	
	Lower Wainganga	CIPC Chandrapur	0.03	0.02	0.18	0.00	0.03
	North Konkan & Middle Konkan	NKIPC Thane	0.02	0.03	0.16	0.00	
	Vashisthi	KIC Ratnagiri	0.04	0.03	0.05	0.02	

Notes: 1) Figures in red indicate values exceeding range of graph.
2) Average performance doesnot include figures in blue.

Appendix-IX



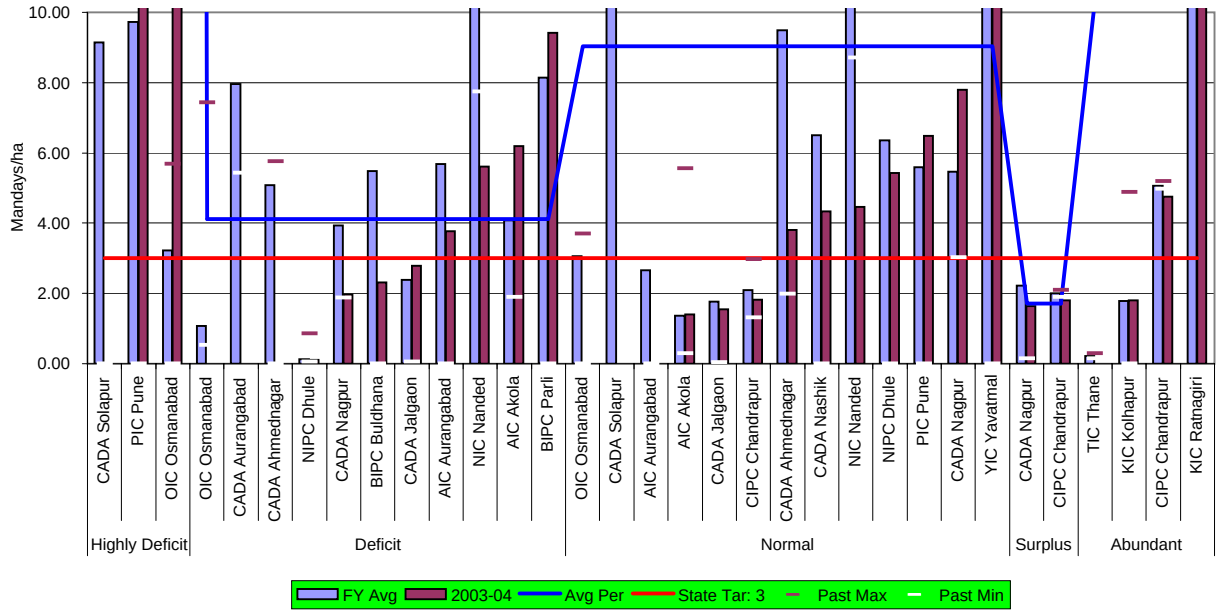
PlanGroup	Subbasin	Circle	FY Avg	2003-04	Past Max	Past Min	Avg Per
Deficit	Purna Tapi & Girna	NIPC Dhule	0	0	0	0	5
	Lower Godavari & Manjra	UWPC Amravati	6	2	10	4	
	Girna	AIC Akola	2	4	4	1	
	Lower Godavari & Purna Dudhana	NIC Nanded	10	8	15	4	
	Purna Tapi	CADA Abad	8	11	36	4	
	Lower Godavari & Manjra	CADA Jalgaon	9	20	499	4	
	Purna Tapi	CADA Beed	9	489	168	0	
Normal	Wardha	CADA Jalgaon	0	0	0	0	5
	Middle Tapi	NIC Nagpur	2	2	2	1	
	Wardha	CIPC Chandrapur	2	2	3	2	
	Upper Bhima & Remaining Bhima	PIC Pune	4	3	14	1	
	Upper Bhima	CADA Pune	3	4	4	3	
	Wardha	UWPC Amravati	7	4	12	6	
	Painganga	AIC Akola	6	5	7	5	
	Upper Godavari	CADA Anagar	6	6	10	4	
	Remaining Bhima	CADA Solapur	3	8	3	2	
	Upper Godavari	CADA Nashik	9	8	33	4	
	Painganga	CADA Abad	13	8	17	11	
	Painganga	YIC Yavatmal	12	22	24	6	
Surplus	Middle Wainganga	CADA Nagpur	3	3	5	2	3
Abundant	North Konkan & Middle Konkan	TIC Thane	0	0	1	0	2
	Lower Wainganga	CIPC Chandrapur	2	2	2	1	
	Upper Krishna (W)	CADA Pune	2	2	2	1	
	Upper Krishna (W)	KIC Kolhapur	3	3	10	1	

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

2) Average performance doesnot include figures in blue.

Appendix_IX

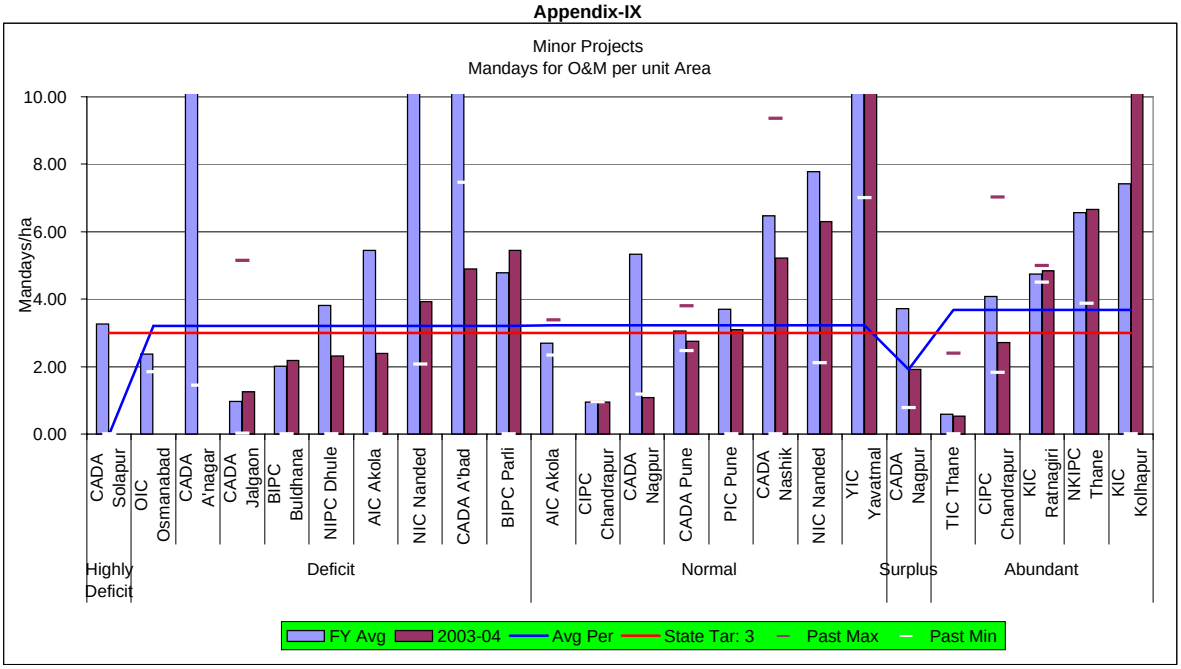
Medium Projects
Mandays for O&M per unit Area



PlanGroup	Subbasin	Circle	FY Avg	2003-04	Past Max	Past Min	Avg Per
Highly Deficit	Sina-Bori-Benetura	CADA Solapur	9	0	50	0	
	Upper Krishna (E) & Sina-Bori-Benetura	PIC Pune	10	376	63	0	383
	Sina-Bori-Benetura	OIC Osmanabad	3	390	6	0	
Deficit	Manjra	OIC Osmanabad	1	0	7	1	
	Lower Godavari	CADA Aurangabad	8	0	29	5	
	Manjra	CADA Ahmednagar	5	0	6	0	
	Girna	NIPC Dhule	0	0	1	0	
	Purna Tapi	CADA Nagpur	4	2	10	2	
	Purna Tapi	BIPC Buldhana	5	2	45	0	4
	Girna	CADA Jalgaon	2	3	21	0	
	Lower Godavari, Purna Dudhana & Manjra	AIC Aurangabad	6	4	16	0	
	Lower Godavari & Manjra	NIC Nanded	18	6	81	8	
	Purna Tapi	AIC Akola	4	6	16	2	
	Lower Godavari & Manjra	BIPC Parli	8	9	49	0	
Normal	Remaining Bhima	OIC Osmanabad	3	0	4	0	
	Remaining Bhima	CADA Solapur	15	0	20	12	
	Upper Godavari	AIC Aurangabad	3	0	11	0	
	Painganga	AIC Akola	1	1	6	0	
	Panzara & Middle Tapi	CADA Jalgaon	2	2	38	0	
	Wardha	CIPC Chandrapur	2	2	3	1	
	Upper Godavari	CADA Ahmednagar	9	4	75	2	9
	Upper Godavari	CADA Nashik	7	4	13	0	
	Painganga	NIC Nanded	18	4	48	9	
	Middle Tapi	NIPC Dhule	6	5	87	0	
	Upper Bhima & Remaining Bhima	PIC Pune	6	6	17	0	
	Wardha & Middle Wainganga	CADA Nagpur	5	8	14	3	
	Painganga & Wardha	YIC Yavatmal	28	53	58	0	
Surplus	Middle Wainganga	CADA Nagpur	2	2	91	0	
	Middle Wainganga	CIPC Chandrapur	2	2	2	2	2
Abundant	North Konkan	TIC Thane	0	0	0	0	
	Upper Krishna (W)	KIC Kolhapur	2	2	5	0	
	Lower Wainganga	CIPC Chandrapur	5	5	5	5	10
	Vashisthi	KIC Ratnagiri	23	24	28	16	

Notes: 1) Figures in red indicate values exceeding range of graph.
2) Average performance doesnot include figures in blue.

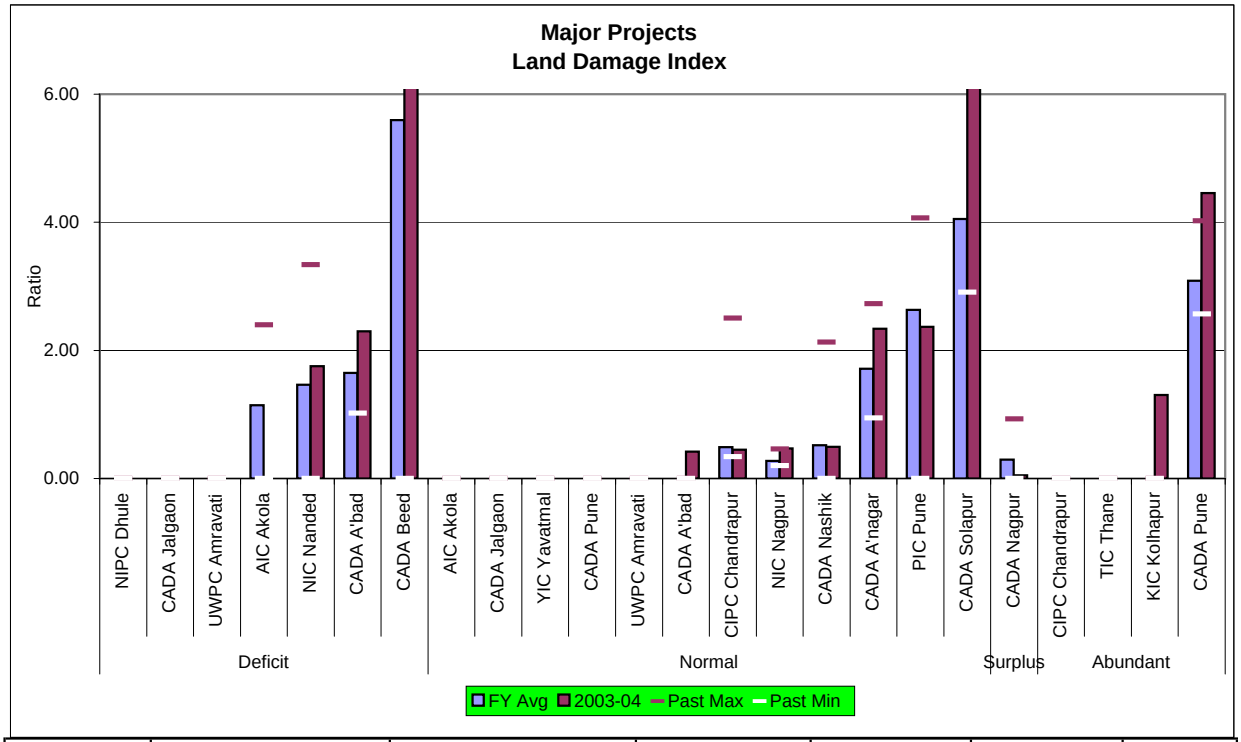
Appendix-IX



PlanGroup	Subbasin	Circle	FY Avg	2003-04	Past Max	Past Min	Avg Per
Highly Deficit	Sina-Bori-Benetura	CADA Solapur	3	0	14	0	0
Deficit	Manjra	OIC Osmanabad	2	0	13	2	
	Manjra	CADA A'nagar	43	0	150	1	
	Girna	CADA Jalgaon	1	1	5	0	
	Purna Dudhana & Purna Tapi	BIPC Buldhana	2	2	32	0	
	Girna	NIPC Dhule	4	2	17	0	3
	Purna Dudhana & Purna Tapi	AIC Akola	5	2	11	0	
	Lower Godavari, Purna Dudhana & Manjra	NIC Nanded	12	4	28	2	
	Lower Godavari	CADA A'bad	12	5	27	7	
	Manjra	BIPC Parli	5	5	20	0	
Normal	Painganga	AIC Akola	3	0	3	2	
	Wardha	CIPC Chandrapur	1	1	1	1	
	Wardha	CADA Nagpur	5	1	32	1	
	Upper Bhima	CADA Pune	3	3	4	2	
	Upper Bhima & Remaining Bhima	PIC Pune	4	3	65	0	3
	Upper Godavari	CADA Nashik	6	5	9	0	
	Remaining Godavari & Painganga	NIC Nanded	8	6	19	2	
	Painganga	YIC Yavatmal	15	12	46	7	
Surplus	Middle Wainganga	CADA Nagpur	4	2	12	1	2
Abundant	North Konkan & Middle Konkan	TIC Thane	1	1	2	0	
	Lower Wainganga	CIPC Chandrapur	4	3	7	2	
	Vashisthi	KIC Ratnagiri	5	5	5	5	4
	North Konkan & Middle Konkan	NKIPC Thane	7	7	34	4	
	Upper Krishna (W)	KIC Kolhapur	7	17	10	0	

Notes: 1) Figures in red indicate values exceeding range of graph.
2) Average performance doesnot include figures in blue.

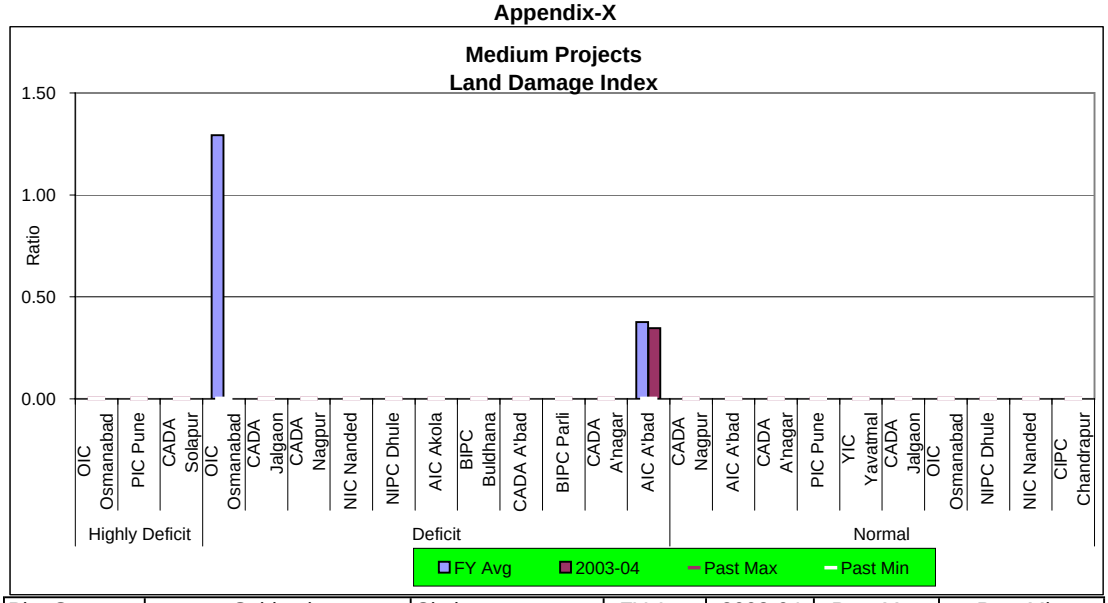
Appendix-X



PlanGroup	Subbasin	Circle	FY Avg	2003-04	Past Max	Past Min
Deficit	Girna	NIPC Dhule	0.00	0.00	0.00	0.00
	Purna Tapi & Girna	CADA Jalgaon	0.00	0.00	0.00	0.00
	Purna Tapi	UWPC Amravati	0.00	0.00	0.00	0.00
	Purna Tapi	AIC Akola	1.14	0.00	2.40	0.00
	Lower Godavari & Manjra	NIC Nanded	1.46	1.75	3.34	0.00
	Lower Godavari & Purna Dudhana	CADA A'bad	1.65	2.30	7.31	1.02
	Lower Godavari & Manjra	CADA Beed	5.60	345.97	97.00	0.00
Normal	Painganga	AIC Akola	0.00	0.00	0.00	0.00
	Middle Tapi	CADA Jalgaon	0.00	0.00	0.00	0.00
	Painganga	YIC Yavatmal	0.00	0.00	0.00	0.00
	Upper Bhima	CADA Pune	0.00	0.00	0.00	0.00
	Wardha	UWPC Amravati	0.00	0.00	0.00	0.00
	Painganga	CADA A'bad	0.00	0.42	0.00	0.00
	Wardha	CIPC Chandrapur	0.49	0.45	2.50	0.34
	Wardha	NIC Nagpur	0.27	0.47	0.46	0.20
	Upper Godavari	CADA Nashik	0.52	0.49	2.13	0.00
	Upper Godavari	CADA A'nagar	1.71	2.34	2.73	0.95
	Upper Bhima & Remaining Bhima	PIC Pune	2.64	2.37	4.07	0.00
	Remaining Bhima	CADA Solapur	4.05	7.93	7.23	2.91
Surplus	Mieele Wainganga	CADA Nagpur	0.30	0.05	0.93	0.00
Abundant	Lower Wainganga	CIPC Chandrapur	0.00	0.00	0.00	0.00
	North Konkan & Middle Konkan	TIC Thane	0.00	0.00	0.00	0.00
	Upper Krishna (W)	KIC Kolhapur	0.00	1.30	0.00	0.00
	Upper Krishna (W)	CADA Pune	3.09	4.46	4.02	2.57

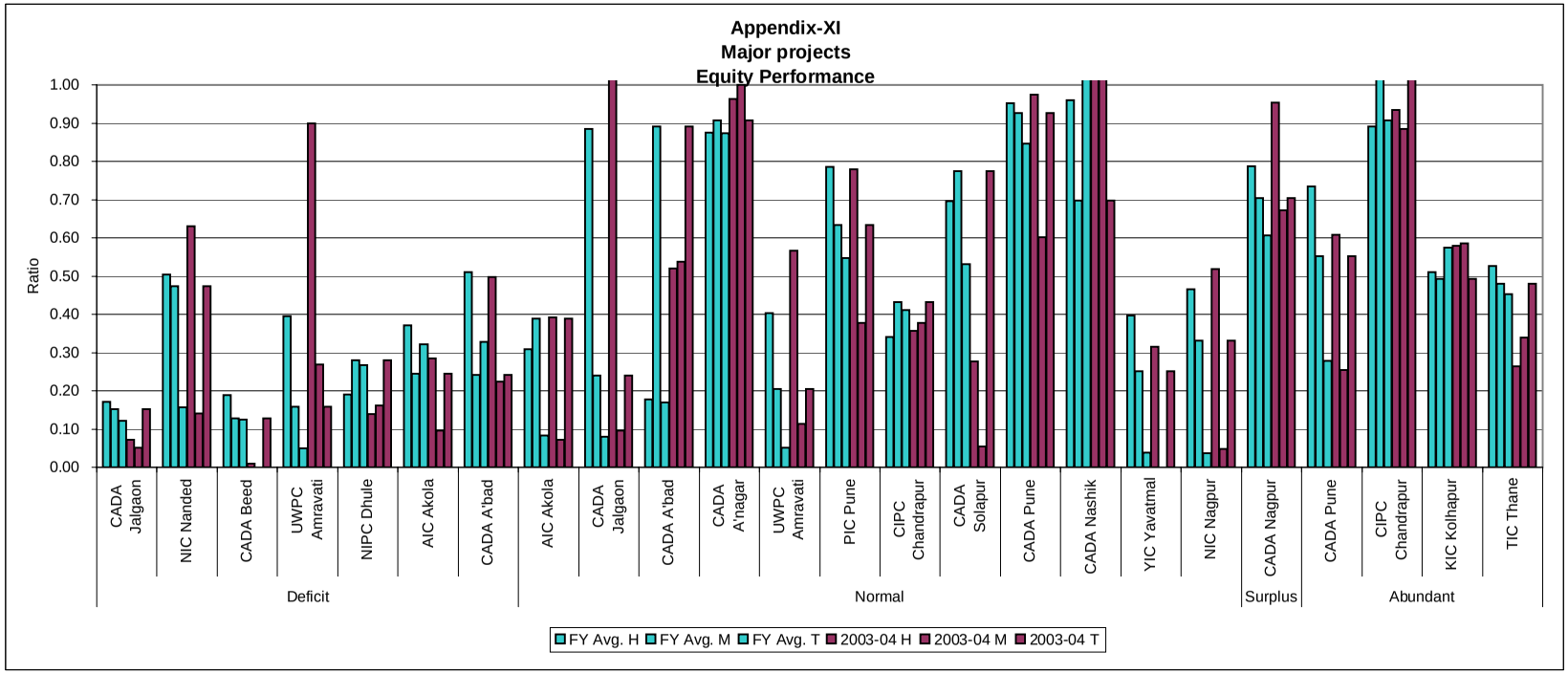
Notes: 1) Figures in red indicate values exceeding range of graph.

Appendix-X



PlanGroup	Subbasin	Circle	FY Avg	2003-04	Past Max	Past Min
Highly Deficit	Sina-Bori-Benetura	OIC Osmanabad	0.00	0.00	0.00	0.00
	Upper Krishna (E) & Sina-Bori-Benetura	PIC Pune	0.00	0.00	0.00	0.00
	Sina-Bori-Benetura	CADA Solapur	0.00	0.00	0.00	0.00
Deficit	Manjra	OIC Osmanabad	1.29	0.00	86.54	0.00
	Girna	CADA Jalgaon	0.00	0.00	0.00	0.00
	Purna Tapi	CADA Nagpur	0.00	0.00	0.00	0.00
	Lower Godavari & Manjra	NIC Nanded	0.00	0.00	0.00	0.00
	Girna	NIPC Dhule	0.00	0.00	0.00	0.00
	Purna Tapi	AIC Akola	0.00	0.00	0.00	0.00
	Purna Tapi	BIPC Buldhana	0.00	0.00	0.00	0.00
	Lower Godavari	CADA A'bad	0.00	0.00	0.00	0.00
	Lower Godavari & Manjra	BIPC Parli	0.00	0.00	0.00	0.00
	Manjra	CADA A'nagar	0.00	0.00	0.00	0.00
	Lower Godavari, Purna Dudhana & Girna	AIC A'bad	0.38	0.35	1.80	0.00
Normal	Wardha & Middle Wainganga	CADA Nagpur	0.00	0.00	0.00	0.00
	Upper Godavari	AIC A'bad	0.00	0.00	0.00	0.00
	Upper Godavari	CADA A'nagar	0.00	0.00	0.00	0.00
	Upper Bhima & Remaining Bhima	PIC Pune	0.00	0.00	0.00	0.00
	Painganga & Wardha	YIC Yavatmal	0.00	0.00	0.00	0.00
	Panzara & Middle Tapi	CADA Jalgaon	0.00	0.00	0.00	0.00
	Remaining Bhima	OIC Osmanabad	0.00	0.00	0.00	0.00
	Middle Tapi	NIPC Dhule	0.00	0.00	0.00	0.00
	Painganga	NIC Nanded	0.00	0.00	0.00	0.00
	Wardha	CIPC Chandrapur	0.00	0.00	0.00	0.00
	Remaining Bhima	CADA Solapur	0.00	0.00	0.00	0.00
	Upper Godavari	CADA Nashik	0.00	0.00	0.00	0.00
	Painganga	AIC Akola	0.06	0.41	1.70	0.00
Surplus	Middle Wainganga	CADA Nagpur	0.00	0.00	0.00	0.00
	Middle Wainganga	CIPC Chandrapur	0.00	0.00	0.00	0.00
Abundant	Lower Wainganga	CIPC Chandrapur	0.00	0.00	0.00	0.00
	Upper Krishna (W)	KIC Kolhapur	0.00	0.00	0.00	0.00
	Vashisthi	KIC Ratnagiri	0.00	0.00	0.00	0.00
	North Konkan	TIC Thane	0.00	0.00	0.00	0.00

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

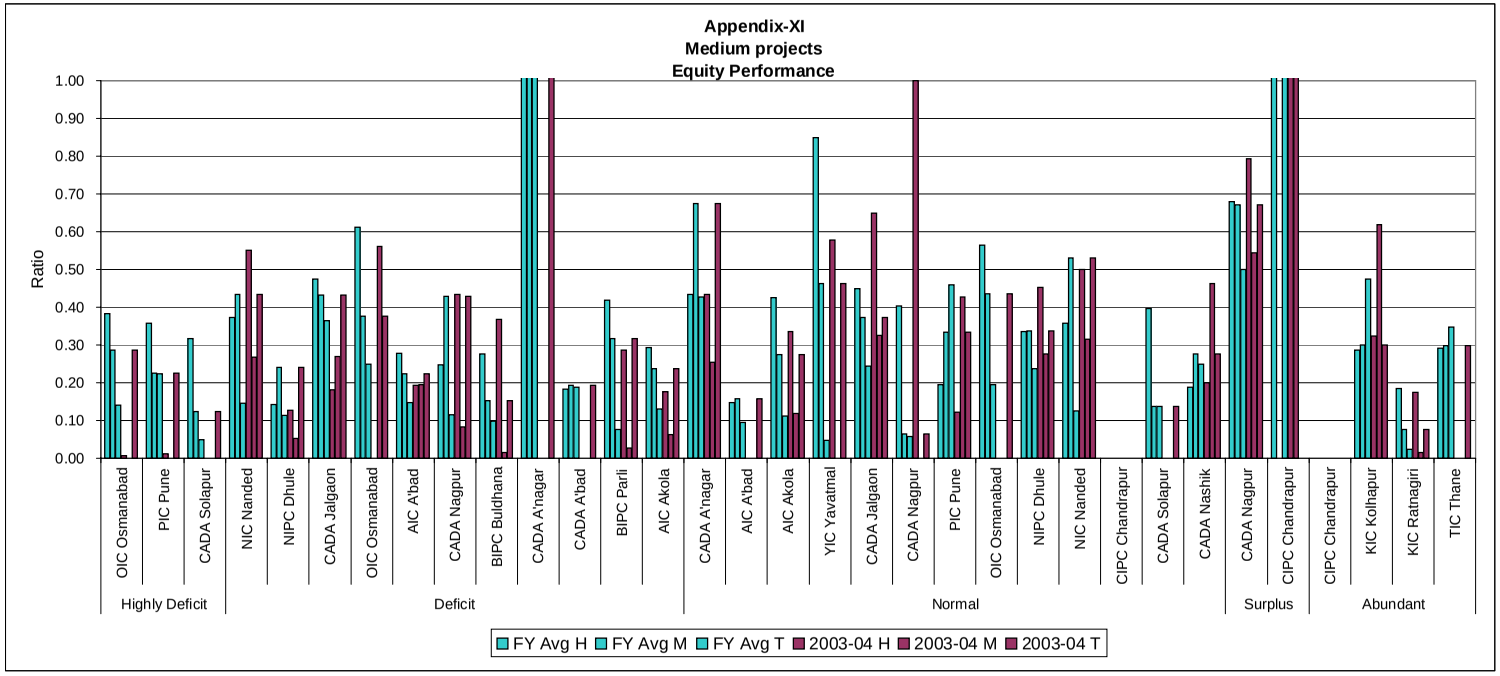

Appendix-XI
Major projects
Equity Performance
Ratio
1.00
0.90
0.80
0.70
0.60
0.50
0.40
0.30
0.20
0.10
0.00
CADA Jalgaon
NIC Nanded
CADA Beed
UWPC Amravati
NIPC Dhule
AIC Akola
CADA A'bad
AIC Akola
CADA Jalgaon
CADA A'bad
CADA A'nagar
UWPC Amravati
PIC Pune
CIPC Chandrapur
CADA Solapur
CADA Pune
CADA Nashik
YIC Yavatmal
NIC Nagpur
CADA Nagpur
CADA Pune
CIPC Chandrapur
KIC Kolhapur
TIC Thane
Deficit
Normal
Surplus
Abundant
FY Avg. H
FY Avg. M
FY Avg. T
2003-04 H
2003-04 M
2003-04 T

Appendix-XI

Major Projects

Equity Performance

PlanGroup	Subbasin	Circle	FY Avg			2003-04		
			Head	Middle	Tail	Head	Middle	Tail
Deficit	Purna Tapi & Girna	CADA Jalgaon	0.17	0.15	0.12	0.07	0.05	0.15
	Lower Godavari & Manjra	NIC Nanded	0.50	0.47	0.16	0.63	0.14	0.47
	Lower Godavari & Manjra	CADA Beed	0.19	0.13	0.12	0.01	0.00	0.13
	Purna Tapi	UWPC Amravati	0.40	0.16	0.05	0.90	0.27	0.16
	Girna	NIPC Dhule	0.19	0.28	0.27	0.14	0.16	0.28
	Purna Tapi	AIC Akola	0.37	0.24	0.32	0.28	0.10	0.24
	Lower Godavari & Purna	CADA A'bad	0.51	0.24	0.33	0.50	0.22	0.24
	Dudhana							
Normal	Painganga	AIC Akola	0.31	0.39	0.08	0.39	0.07	0.39
	Middle Tapi	CADA Jalgaon	0.88	0.24	0.08	1.00	0.10	0.24
	Painganga	CADA A'bad	0.18	0.89	0.17	0.52	0.54	0.89
	Upper Godavari	CADA A'nagar	0.88	0.91	0.87	0.96	1.00	0.91
	Wardha	UWPC Amravati	0.40	0.20	0.05	0.57	0.11	0.20
	Upeer Bhima & Remaining Bhima	PIC Pune	0.78	0.63	0.55	0.78	0.38	0.63
	Wardha	CIPC Chandrapur	0.34	0.43	0.41	0.36	0.38	0.43
	Remaining Bhima	CADA Solapur	0.70	0.77	0.53	0.28	0.06	0.77
	Upper Bhima	CADA Pune	0.95	0.93	0.85	0.97	0.60	0.93
	Upper Godavari	CADA Nashik	0.96	0.70	1.00	1.00	1.00	0.70
	Painganga	YIC Yavatmal	0.40	0.25	0.04	0.32	0.00	0.25
	Wardha	NIC Nagpur	0.47	0.33	0.04	0.52	0.05	0.33
Surplus	Middle Wainganga	CADA Nagpur	0.79	0.70	0.61	0.95	0.67	0.70
Abundant	Upper Krishna (W)	CADA Pune	0.73	0.55	0.28	0.61	0.26	0.55
	Lower Wainganga	CIPC Chandrapur	0.89	1.00	0.91	0.93	0.88	1.00
	Upper Krishna (W)	KIC Kolhapur	0.51	0.49	0.57	0.58	0.59	0.49
	North Konkan & Middle Konkan	TIC Thane	0.53	0.48	0.45	0.26	0.34	0.48


Appendix-XI
Medium projects
Equity Performance
Ratio
1.00
0.90
0.80
0.70
0.60
0.50
0.40
0.30
0.20
0.10
0.00
OIC Osmanabad
PIC Pune
CADA Solapur
NIC Nanded
NIPC Dhule
CADA Jalgaon
OIC Osmanabad
AIC A'bad
CADA Nagpur
BIPC Buldhana
CADA A'nagar
CADA A'bad
BIPC Parli
AIC Akola
CADA A'nagar
AIC A'bad
AIC Akola
YIC Yavatmal
CADA Jalgaon
CADA Nagpur
PIC Pune
OIC Osmanabad
NIPC Dhule
NIC Nanded
CIPC Chandrapur
CADA Solapur
CADA Nashik
CADA Nagpur
CIPC Chandrapur
CIPC Chandrapur
KIC Kolhapur
KIC Ratnagiri
TIC Thane
Highly Deficit
Deficit
Normal
Surplus
Abundant
FY Avg H
FY Avg M
FY Avg T
2003-04 H
2003-04 M
2003-04 T

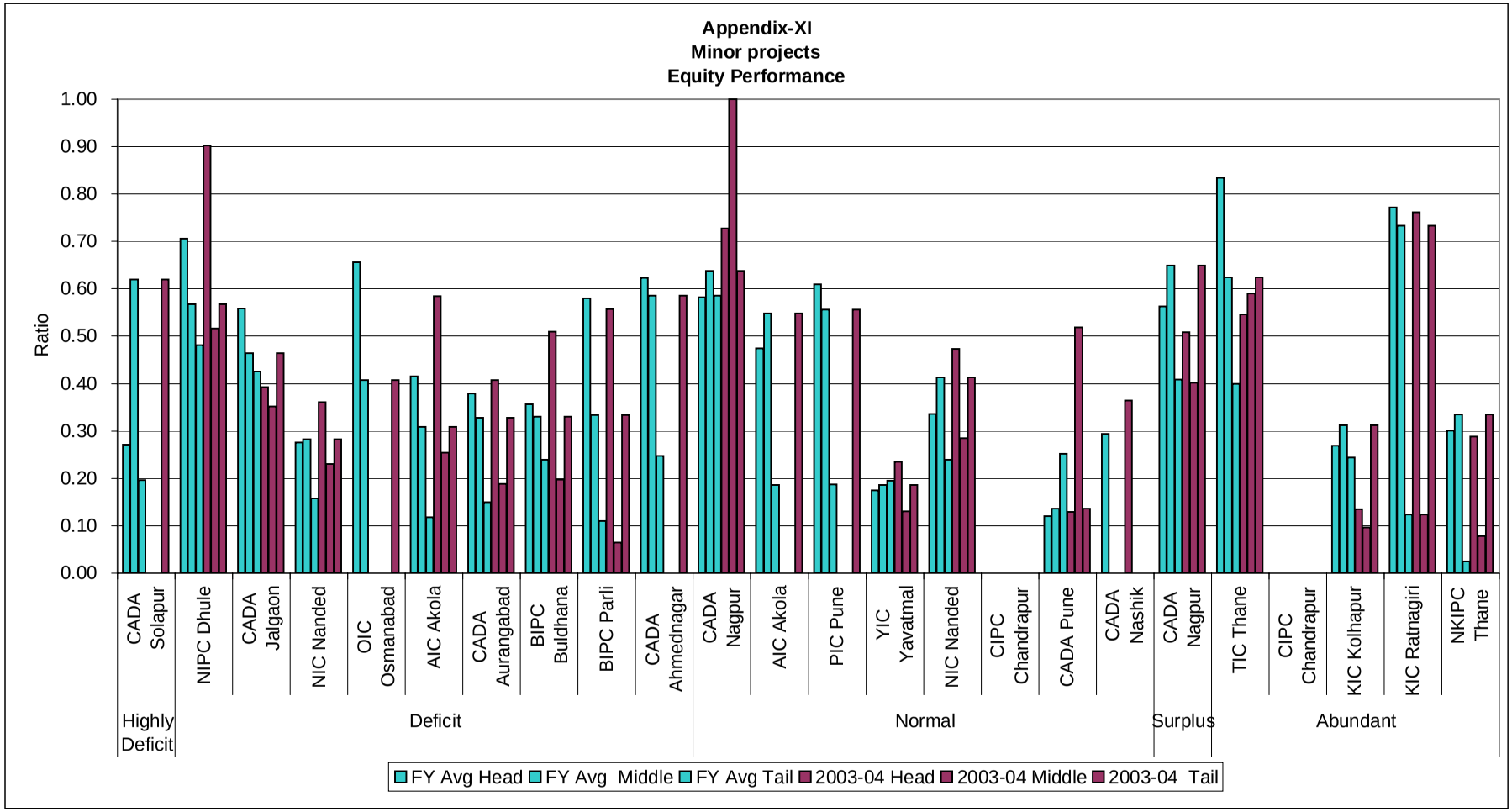
Appendix-XI

Medium projects

Equity Performance

Plan Group	Subbasin	Circle	FY Avg			2003-04		
			Head	Middle	Tail	Head	Middle	Tail
Highly Deficit	Sina-Bori-Benetura	OIC Osmanabad	0.38	0.29	0.14	0.01	0.00	0.29
	Upper Krishna (E) & Sina-Bori-Benetura	PIC Pune	0.36	0.23	0.22	0.01	0.00	0.23
	Sina-Bori-Benetura	CADA Solapur	0.32	0.12	0.05	0.00	0.00	0.12
Deficit	Lower Godavari & Manjra	NIC Nanded	0.37	0.43	0.15	0.55	0.27	0.43
	Girna	NIPC Dhule	0.14	0.24	0.11	0.13	0.05	0.24
	Girna	CADA Jalgaon	0.47	0.43	0.37	0.18	0.27	0.43
	Manjra	OIC Osmanabad	0.61	0.38	0.25	0.00	0.56	0.38
	Lower Godavari, Purna Dudhana & Girna	AIC A'bad	0.28	0.22	0.15	0.19	0.20	0.22
	Purna Tapi	CADA Nagpur	0.25	0.43	0.12	0.43	0.08	0.43
	Purna Tapi	BIPC Buldhana	0.28	0.15	0.10	0.37	0.02	0.15
	Manjra	CADA A'nagar	1.00	1.00	1.00	0.00	0.00	1.00
	Lower Godavari	CADA A'bad	0.18	0.19	0.19	0.00	0.00	0.19
	Lower Godavari & Manjra	BIPC Parli	0.42	0.32	0.08	0.29	0.03	0.32
	Purna Tapi	AIC Akola	0.29	0.24	0.13	0.18	0.06	0.24
Normal	Upper Godavari	CADA A'nagar	0.43	0.67	0.43	0.43	0.25	0.67
	Upper Godavari	AIC A'bad	0.15	0.16	0.09	0.00	0.00	0.16
	Painganga	AIC Akola	0.43	0.27	0.11	0.34	0.12	0.27
	Painganga & Wardha	YIC Yavatmal	0.85	0.46	0.05	0.58	0.00	0.46
	Panzara & Middle Tapi	CADA Jalgaon	0.45	0.37	0.24	0.65	0.33	0.37
	Wardha & Middle Wainganga	CADA Nagpur	0.40	0.06	0.06	1.00	0.00	0.06
	Upper Bhima & Remaining Bhima	PIC Pune	0.19	0.33	0.46	0.12	0.43	0.33
	Remaining Bhima	OIC Osmanabad	0.56	0.44	0.19	0.00	0.00	0.44
	Middle Tapi	NIPC Dhule	0.34	0.34	0.24	0.45	0.28	0.34
	Painganga	NIC Nanded	0.36	0.53	0.12	0.50	0.31	0.53
	Wardha	CIPC Chandrapur	0.00	0.00	0.00	0.00	0.00	0.00
	Remaining Bhima	CADA Solapur	0.40	0.14	0.14	0.00	0.00	0.14
	Upper Godavari	CADA Nashik	0.19	0.28	0.25	0.20	0.46	0.28
Surplus	Middle Wainganga	CADA Nagpur	0.68	0.67	0.50	0.79	0.54	0.67
	Middle Wainganga	CIPC Chandrapur	1.00	0.00	1.00	1.00	1.00	0.00
Abundant	Lower Wainganga	CIPC Chandrapur	0.00	0.00	0.00	0.00	0.00	0.00
	Upper Krishna (W)	KIC Kolhapur	0.29	0.30	0.48	0.32	0.62	0.30
	Vashisthi	KIC Ratnagiri	0.18	0.08	0.02	0.18	0.02	0.08
	North Konkan	TIC Thane	0.29	0.30	0.35	0.00	0.00	0.30

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

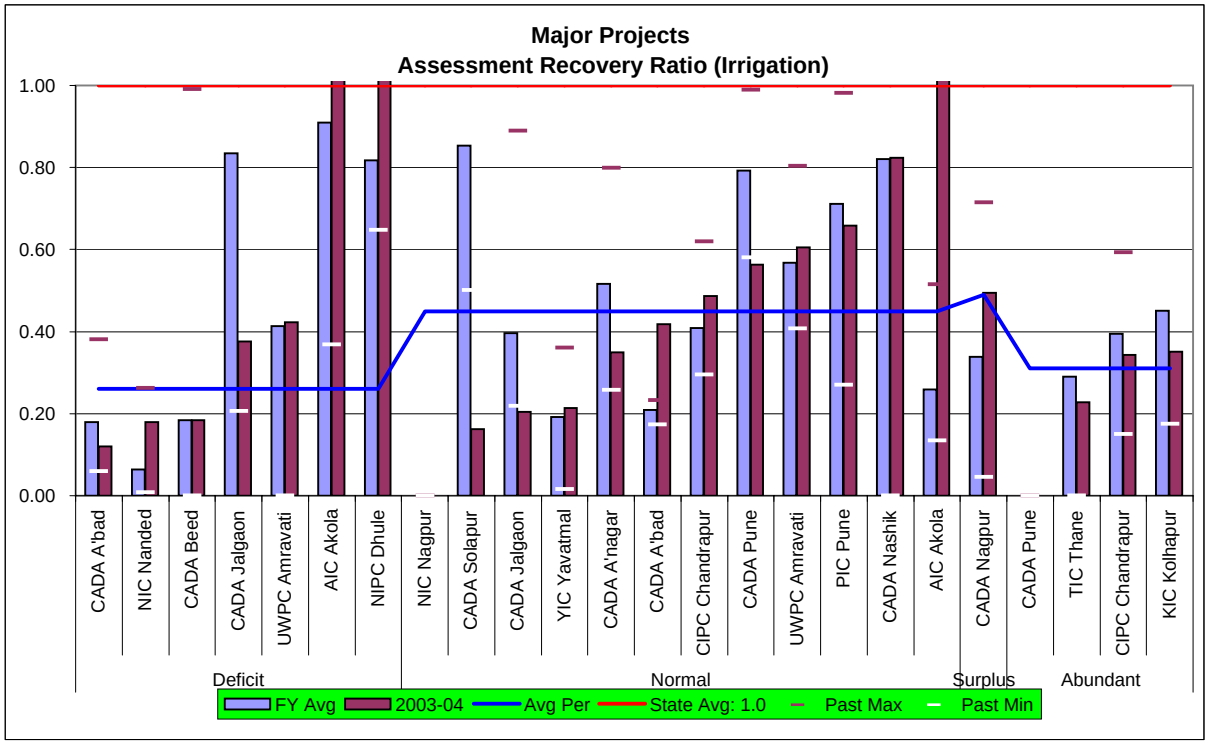

Appendix-XI
Minor projects
Equity Performance
Ratio
1.00
0.90
0.80
0.70
0.60
0.50
0.40
0.30
0.20
0.10
0.00
CADA Solapur
NIPC Dhule
CADA Jalgaon
NIC Nanded
OIC Osmanabad
AIC Akola
CADA Aurangabad
BIPC Buldhana
BIPC Parli
CADA Ahmednagar
CADA Nagpur
AIC Akola
PIC Pune
YIC Yavatmal
NIC Nanded
CIPC Chandrapur
CADA Pune
CADA Nashik
CADA Nagpur
TIC Thane
CIPC Chandrapur
KIC Kolhapur
KIC Ratnagiri
NKIPC Thane
Highly Deficit
Deficit
Normal
Surplus
Abundant
FY Avg Head
FY Avg Middle
FY Avg Tail
2003-04 Head
2003-04 Middle
2003-04 Tail

Appendix-XI

Minor Projects : Equity Performance

PlanGroup	Subbasin	Circle	FY Avg			2003-04		
			Head	Middle	Tail	Head	Middle	Tail
Highly Deficit	Sina-Bori-Benetura	CADA Solapur	0.27	0.62	0.20	0.00	0.00	0.62
Deficit	Girna	NIPC Dhule	0.71	0.57	0.48	0.90	0.52	0.57
	Girna	CADA Jalgaon	0.56	0.46	0.43	0.39	0.35	0.46
	Lower Godavari, Purna	NIC Nanded	0.28	0.28	0.16	0.36	0.23	0.28
	Dudhana & Manjra							
	Manjra	OIC Osmanabad	0.66	0.41	0.00	0.00	0.00	0.41
	Purna Dudhana & Purna Tapi	AIC Akola	0.42	0.31	0.12	0.58	0.25	0.31
	Lower Godavari	CADA Aurangabad	0.38	0.33	0.15	0.41	0.19	0.33
	Purna Dudhana & Purna Tapi	BIPC Buldhana	0.36	0.33	0.24	0.51	0.20	0.33
	Manjra	BIPC Parli	0.58	0.33	0.11	0.56	0.06	0.33
	Manjra	CADA Ahmednagar	0.62	0.59	0.25	0.00	0.00	0.59
Normal	Wardha	CADA Nagpur	0.58	0.64	0.59	0.73	1.00	0.64
	Painganga	AIC Akola	0.47	0.55	0.19	0.00	0.00	0.55
	Upper Bhima & Remaining Bhima	PIC Pune	0.61	0.56	0.19	0.00	0.00	0.56
	Painganga	YIC Yavatmal	0.17	0.19	0.19	0.24	0.13	0.19
	Remainganga Godavari & Painganga	NIC Nanded	0.34	0.41	0.24	0.47	0.28	0.41
	Wardha	CIPC Chandrapur	0.00	0.00	0.00	0.00	0.00	0.00
	Upper Bhima	CADA Pune	0.12	0.14	0.25	0.13	0.52	0.14
	Upper Godavari	CADA Nashik	0.29	0.00	0.00	0.36	0.00	0.00
Surplus	Middle Wainganga	CADA Nagpur	0.56	0.65	0.41	0.51	0.40	0.65
Abundant	North Konkan & Middle Konkan	TIC Thane	0.83	0.62	0.40	0.55	0.59	0.62
	Lower Wainganga	CIPC Chandrapur	0.00	0.00	0.00	0.00	0.00	0.00
	Upper Krishna (W)	KIC Kolhapur	0.27	0.31	0.24	0.14	0.10	0.31
	Vashisthi	KIC Ratnagiri	0.77	0.73	0.12	0.76	0.12	0.73
	North Konkan & Middle Konkan	NKIPC Thane	0.30	0.34	0.03	0.29	0.08	0.34

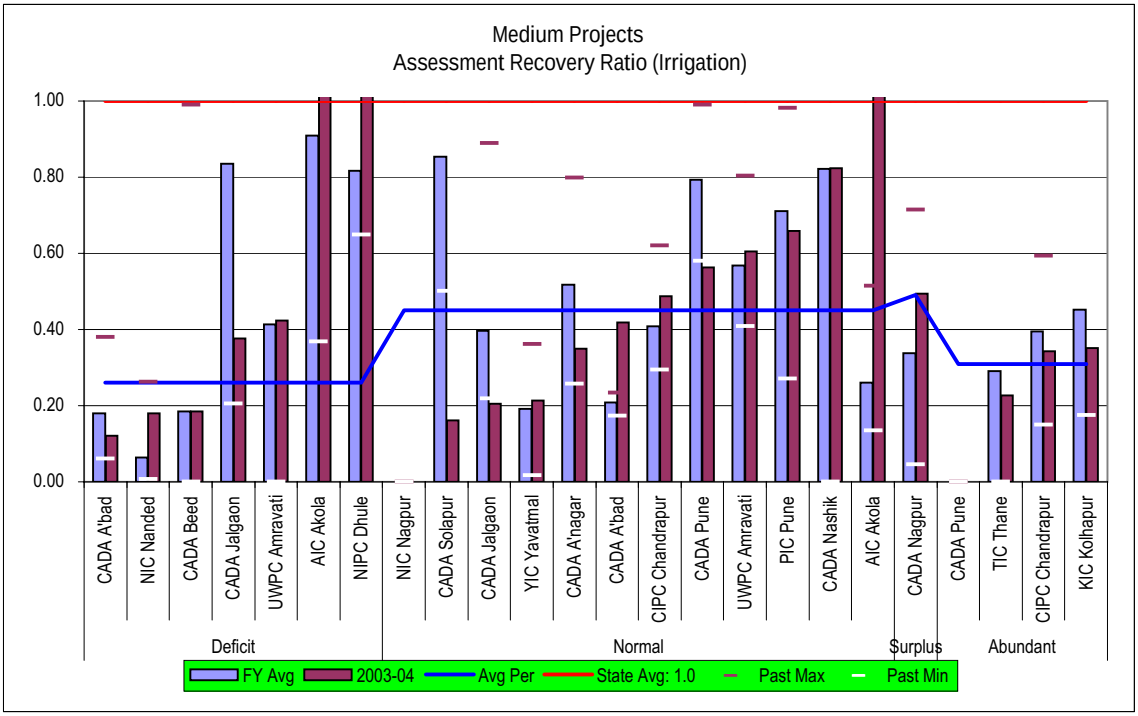
Appendix-XII-A (Irr.)



PlanGroup	Subbasin	Circle	FY Avg	2003-04	Past Max	Past Min	Avg Per
Deficit	Lower Godavari & Purna Dudhana	CADA A'bad	0.18	0.12	0.38	0.06	
	Lower Godavari & Manjra	NIC Nanded	0.06	0.18	0.26	0.01	
	Lower Godavari & Manjra	CADA Beed	0.18	0.18	0.99	0.00	0.26
	Purna Tapi & Girna	CADA Jalgaon	0.84	0.38	1.00	0.21	
	Purna Tapi	UWPC Amravati	0.41	0.42	1.00	0.00	
	Purna Tapi	AIC Akola	0.91	1.00	1.00	0.37	
	Girna	NIPC Dhule	0.82	1.00	1.00	0.65	
Normal	Wardha	NIC Nagpur	0.00	0.00	0.00	0.00	
	Remaining Bhima	CADA Solapur	0.85	0.16	1.00	0.50	
	Middle Tapi	CADA Jalgaon	0.40	0.20	0.89	0.22	
	Painganga	YIC Yavatmal	0.19	0.21	0.36	0.02	
	Upper Godavari	CADA A'nagar	0.52	0.35	0.80	0.26	
	Painganga	CADA A'bad	0.21	0.42	0.23	0.17	
	Wardha	CIPC Chandrapur	0.41	0.49	0.62	0.29	0.45
	Upper Bhima	CADA Pune	0.79	0.56	0.99	0.58	
	Wardha	UWPC Amravati	0.57	0.61	0.80	0.41	
	Upper Bhima & Remaining Bhima	PIC Pune	0.71	0.66	0.98	0.27	
	Upper Godavari	CADA Nashik	0.82	0.82	1.00	0.00	
	Painganga	AIC Akola	0.26	1.00	0.51	0.13	
Surplus	Middle Wainganga	CADA Nagpur	0.34	0.49	0.71	0.05	0.49
Abundant	Upper Krishna (W)	CADA Pune	0.00	0.00	0.00	0.00	
	North Konkan & Middle Konkan	TIC Thane	0.29	0.23	1.00	0.00	0.31
	Lower Wainganga	CIPC Chandrapur	0.39	0.34	0.59	0.15	
	Upper Krishna (W)	KIC Kolhapur	0.45	0.35	1.00	0.17	

Note: Average performance doesnot include figures in blue.

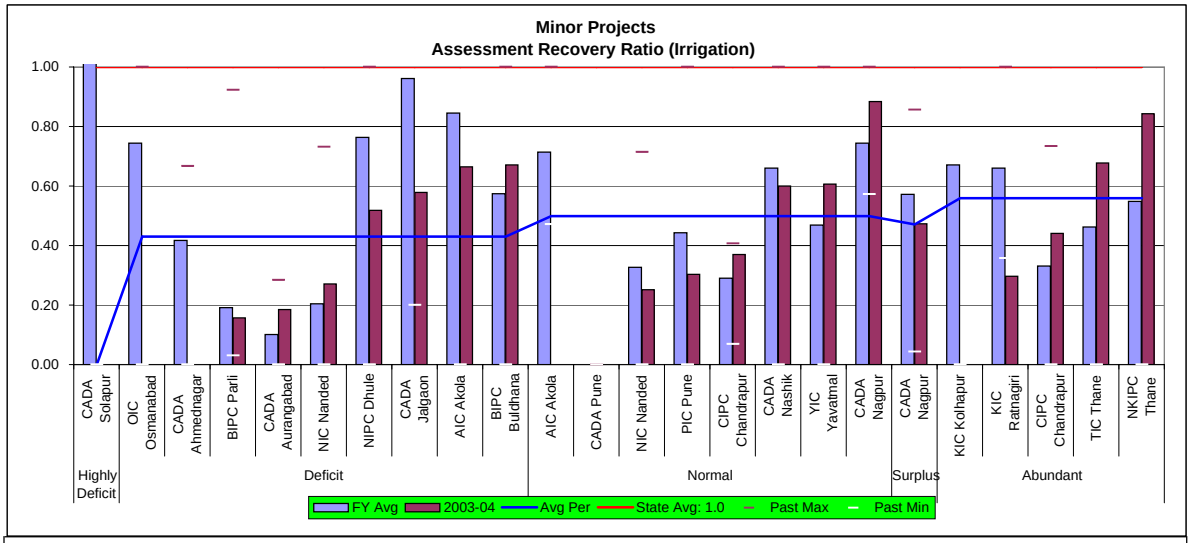
Appendix-XII-A



PlanGroup	Subbasin	Circle	FY Avg	2003-04	Past Max	Past Min	Avg Per
Deficit	Lower Godavari & Purna Dudhana	CADA A'bad	0.18	0.12	0.38	0.06	
	Lower Godavari & Manjra	NIC Nanded	0.06	0.18	0.26	0.01	
	Lower Godavari & Manjra	CADA Beed	0.18	0.18	0.99	0.00	0.26
	Purna Tapi & Girna	CADA Jalgaon	0.84	0.38	1.00	0.21	
	Purna Tapi	UWPC Amravati	0.41	0.42	1.00	0.00	
	Purna Tapi	AIC Akola	0.91	1.00	1.00	0.37	
	Girna	NIPC Dhule	0.82	1.00	1.00	0.65	
Normal	Wardha	NIC Nagpur	0.00	0.00	0.00	0.00	
	Remaining Bhima	CADA Solapur	0.85	0.16	1.00	0.50	
	Middle Tapi	CADA Jalgaon	0.40	0.20	0.89	0.22	
	Painganga	YIC Yavatmal	0.19	0.21	0.36	0.02	
	Upper Godavari	CADA A'nagar	0.52	0.35	0.80	0.26	
	Painganga	CADA A'bad	0.21	0.42	0.23	0.17	
	Wardha	CIPC Chandrapur	0.41	0.49	0.62	0.29	0.45
	Upper Bhima	CADA Pune	0.79	0.56	0.99	0.58	
	Wardha	UWPC Amravati	0.57	0.61	0.80	0.41	
	Upper Bhima & Remaining Bhima	PIC Pune	0.71	0.66	0.98	0.27	
	Upper Godavari	CADA Nashik	0.82	0.82	1.00	0.00	
	Painganga	AIC Akola	0.26	1.00	0.51	0.13	
Surplus	Middle Wainganga	CADA Nagpur	0.34	0.49	0.71	0.05	0.49
Abundant	Upper Krishna (W)	CADA Pune	0.00	0.00	0.00	0.00	
	North Konkan & Middle Konkan	TIC Thane	0.29	0.23	1.00	0.00	0.31
	Lower Wainganga	CIPC Chandrapur	0.39	0.34	0.59	0.15	
	Upper Krishna (W)	KIC Kolhapur	0.45	0.35	1.00	0.17	

Notes: 1) Figures in red indicate values exceeding range of graph.
2) Average performance doesnot include figures in blue.

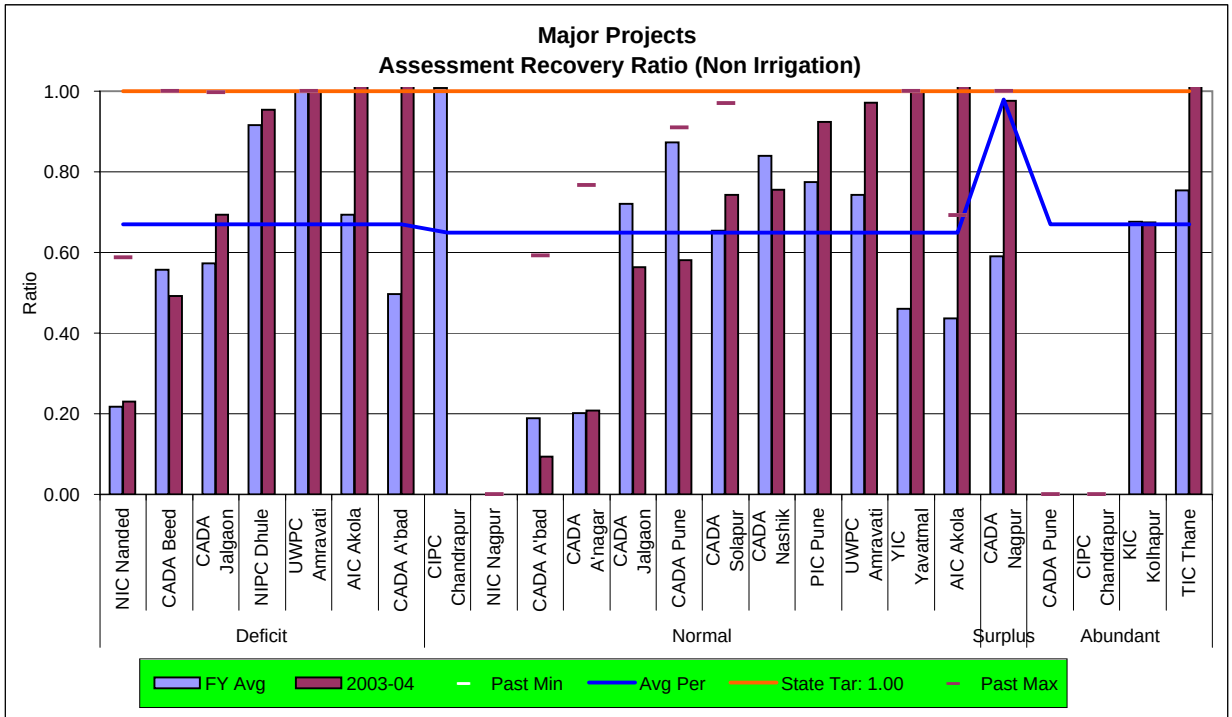
Appendix XII A



PlanGroup	SB No.	Circle	FY Avg	2003-04	Past Max	Past Min	Avg Per
Highly Deficit	Sina-Bori-Benetura	CADA Solapur	1.00	0.00	1.00	0.00	0.00
Deficit	Manjra	OIC Osmanabad	0.74	0.00	1.00	0.00	
	Manjra	CADA Ahmednagar	0.42	0.00	0.67	0.00	
	Manjra	BIPC Parli	0.19	0.16	0.92	0.03	
	Lower Godavari	CADA Aurangabad	0.10	0.19	0.28	0.00	
	Lower Godavari,Purna Dudhana & Manjra	NIC Nanded	0.20	0.27	0.73	0.00	
	Girna	NIPC Dhule	0.76	0.52	1.00	0.00	0.43
	Girna	CADA Jalgaon	0.96	0.58	1.00	0.20	
	Purna Dudhana & Purna Tapi	AIC Akola	0.84	0.66	1.00	0.00	
	Purna Dudhana & Purna Tapi	BIPC Buldhana	0.57	0.67	1.00	0.00	
Normal	Painganga	AIC Akola	0.71	0.00	1.00	0.47	
	Upper Bhima	CADA Pune	0.00	0.00	0.00	0.00	
	Remaining Godavari & Painganga	NIC Nanded	0.33	0.25	0.71	0.00	
	Upper Bhima & remaining Bhima	PIC Pune	0.44	0.30	1.00	0.00	0.50
	Wardha	CIPC Chandrapur	0.29	0.37	0.41	0.07	
	Upper Godavari	CADA Nashik	0.66	0.60	1.00	0.00	
	Painganga	YIC Yavatmal	0.47	0.61	1.00	0.00	
	Wardha	CADA Nagpur	0.74	0.88	1.00	0.57	
Surplus	Middle Wainganga	CADA Nagpur	0.57	0.47	0.86	0.04	0.47
Abundant	Upper Krishna (W)	KIC Kolhapur	0.67	0.00	1.00	0.00	
	Vashisthi	KIC Ratnagiri	0.66	0.30	1.00	0.36	
	Lower Wainganga	CIPC Chandrapur	0.33	0.44	0.73	0.00	
	North Konkan & Middle Konkan	TIC Thane	0.46	0.68	1.00	0.00	0.56
	North Konkan & Middle Konkan	NKIPC Thane	0.55	0.84	1.00	0.00	

Note: Average performance doesnot include figures in blue.

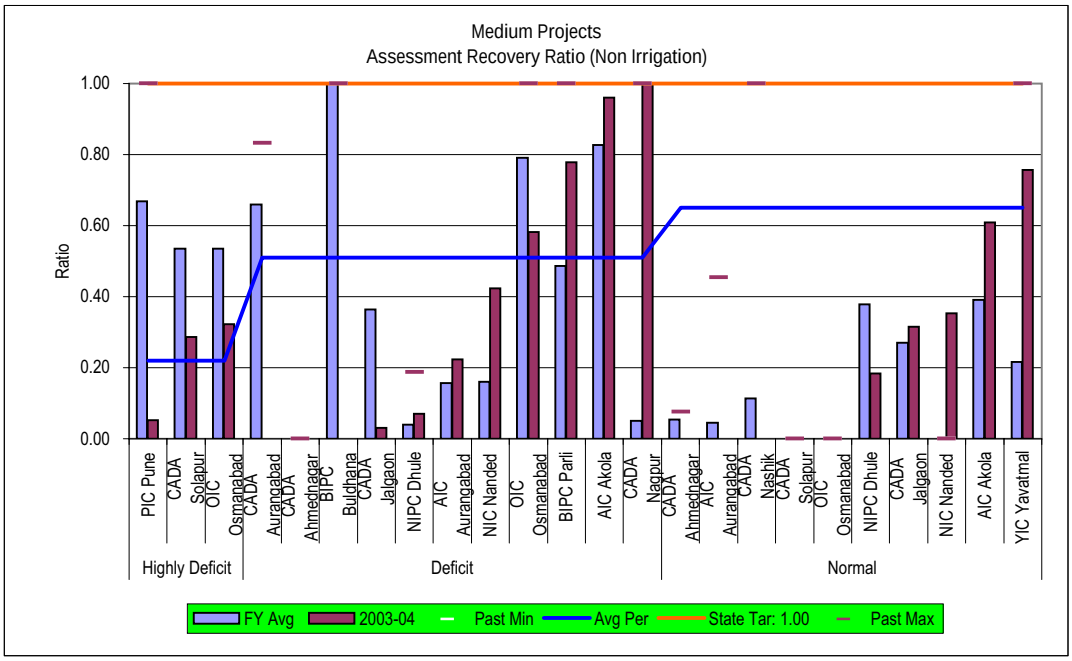
Appendix-XII=B



PlanGroup	Subbasin	Circle	FY Avg	2003-04	Past Max	Past Min	Avg Per
Deficit	Lower Godavari & Manjra	NIC Nanded	0.22	0.23	0.59	0.59	
	Lower Godavari & Manjra	CADA Beed	0.56	0.49	1.00	1.00	
	Purna Tapi & Girna	CADA Jalgaon	0.57	0.69	1.00	1.00	0.67
	Girna	NIPC Dhule	0.92	0.95	1.00	1.00	
	Purna Tapi	UWPC Amravati	1.00	1.00	1.00	1.00	
	Purna Tapi	AIC Akola	0.69	1.00	1.00	1.00	
	Lower Godavari & Purna Dudhana	CADA A'bad	0.50	1.00	1.00	1.00	
Normal	Waradha	CIPC Chandrapur	1.00	0.00	1.00	1.00	
	Waradha	NIC Nagpur	0.00	0.00	0.00	0.00	
	Painganga	CADA A'bad	0.19	0.09	0.59	0.59	
	Upper Godavari	CADA A'nagar	0.20	0.21	0.77	0.77	
	Middle Tapi	CADA Jalgaon	0.72	0.56	1.00	1.00	
	Upper Bhima & Remaining Bhima	CADA Pune	0.87	0.58	0.91	0.91	
	Remaining Bhima	CADA Solapur	0.65	0.74	0.97	0.97	0.65
	Upper Godavari	CADA Nashik	0.84	0.76	1.00	1.00	
	Upper Bhima & Remaining Bhima	PIC Pune	0.77	0.92	1.00	1.00	
	Waradha	UWPC Amravati	0.74	0.97	1.00	1.00	
	Painganga	YIC Yavatmal	0.46	1.00	1.00	1.00	
	Painganga	AIC Akola	0.44	1.00	0.69	0.69	
Surplus	Middle Wainganga	CADA Nagpur	0.59	0.98	1.00	1.00	0.98
Abundant	Upper Krishna (W)	CADA Pune	0.00	0.00	0.00	0.00	
	Lower Wainganga	CIPC Chandrapur	0.00	0.00	0.00	0.00	
	Upper Krishna (W)	KIC Kolhapur	0.68	0.67	1.00	1.00	0.67
	North Konkan & Middle Konkan	TIC Thane	0.75	1.00	1.00	1.00	

Note: Average performance doesnot include figures in blue.

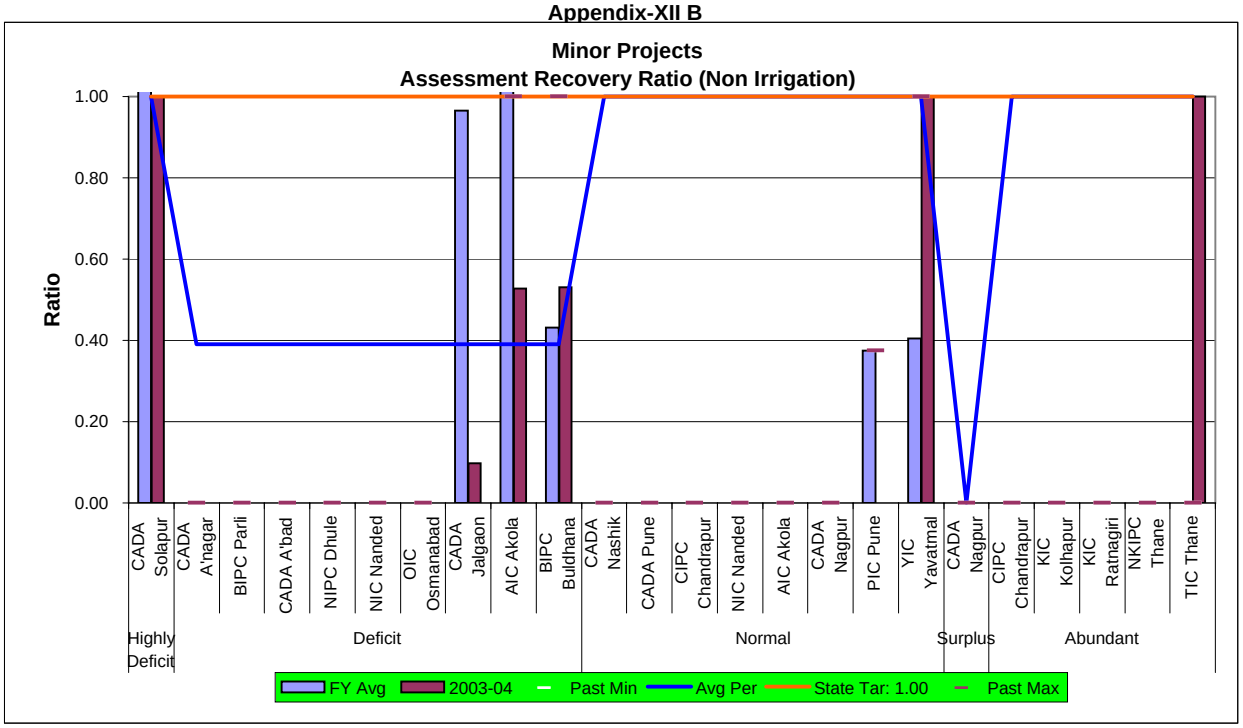
Appendix-XII-B



PlanGroup	Subbasin	Circle	FY Avg	2003-04	Past Max	Past Min	Avg Per
Highly Deficit	Upper Krishna (E) & Sina-Bori-Benetura	PIC Pune	0.67	0.05	1.00	1.00	0.22
	Sina-Bori-Benetura	CADA Solapur	0.54	0.29	1.00	1.00	
	Sina-Bori-Benetura	OIC Osmanabad	0.53	0.32	1.00	1.00	
Deficit	Lower Godavari	CADA Aurangabad	0.66	0.00	0.83	0.83	0.51
	Manjra	CADA Ahmednagar	0.00	0.00	0.00	0.00	
	Purna Tapi	BIPC Buldhana	1.00	0.00	1.00	1.00	
	Girna	CADA Jalgaon	0.36	0.03	1.00	1.00	
	Girna	NIPC Dhule	0.04	0.07	0.19	0.19	
	Lower Godavari, Purna Dudhana & Girna	AIC Aurangabad	0.16	0.22	1.00	1.00	
	Lower Godavari & Manjra	NIC Nanded	0.16	0.42	1.00	1.00	
	Manjra	OIC Osmanabad	0.79	0.58	1.00	1.00	
	Lower Godavari & Manjra	BIPC Parli	0.49	0.78	1.00	1.00	
	Purna Tapi	AIC Akola	0.83	0.96	1.00	1.00	
	Purna Tapi	CADA Nagpur	0.05	1.00	1.00	1.00	
Normal	Upper Godavari	CADA Ahmednagar	0.05	0.00	0.08	0.08	0.65
	Upper Godavari	AIC Aurangabad	0.04	0.00	0.45	0.45	
	Upper Godavari	CADA Nashik	0.11	0.00	1.00	1.00	
	Remaining Bhima	CADA Solapur	0.00	0.00	0.00	0.00	
	Remaining Bhima	OIC Osmanabad	0.00	0.00	0.00	0.00	
	Middle Tapi	NIPC Dhule	0.38	0.18	1.00	1.00	
	Panzara & Middle Tapi	CADA Jalgaon	0.27	0.32	1.00	1.00	
	Painganga	NIC Nanded	0.00	0.35	0.00	0.00	
	Painganga	AIC Akola	0.39	0.61	1.00	1.00	
	Painganga & Wardha	YIC Yavatmal	0.22	0.76	1.00	1.00	
	Wardha	CIPC Chandrapur	1.00	0.96	1.00	1.00	
	Upper Bhima & Remaining Bhima	PIC Pune	1.00	0.99	1.00	1.00	
	Wardha & Lower Wainganga	CADA Nagpur	0.70	1.00	1.00	1.00	
Surplus	Middle Wainganga	CIPC Chandrapur	0.00	0.00	0.00	0.00	1.00
	Middle Wainganga	CADA Nagpur	0.86	1.00	1.00	1.00	
Abundant	Lower Wainganga	CIPC Chandrapur	0.00	0.00	0.00	0.00	0.57
	Vaishisti	KIC Ratnagiri	0.00	0.00	0.00	0.00	
	North Konkan	TIC Thane	0.00	0.00	0.00	0.00	
	Upper Krishna (E)	KIC Kolhapur	0.67	0.57	0.94	0.94	

Notes: 1) Figures in red indicate values exceeding range of graph.
2) Average performance doesnot include figures in blue.

Appendix-XII B



PlanGroup	Subbasin	Circle	FY Avg	2003-04	Past Max	Past Min	Avg Per
Highly Deficit	Sina-Bori-Benetura	CADA Solapur	1.00	1.00	1.00	1.00	1.00
Deficit	Manjra	CADA A'nagar	0.00	0.00	0.00	0.00	
	Manjra	BIPC Parli	0.00	0.00	0.00	0.00	
	Lower Godavari	CADA A'bad	0.00	0.00	0.00	0.00	
	Girna	NIPC Dhule	0.00	0.00	0.00	0.00	
	Lower Godavari, Purna Dudhana & Manjra	NIC Nanded	0.00	0.00	0.00	0.00	
	Manjra	OIC Osmanabad	0.00	0.00	0.00	0.00	0.39
	Girna	CADA Jalgaon	0.97	0.10	1.00	1.00	
	Purna Dudhana & Purna Tapi	AIC Akola	1.00	0.53	1.00	1.00	
	Purna Dudhana & Purna Tapi	BIPC Buldhana	0.43	0.53	1.00	1.00	
Normal	Upper Godavari	CADA Nashik	0.00	0.00	0.00	0.00	
	Upper Bhima	CADA Pune	0.00	0.00	0.00	0.00	
	Wardha	CIPC Chandrapur	0.00	0.00	0.00	0.00	
	Remaining Godavari & Painanga	NIC Nanded	0.00	0.00	0.00	0.00	
	Painganga	AIC Akola	0.00	0.00	0.00	0.00	1.00
	Wardha	CADA Nagpur	0.00	0.00	0.00	0.00	
	Upper Bhima & Remaining Bhima	PIC Pune	0.38	0.00	0.38	0.38	
	Painganga	YIC Yavatmal	0.41	1.00	1.00	1.00	
Surplus	Middle Wainganga	CADA Nagpur	0.00	0.00	0.00	0.00	0.00
Abundant	Lower Wainganga	CIPC Chandrapur	0.00	0.00	0.00	0.00	
	Upper Krishna (W)	KIC Kolhapur	0.00	0.00	0.00	0.00	
	Vashisthi	KIC Ratnagiri	0.00	0.00	0.00	0.00	
	North Konkan & Middle Konkan	NKIPC Thane	0.00	0.00	0.00	0.00	1.00
	North Konkan & Middle Konkan	TIC Thane	0.00	1.00	0.00	0.00	

Note: Average performance doesnot include figures in blue.

Appendix-XIII

Overview of Projects selected for Benchmarking (Major Projects)

SB No	Name of Circle	Name of Project	PlanGroup	Avg. Annual Rainfall mm	Live Storage Mm³	Water for Irrigation use Mm³	Water for Non irrigation use Mm³	Max.Live Storage observed during 2003-04	Year of Commencement of Irrigation	Culturable Command Area Ha	Irrigable command area Ha	Total No. of farmers	No. of villages in benefit zone	Avg. farm size Ha	Main crops	Area covered under WUA	Remarks
1	CADA Nashik	Bhandardara	Normal	3175	304.10	419.00	0	304.10	1926	63740	23077	72805	110	4 to 5	Sorghum, Wheat, Grass, Maize, Sunflower, Sugarcane	2074	
1	CADA Nashik	Mula	Normal	500	608.45	540.27	87.90	266.27	1972	138792	82920	86917	160	4 to 5	-do-	26498	
1	CADA Nashik	Ozerkhed	Normal	746	60.32	31.59	2.19		1985	14856	10400	10195	35	0.8	Wheat, Sorghum, Gram	4228	More evaporation losses about 50%.
1	CADA Nashik	Palkhed	Normal	661	187.47	82.90	46.85	0.00	1976	60704	43154	42425	144	0.8	Gram, Sorghum	27660	
1	CADA Nashik	Waghad	Normal	964	72.23	36.53	3.50		1981	9642	6750	7225	23	0.6	Paddy, Onion, Vegetables, Groundnut, Bajri, Wheat, Gram, Sorghum	6519	
1	CADA Nashik	Darna	Normal	550	202.40	135.73	66.67		1918	88822	33170	17958	146	2	Sugarcane, Sorghum, Bajri, Wheat, Gram, Fruits	5064	
1	CADA Nashik	Gangapur	Normal	500	203.85	86.78	117.07		1954	21900	15960	11630	92	1.3	-do-	2367	
1	CADA Nashik	Kadwa	Normal	533	52.90	61.96	8.46	52.91	1997	15523	10117	21685	42	0.47	-do-	190	
2	CADA Beed	Jayakwadi (PRBC)	Deficit	700		331.39	29.68	0.00	1976-77	53910	41682	34272	99	1.57	Cotton,Wheat,Sorghum, Sugarcane	2637	
2	CADA Beed	Majalgaon	Deficit	840	312.00	680.28	46.88	114.50	1989-90	64295	54737		132	1 to 2	Wheat, Sorghum, Cotton, Sugarcane	4362	
2	NIC NANDED	Vishnupuri	Deficit	910	81.37	275.18	54.37		1990	37785	28340	18335	46	2.06	-do-	605	
3	NIC NANDED	Purna	Deficit	685	809.77	732.33	68.67		1968-69	78485	57988	38300	232	1 to 2	Cottton, Wheat, Sorghum	2891	
4	CADA Beed	Manjra	Deficit	685	173.32	185.64	85.67	0.00	1980-81	23690	18223	8954	80	2.03	-do-	1598	
4	CADA Beed	Lower Terna	Deficit	710	113.95	62.50	21.05	0.00	1997-98	14513	11610	10554	63	1 to 1.5	Sorghum, Wheat, Sunflower, Groundnut, Gram	ND	
4	NIC NANDED	Manar	Deficit	850	128.68	198.06	5.94		1968	27745	23310	17845	96	1.55	Wheat, Gram, Sugarcane, Cotton, Groundnut, Sorghum	2928	More post monsoon yield is available
4	UWPC Amravati	Wan	Deficit	891	81.96	78.57	20.08	81.96	1998-99	22525	15100	9044	54	1.5	-do-	224	
6	NIC NANDED	Upper Penganga	Normal	825	964.09	782.69	15.16		1984-85	139438	125495	44618	356	1 to 2	Cottton, Wheat, Sorghum,	ND	
6	YIC Yevatmal	Arunawati	Normal	913	169.67	121.65	15.62	37.92	1995	24135	20515	9000	73	2 to 3	Cotton, Wheat, Sugarcane	4444	
6	AIC Akola	Pus	Normal	945	91.26	100.35	19.06		1972	13678	8215	8442	40	1.5 to 3	Sugarcane, Sorghum, Wheat, Gram, Cotton,	1208	
7	PIC Pune	Bhatghar Dam N.L.B.C.	Normal	1953	666.00	386.58	33.92	639.25	1893	68767	60656	45840	87	1 to 2	Sorghum, Wheat, Bajri, Sugarcane	1315	245.5 Mcum balance storage
7	UWPC Amravati	Upper Wardha	Normal	840	614.79	302.78	99.72	614.80	1994-95	83300	75000	45400	279	1.5	Cotton, Wheat, Hy. Jowar, Chilli, Groundnut	ND	
7	CIPC Chandrapur	Bor	Normal	1327	127.42	109.29	6.35	81.64	1967	24055	13360	8178	77	1.5 to 2	Cotton, Wheat	ND	
7	NIC Nagpur	Lower Wunna	Normal	1330	189.18	148.00	29	189.18	1991	21591	19500	17034	109	2.5	Cotton, Wheat, Gram, Soybean, Sugarcane	412	
8	CADA Nagpur	Bagh Sirpur	Surplus	1325		0.00	0	269.00	1971	0	0	0	0	1 to 2	-do-	ND	Three storages namely Sirpur (live storage 192.55 Mcum) Kalisarar
8	CADA Nagpur	Pench	Surplus	1137.62	180.00	689.00	243	1303.00	1976	126913	101200	46000	407	1 to 2	Paddy, Cotton, Chilly, Wheat, Gram, Sunflower,	ND	Upstream storages are Khindsi (103 Mcum) and
9	CIPC Chandrapur	Asolamendha	Abundant	1146.55	56.37	52.00	0	46.34	1918	37945	9919	12221	67	1.5 to 2	Paddy	ND	
9	CIPC Chandrapur	Dina	Abundant	1314.7	55.94	55.94	0	55.94	1974	12494	7826	9090	66	1.5 to 2	-do-	ND	
10	PIC Pune	N.R.B.C. (Veer Dam)	Deficit	1067	266.44	860.99	0	86.64	1938	181266	65506	38500	214	1.7	Sugarcane, Sorghum, Bajri, Wheat, Other Perenials	323	223% more use

Appendix-XIII

Overview of Projects selected for Benchmarking (Major Projects)

SB No	Name of Circle	Name of Project	PlanGroup	Avg. Annual Rainfall mm	Live Storage Mm^3	Water for Irrigation use Mm^3	Water for Non irrigation use Mm^3	Max.Live Storage observed during 2003-04	Year of Commencement of Irrigation	Culturable Command Area Ha	Irrigable command area Ha	Total No. of farmers	No. of villages in benefit zone	Avg. farm size Ha	Main crops	Area covered under WUA	Remarks
10	CADA Jalgaon	Chankapur	Deficit	1067	76.85	146.59	0		1973	19173	14042	14000	48	0.5	Bajri, Two seasonals, Paddy, Sorghum, Groundnut, Wheat, Gram	ND	More Irrigation in Kharif and regeneration of flow in river due to downstreem bandharas
10	AIC Akola	Katepurna	Deficit	950	86.35	49.45	32.65		1972	11187	8325	5808	30	1.5 to 2	Wheat, Peas, Cotton, Sunflower.	7865	
10	AIC Akola	Nalganga	Deficit	737	69.32	53.21	6.51		1963	9165	8604	8367	31	1 to 2	Gram, Wheat, Cotton	5692	
11	CADA Jalgaon	Girna	Deficit	743	523.55	549.66	0	217.00	1962-63	79293	69350	31500	195	3	Sugarcane, Banana, Cotton, Wheat, Sorghum	116	
13	CADA Jalgaon	Hatnur	Normal	743	255.00	500.12	90.53	255.00	1983	47360	37838	16120	82	1.2	Sugarcane, Banana, Groundnut	ND	132 % more use. Sizeable post monsoon flow.
15	CADA Pune	Krishna	Abundant	872	602.73	602.73	0		1978-85	81400	74000	44899	146	1 to 2	Sugarcane, Sorghum,	24298	
15	KIC Kolhapur	Radhanagari	Abundant	3638	219.97	203.87	24.35	219.97	1955	35422	26560	17350	91	0.5 to 1.5	Sugercane, Paddy, Wheat, Vegetables	ND	
15	KIC Kolhapur	Tulashi	Abundant	1870	89.31	63.43	42.50	91.92	1978	5711	4720	2500	23	0.5 to 2	-do-	ND	
15	KIC Kolhapur	Warna	Abundant	2092	779.35	578.05	6.46	779.35	1986-87	123463	96919	25910	332	0.8	-do-	ND	194.84 Mcum balance storage
15	KIC Kolhapur	Dudhganga	Abundant	2636	679.11	622.11	57	675.03	1993-94	46976	38388	-	125	1 to 2	Sugarcane, Paddy, Wheat	ND	
17	CADA Pune	Kukadi	Normal	790	864.64	951.29	0	615.16	1978	224699	156278	390700	269	0.8 to 1	Wheat, Sorghum, Bajri, Vegetables, Sugarcane, Groundnut, Gram	25558	
17	CADA Pune	Ghod	Normal	515	154.80	202.86	2.54	68.22	1965	41460	20500	25238	54	1	Sugarcane, Sorghum, Bajri, Wheat, Grain	ND	
17	PIC Pune	Khadakwasla	Normal	911	712.00	602.55	204	646.74	1970	83302	62146	31300	96	0.5 to 5	Sorghum, Bajri, Maize, Wheat, Sugarcane	336	94.55 Mcum balance storage
17	PIC Pune	Pawana	Normal	2210	274.00	96.50	168.32	0.00	1975	7468	6365	2950	30	0.5 to 2.5	Paddy, Sorghum, Bajri, Maize, Wheat, Sugarcane	ND	
18	CADA Solapur	Bhima	Normal	500	1517.20	1444.70	116.43		1977	198035	182683	101564	384	1 to 2.5	Sorghum, Wheat, Groundnut, Sugarcane	20095	
19	CADA Aurangaba	Jayakwadi (PLBC)	Highly Deficit	755	2171.00	1064.96	329.04	400.07	1975-76	183560	141640	110129	355	1.5 to 2	Cottton, Wheat, Sorghum, Sunflower	10574	
19	CADA Nagpur	Itiadoh	Highly Deficit	1336	318.86	412.04	0	234.00	1971	22752	17500	17429	100	1 to 2	Paddy	ND	Project designed for 50% dependability and area under Irrigation in Kharif (Paddy) is more.
21	TIC, Thane	Surya	Abundant	2286	176.48	145.42	31.06	176.48	1981-82	30547	14696	6810	64	0.25	Paddy	ND	
21	TIC, Thane	Bhatsa	Abundant	2589	942.10	511.86	389.03	711.86	1985-86	29378	23000	59405	149	0.39	-do-	ND	
21	TIC, Thane	Rajanala	Abundant	3461	32.000	32.00	0.00		1958-59	3050	2542	3307	35	0.20	Paddy	400	
22	TIC, Thane	Kal	Abundant	3020	211.12	156.41	54.70		1973-74	9558	7965	10122	127	0.20	-do-	ND	

Overview of Projects selected for Benchmarking (Medium Projects)

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1	CADA Solapur	Chandani	Normal	770	18.29	20.59	3.11		1966	2891	2024	10.00	2 to 3	Sorghum, Sunflower, Wheat, Pulses	344
1	CADA Solapur	Sakat	Normal	770	13.48	15.17	0.00		1994	3140	2355	9.00	2 to 3	-do-	0
1	CADA Solapur	Kurnoor	Normal	770	32.28	32.18	4.81		1968	6414	3644	9.00	2 to 3	Groundnut, Sugarcane, Sorghum, Sunflower, Wheat	270
1	CADA Solapur	Khandala	Normal	770	5.24	5.24	0.00		1974	1328	830	2.00	2 to 3	-do-	0
1	CADA Solapur	Kada	Normal	589	8.56	8.38	0.18		1970	1804	12214	5.00	1 to 1.5	Soghum, Wheat, Groundnut, Sugarcane, Maize, Sunflower	0
1	CADA Solapur	Mehakari	Normal	589	12.98	12.98	0.00		1966	5007	4048	8.00	1 to 1.5	Soghum, Wheat, Groundnut, Sugarcane, Maize, Sunflower	0
1	CADA Solapur	Kambli	Normal	589	3.1	3.10	0.00		1958	1047	972	5.00	1 to 1.5	Soghum, Wheat, Groundnut, Sugarcane, Maize, Sunflower	0
2	KIC Kolhapur	Chikotra	Deficit	1074	43.08	43.05	0.00		2001	6833	5630	27	1 to 2	Sugercane, Paddy, Wheat, Vegetables	0
2	KIC Kolhapur	Patgaon	Deficit	3486	104.77	78.58	26.19		1996	10000	8100	44	1 to 2	Sugercane, Paddy, Wheat	No Data
2	PIC Pune	Vadiwale	Deficit	2845	30.39	22.18	0	34.51	1990	5564	5000	26	0.15 to 1	Paddy, Wheat	No Data
2	PIC Pune	Khairy	Deficit	682	13.74	17.83	0	0.59	1989	2718	2318	14	2	Sorghum, Bajri, Wheat, Groundnut	692
2	CADA Jalgaon	Tondapur	Deficit	763	4.63	4.77	0.85	4.64	1998	1597	1060	2	0.8	-do-	No Data
3	CADA Solapur	Ekrukh	Deficit	500	61.16	43.21	15.95		1871	6858	2610	11	1 to 1.5	Sorghum, Wheat, Vegetables, Sugarcane	0
3	CADA Solapur	Jakapur	Deficit	770	7.43	7.43	0.00		1979	1600	1584	4.00	2 to 3	-do-	0
3	CADA Solapur	Turori	Deficit	770	5.73	5.73	1.70		1984	900	830	8.00	2 to 3	-do-	0
3	CADA Solapur	Khendeshwar	Deficit	685	7.85	11.28	0.00		1981	1710	1471	10.00	1 to 3	Groundnut, Sorghum, Sunflower, Wheat	0
3	CADA Solapur	Ramganga	Deficit	685	5.34	6.50	0.00		1977	1017	963	7.00	1 to 3	Groundnut, Sorghum, Sunflower, Wheat	0
3	CADA Solapur	Banganga	Deficit	685	4.93	6.35	0.59		1975	964	906	5.00	1 to 3	Groundnut, Sorghum, Sunflower, Wheat	0

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3	CADA Solapur	Talwar	Deficit	589	3.23	3.23	0.00		1960	760	668	4.00	0.5 to 1.5	Soghum, Wheat, Groundnut, Sugarcane, Maize, Sunflower	0
3	CADA Solapur	Kadi	Deficit	589	5.47	5.47	0.00		1965	1190	1084	4.00	0.5 to 4	Soghum, Wheat, Groundnut, Sugarcane, Sunflower	0
3	KIC Kolhapur	Chitri	Deficit	1524	39.28	64.45	0.00		2001-02	9160	5850	54	0.55	-do-	0
4	CADA Solapur	Buddhihal	Deficit	500	19.03	15.08	0.00		1966	5448	4251	8	0.5 to 1.5	Sorghum, Wheat, Groundnut, Sugarcane, Maize, Sunflower	4251
4	KIC Kolhapur	Jangamhatti	Deficit	2190	33.21	26.37	6.84		1996-97	4450	3700	10	0.1	Sugercane, Maize,Chilly Wheat,Potato, GrouNo Datanut	No Data
4	PIC Pune	Nher	Deficit	508	11.79	11.79	0	1.83	1886	4324	2636	18	1	Bajari, Sorghum, Wheat other Non Perennial	No Data
4	PIC Pune	Ranand	Deficit	538	6.36	1.83	0	3.85	1953	3886	1093	6		Kadwal, Wheat, Sorghum	No Data
4	PIC Pune	Sina	Deficit	562	52.3	67.09	0.2	0	1984	9677	8445	26	1	Sorghum, Bajri, Wheat, Maize, Kadwal	1430
4	PIC Pune	Mhaswad	Deficit	533	46.21	46.21	0	5.04	1881	5804	4049	11	1	Sorghum, Bajri, Groundnut	--
4	PIC Pune	Tisangi	Deficit	508	24.46	24.46	0	1.21	1965	5068	4049	0	1	Sorghum, Bajri,	--
4	CADA Jalgaon	Manyad	Deficit	750	40.27	45.30	0.00	11.68	1973-74	6500	4864	12	2	Sugarcane, Banana, Cotton	No Data
4	CADA Jalgaon	Bori	Deficit	694	25.15	31.30	7.08	25.15	1985-76	6504	4553	15	2	-do-	No Data
4	CADA Jalgaon	Bhokarbari	Deficit	694	6.54	8.15	0.00	6.54	1993-94	1790	1205	5	1.5	-do-	No Data
4	CADA Jalgaon	Suki	Deficit	774	39.85	45.47	0.00	39.85	1985	8647	5128	8	0.9	Groundnut, Pulses, Sorghum, Cotton	No Data
4	CADA Jalgaon	Abhora	Deficit	750	6.02	7.13	0.00	6.02	1985	1403	1115	2	0.8	-do-	No Data
4	CADA Jalgaon	Agnawati	Deficit	743	2.76	2.90	0.58	2.76	1987	960	605	3	0.75	-do-	No Data
4	CADA Jalgaon	Hiwara	Deficit	810	3.6	12.30	0.00	9.60	1997	2923	2231	3	0.8	-do-	No Data
4	CADA Jalgaon	Haranbari	Deficit	795	33.02	47.66	0.00		1988-89	12966	9726	55	0.5	Paddy, Sorghum, Groundnut, Wheat, Gram, Sugarcane	462
4	CADA Jalgaon	Nagya Sakya	Deficit	528	11.24	13.72	0.00		1992.93	2400	2400	11	0.5	Paddy, Sorghum, Groundnut, Wheat, Gram, Sugarcane	No Data

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4	CADA Aurangabad	Sukhana	Deficit	688	18.49	16.56	1.93		1968	3136	2511	14	2.73	-do-	No Data
6	CADA Jalgaon	Kelzar	Normal	687	16.2	16.51	0.00		1988-89	5583	3394	19	0.5	Bajri, Two seasonals, Paddy, Sorghum, Groundnut, Wheat, Gram	672
6	CADA Jalgaon	Kanoli	Normal	660	8.45	10.50	0.00		1974-75	1620	1363	8	1 to 2	Wheat, Cotton, Gram, Bajri, Sorghum	No Data
6	CADA Jalgaon	Aner	Normal	970	59.2	79*	8.50		1976	9201	7180	10	0.5	Wheat, Groundnut, Cotton	No Data
6	CADA Nashik	Bhojapur	Normal	393	10.7	8.15	2.55	9.54	1973	4580	4500	24	1.7	Bajri, Wheat, Sorghum, Gram	No Data
6	CADA Aurangabad	Kalyan Girija	Normal	663	8.42	8.42	0.00		1972	1557	1377	9	3	Wheat, Sorghum, Sunflower	565
6	CADA Aurangabad	Dhamna	Normal	677	8.49	8.34	0.15		1973	1682	1280	8	2.5	-do-	No Data
6	CADA Aurangabad	Jivrekha	Normal	668	6.14	6.14	0.00		1964	2589	1064	6	2.5	-do-	No Data
6	CADA Aurangabad	Dheku	Normal	600	12.15	6.55	5.60		1961	3564	2712	15	2.07	-do-	No Data
6	CADA Aurangabad	Kolhi	Normal	600	3.23	2.63	0.60		1967	1056	472	4	3.02	-do-	No Data
7	CADA Jalgaon	Karvand	Normal	960	21.39	21.39	0.62		1968	7027	4534	14	0.4	-do-	No Data
7	CADA Aurangabad	Lahuki	Normal	688	5.31	3.72	1.59		1977	1323	1092	4	0.96	-do-	No Data
7	CADA Aurangabad	Girija	Normal	762	21.23	14.66	6.57		1990	3443	3443	10	0.77	-do-	No Data
7	CADA Aurangabad	Gadadgad	Normal	840	4.64	3.97	0.67		1971	1448	1180	4	1.77	-do-	615
7	CADA Aurangabad	Ajintha Andhari	Normal	650	7.65	5.27	2.38		1984	1967	1578	3	3.93	-do-	No Data
7	CADA Aurangabad	Karpara	Normal	760	24.9	21.03	2.80		1974	2862	2151	7	1.5	-do-	No Data
7	CADA Beed	Devarjan	Normal	838	10.680	7.12	0.00		1997	2853	1882	7	2.04	Sorghum, Wheat, Gram, Sunflower	No Data

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8	CADA Solapur	Rooty	Surplus	589	6.57	6.09	0.48		1938	1943	1862	5.00	1 to 1.5	Sorghum, Wheat, Vegetables, Sugarcane	0
8	KIC Kolhapur	Kasari	Surplus	4560	77.96	61.57	0.00		1989	9995	5458	61	1 to 1.5	Sugercane, Paddy, Wheat	0
8	CADA Aurangabad	Ambadi	Surplus	650	9.42	6.92	2.50		1979	2375	2147	10	2.26	-do-	No Data
8	CADA Aurangabad	Masoli	Surplus	780	27.3	23.44	3.94		1982	3502	2591	7	1.5	-do-	No Data
8	CADA Beed	Kundlika	Surplus	753		37.83	0.33		1988	3927	2964	13	3.91	Sugarcane, Groundnut, Sorghum, Bajri, Cotton, Sunflower	200
8	CADA Beed	Gharni	Surplus	716	22.460	23.78	0.00		1969	3542	2834	14	2.10	Sugarcane, Groundnut, Sorghum, Cotton, Maize, Paddy, Vegetable, Wheat, Gram	2834
8	CADA Beed	Tiru	Surplus	684	15.290	21.19	0.00		1978	2654	2348	14	1.40	Sorghum, Chilli, Groundnut, Maize, Paddy, Vegetables, Wheat, Gram	1790
8	CADA Beed	Tavarja	Surplus	744	20.340	10.98	3.92		1983	4907	3603	19	1.72	Sorghum, Sunflower, Wheat	No Data
8	CADA Beed	Terna	Surplus	770	19.663	10.84	4.81		1964	1928	1652	9	1.50	Sugarcane	50
8	CADA Beed	Raigavhvan	Surplus	770	11.259	8.57	0.28		1992	2267	1700	8	1.30	-do-	620
8	CADA Beed	Rui	Surplus	770	8.605	5.80	1.72		1994	1893	1650	7	1.20	-do-	0
8	NIC NANDED	Kundrala	Surplus	630	10.41	12.81	4.21		1981	1265	1012	7	1.61	Wheat, Gram, Sugarcane, Cotton, Groundnut, Sorghum	1265
8	NIC NANDED	Karadkhed	Surplus	650	11.01	11.34	6.56		1976	2510	1780	11	1.93	-do-	2509
8	NIC NANDED	Kudala	Surplus	700	4.35	5.54	1.38		1974	676	567	5	1.23	-do-	No Data
8	NIC NANDED	Pethwadaj	Surplus	850	9.04	13.52	1.31		1977	1970	1478	13	1	-do-	No Data
8	NIC NANDED	Nagzari	Surplus	1150	6.56	6.18	2.92		1983	1260	960	6	4.68	-do-	962
8	NIC NANDED	Loni	Surplus	1150	8.38	9.51	0.91		1981	1835	1377	7	1.02	-do-	No Data
9	CADA Nashik	Alandi	Abundant	614	27.57	21.00	5.67	27.46	1985	7408	6296	18	3	Vegetables, Grapes, Sorghum, Sugarcane, Wheat, Gram	No Data

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9	CADA Aurangabad	Khelna	Abundant	650	11.07	4.74	6.33		1967	4935	2429	11	4.08	-do-	No Data
10	CADA Jalgaon	Panzara	Deficit	780	35.63	72.66*	0.71		1976	7328	6868	25	0.8	Maize, Bajra, Wheat	No Data
10	CADA Jalgaon	Malangaon	Deficit	780	11.32	15.02	0.00		1972	2674	1587	15	0.5	-do-	No Data
10	CADA Jalgaon	Burai	Deficit	500	14.21	19.23*	0.87		1984-85	2981	2760	5	1	Wheat, Cotton, Gram, Bajri, Sorghum, Onion, Maize	147
10	CADA Jalgaon	Rangavali	Deficit	1054.9	12.89	23.05*	0.00		1983-84	5130	3134	21	2 to 2.5	Sorghum, Wheat, Cotton, Vegetables	801
10	CADA Nashik	Adhala	Deficit	500	27.6	38.74	0.00		1977	6427	3914	16	3 to 4	Sorghum, Wheat, Grass, Bajri, Groundnut, Maize	919
10	CADA Nashik	Mand Ohol	Deficit	600	8.78	13.16	0.00		1983	2833	2266	15	3 to 4	Sorghum, Wheat, Grass, Maize, Sunflower, Sugarcane	1941
10	CADA Nashik	G.Pargaon	Deficit	685	8.5	12.36	0.00		1984	2142	1660	15	3 to 4	-do-	463
10	CADA Aurangabad	Kalyan	Deficit	567	10.48	7.35	3.03		1986	2693	2020	9	3	-do-	572
10	CADA Aurangabad	Jui	Deficit	647	8.22	6.22	2.00		1960	2636	2206	14	2.5	-do-	No Data
10	CADA Aurangabad	Galhati	Deficit	598	13.84	7.08	4.34		1964	2812	2200	12	1 to 2	Sorghum, Wheat, Cotton, Tur	No Data
10	CADA Beed	Sakol	Deficit	850	10.840	8.40	0.00		1996	2174	2064	7	2.18	Sorghum, Chilli, Groundnut, Maize, Paddy, Vegetables, Wheat, Gram	No Data
11	KIC Kolhapur	Kadavi	Deficit	3418	70.56	70.56	0.00		2001	9908	9219	52	0.8	-do-	0
11	KIC Kolhapur	Kumbhi	Deficit	4985	76.5	74.81	1.68		2001	9170	8711	51	0.10 to 1	Sugercane, Wheat, Groundnut, Sunflower	0
11	CADA Beed	Wan	Deficit	533		19.31	7.64		1967	7125	5262	22	1.54	Sorghum, Wheat, Sunflower, Cotton, Groundnut	No Data
13	TIC, Thane	Wandri	Normal	2540	35.938	35.94	0.00	35.94	1984.85	3066	2044	17	0.25	-do-	0

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13	KIC, Ratnagiri	Natuwadi	Normal	3632	27.230	27.23	0.00		1984	2139	2050	18	0.02 to 0.05	Paddy, Groundnut, Pulses, Mango	2050
13	CADA Solapur	Padawalkar wadi	Normal	500	2.12	2.12	0.00		1973	458	352	2	1 to 1.5	-do-	352
13	CADA Solapur	Javalgon	Normal	500	29.18	29.37	6.15		1997	5372	5341	13	1 to 1.5	-do-	1200
13	NIC NANDED	Mahalingi	Normal	775	4.78	4.06	1.68		1980	1015	784	6	1.8	-do-	784
18	CADA Solapur	Hingni (P)	Normal	500	31.97	37.83	1.68		1977	6482	5629	15	1 to 1.5	-do-	0
19	CADA Solapur	Khasapur	Highly Deficit	770	13.04	13.30	2.55		1954	3575	2146	15.00	2 to 3	-do-	0
19	CADA Beed	Masalga	Highly	673	13.590	11.54	0.00		1996	1678	1364	11	1.73	Sorghum, Bajri, Cotton, Sunflower	800
22	CADA Beed	Vhati	Abundant	880	8.270	9.93	0.00		1983	1809	1760	7	2.15	Sorghum, Chilli, Groundnut, Maize, Paddy, Vegetables, Wheat, Gram, Fodder	1076
	NIC NANDED	Dongargaon		1150	8.36	11.55	0.00		1983	1008	830	5	1.8	-do-	1008
	YIC Yevatmal	Adan		798	67.25	69.67	11.14	17.73	1979	10067	7804	32	0.56	Cotton, Tur, Sugarcane, Groundnut	No Data
	YIC Yevatmal	Nawargaon		1067	12.47	13.28	2.71	12.47	1999	2574	2056	15	0.56	-do-	929
	BIPC Buldhana	Mun		761	36.83	45.10	0.00	12.86	1992-93	9735	7804	32	2.5	Cotton, Chilly, Sunflower	4680
		Torna		711	7.9	7.75	0.11	2.11	1994-95	1725	1465	7	2.5	-do-	354
	AIC Akola	Morna		827	41.46	46.50	0.00		1972	6464	4633	29	1 to 3	Wheat, Gram,	1985
	AIC Akola	Nirguna		812	28.85	34.50	0.00		1979	6377	5836	20	1 to 2	Wheat, Gram, Cotton, Hy.Jawar, Groundnut	2422
	AIC Akola	Uma		818	11.68	10.23	0.92		1982	3007	2241	21	1 to 3	Wheat, Gram, Cotton, Hy.Jawar	267
	AIC Akola	Shahanur		1440	46.04	41.12	12.45		1990	9330	7466	47	1.27	Cotton, Sorghum, Wheat, Gram, Orange	1391
	AIC Akola	Sonal		860	16.92	17.95	0.00		1981	3496	2447	46	1 to 2	Hy. Jawar, Sunflower, Cotton, Wheat, Gram	746
	AIC Akola	Ekburji		986	11.97	9.08	0.76		1964	2625	2429	11	1 to 2	Wheat, Gram	134
	AIC Akola	Dnyanganga		732	33.93	33.80	8.69		1971	4494	4249	21	1.5 to 2	Wheat, Gram, Cotton	614
	AIC Akola	Koradi		660	15.12	15.12	0.00		1981	5067	4061	26	1 to 2	Cotton, Sorghum, Wheat, Groundnut	2729

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SB No	Name of Circle	Name of Project	Plan Group	Avg. Annual Rainfall mm	Live Storage Mm^3	Water for Irrigation use Mm^3	Water for Non irrigation use Mm^3	Max.Live Storage observed during 2003-04	Year of Commencement of Irrigation	Culturable Command Area Ha	Irrigable command area Ha	No. of villages in benefit zone	Avg. farm size Ha	Main crops	Area covered under WUA Ha
	AIC Akola	Paldhag		766	7.51	10.40	0.37		1978	3082	1932	14	1 to 2	Wheat, Gram, Cotton	583
	AIC Akola	Mas		696	15.04	21.48	8.09		1982	6107	4415	22	2 to 3	-do-	No Data
	AIC Akola	Borgaon		988	6.61	10.86	0.35		1992	3028	2271	16	1.5 to 3	Groundnut, Cotton, Sorghum, Wheat, Gram, Pulses	727
	AIC Akola	Saikheda		1098	27.18	24.77	4.38		1972	3895	3116	18	1.5 to 3	Cotton, Sorghum, Wheat, Gram, Pulses, Vegetables	No Data
	AIC Akola	Lower Pus		852	59.63	70.50	2.42		1990	7606	6600	29	2 to 4	Sugarcane, Cotton, Sorghum, Wheat, Gram, Pulses, Vegetables	No Data
	CIPC Chandrapur	Panchdhara		1103	8.75	8.43	0.00	6.20	1976	2262	1822	14	1.5 to 2	Cotton, Wheat	No Data
	CIPC Chandrapur	Pothara		1100	34.72	34.72	0.00	34.72	1984	10910	8948	33	1.5 to 2	-do-	No Data
	CIPC Chandrapur	Dongargaon		1100	4.44	3.17	0.00	2.96	1974	972	631	9	1.5 to 2	-do-	No Data
	CIPC Chandrapur	Ghorazari		1285.2	38	35.00	0.00	33.25	1923	12868	3846	65	1.5 to 2	Paddy	No Data
	CIPC Chandrapur	Naleshwar		1146.6	8.18	4.29	0.00	8.18	1922	5035	1888	23	1.5 to 2	-do-	No Data
	CIPC Chandrapur	Chargaon		1284.7	19.86	11.98	0.00	19.87	1983	1946	1500	12	1.5 to 2	Paddy, Wheat	No Data
	CIPC Chandrapur	Chandai		1205	10.69	9.28	0.00	10.69	1983	2565	2056	14	1.5 to 2	-do-	No Data
	CIPC Chandrapur	Labhansarad		1103	7.35	5.87	0.00	7.35	1987	2024	2024	11	1.5 to 2	Wheat, Cotton, Soybean	No Data
	CIPC Chandrapur	Amalnalla		1217.5	21.2	19.52	0.00	21.20	1981	4710	2962	22	1.5 to 2	Wheat, Cotton, Gram	No Data
	CADA Nagpur	Kanholibara		1004	19.82	22.03	4.73	18.15	1976	4815	3371	22	3	HW Groundnut, Cotton, Soybean, Wheat, Gram, Vegetables	No Data
	CADA Nagpur	Chandrabhaga		1016	8.262	8.25	0.02	8.26	1974-75	3181	2604	15	2.1	Orange, Wheat, Gram, Vegetable, Cotton	No Data
	CADA Nagpur	Kesamala		979	3.93	4.28	0.00	2.20	1976	937	780	7	1.6	-do-	No Data

Overview of Projects selected for Benchmarking (Medium Projects)

SB No	Name of Circle	Name of Project	Plan Group	Avg. Annual Rainfall mm	Live Storage Mm^3	Water for Irrigation use Mm^3	Water for Non irrigation use Mm^3	Max.Live Storage observed during 2003-04	Year of Commencement of Irrigation	Culturable Command Area Ha	Irrigable command area Ha	No. of villages in benefit zone	Avg. farm size Ha	Main crops	Area covered under WUA Ha
	CADA Nagpur	Khekranala		963	23.81	29.54	0.00	19.64	1987	3810	2610	14	1.5	Cotton, Wheat, Gram, Orange, Sugarcane, HW Groundnut, Soybean, Vegetables.	No Data
	CADA Nagpur	Kolar		978	31.32	41.23	1.21	24.45	1984	8088	5940	43	2.1	-do-	No Data
	CADA Nagpur	Makardhokda		963	26.91	27.37	1.45	19.05	1980-81	5835	5477	29	1.33	Paddy, Cotton, Chillies, Wheat, Sorghum, Gram, Soybean, Vegetables	No Data
	CADA Nagpur	Mordham		1016	4.95	4.91	0.05	4.95	No data	1423	1315	8	2.1	Orange, Wheat, Gram, Vegetables, Cotton	No Data
	CADA Nagpur	Pandharabodi		1290	13.25	14.51	2.15	13.14	1974-75	1044	862	12	2.18	Paddy, Chillies, Wheat, Gram, Soybean, Sunflower.	No Data
	CADA Nagpur	Umari		1064	5.14	5.85	0.00	5.14	1971-72	1802	1195	8	2	Wheat, Cotton, Orange, Gram, Vegetables, Groundnut	No Data
	CADA Nagpur	Wenna		1100	21.66	9.49	11.55	14.39	1968	2000	1214	10	1.33	Wheat, Cotton, Orange, Gram, Vegetables	No Data
	CADA Nagpur	Bageda		1146	4.535	4.11	0.00	4.04	1974	1887	1798	10	0.85	Paddy	No Data
	CADA Nagpur	Betekar Bothali		1186	3.666	3.67	0.00	3.67	1989	1266	1315	4	0.75	-do-	No Data
	CADA Nagpur	Chandpur		1200	28.87	28.87	0.00	16.22	1916	10117	6271	40	0.9	-do-	No Data
	CADA Nagpur	Sorna		1255	5.733	5.73	0.00	5.73	1972	1553	933	8	0.75	-do-	No Data
	CADA Nagpur	Bodalkasa		1281	19.18	16.45	2.73	16.45	1917	14665	4047	36	0.21	-do-	No Data
	CADA Nagpur	Chorkhamara		1267	22.8	20.80	0.00	10.71	1917	13246	4047	25	0.35	-do-	No Data
	CADA Nagpur	Chulband		1384	22.24	16.82	0.00	19.99	1976	3378	3167	21	1.1	-do-	No Data
	CADA Nagpur	Khairbanda		870	15.953	12.22	0.00	15.38	1915	11271	6109	31		-do-	No Data
	CADA Nagpur	Managad		1609	7.081	7.83	0.00	7.05	1970	3390	1700	11	0.35	-do-	No Data
	CADA Nagpur	Rengepar		1138	3.338	5.86	0.00	3.57	1977	1305	870	7	0.75	-do-	No Data
	CADA Nagpur	Sangrampur		1281	3.868	8.87	0.46	3.67	1969	1536	1094	7		-do-	No Data

More Irrigation in Kharif and regeneration of flow in river due to downstreem bandharas

Overview of Projects selected for Benchmarking (Minor Projects)

SB No	Name of Circle	Name of Project	Plan Group	Avg. Annual Rainfall mm	Live Storage Mm^3	Water for Irrigation use Mm^3	Water for Non irrigation use Mm^3	Max.Live Storage observed during 2003-04	Year of Commencement of Irrigation	Culturable Command Area Ha	Irrigable command area Ha	No. of villages in benefit zone	Avg. farm size Ha	Main crops	Area covered under WUA Ha
2	CADA Aurangabad	Tandulwadi	Deficit	653	1.994	1.99	0.00		1972	566	474	3	1.15	Wheat, Sorghum, Cotton, Gram Groundnut	No Data
2		Koshtewadi	Deficit	850	0.76	1.05	0		1966	190	190	1	1.05		No Data
2		Majara	Deficit	924	3.23	2.50	0	3.23	1994	1425	1269	6	2.5 to 3	Cotton, Tur, Wheat	590
3		Purjal	Deficit	830	2.656	2.66	0		1975	631	558	4	0.9		No Data
3	YIC Yevatmal	Ancharwadi-1	Deficit	737	2.34	2.66	0		1985	607	370	2	1 to 2	Wheat, Gram, Cotton	No Data
3		Kardi	Deficit	766	4.89	5.52	0.00		1991-92	1197	958	8	1.5	Cotton, Chilly,	1197
3		Masural	Deficit	776	8.25	7.88	2.92		1990-91	841	734	5	1.0	Cotton, Chilly,	854
3		Vidrupa	Deficit	590	3.41	0.00	0.00		1990-91	1020	840	6	1.5	Cotton, Chilly,	0
3		Mohagavan	Deficit	800	5.72	4.14	0.52		1998-99	1048	706	5	3.0	Cotton, Chilly,	0
4		Kuttarwadi	Deficit	618	1.46	2.12	0		1993	370	297	2	2 to 3	Sorghum, Wheat, Grass, Bajri, Groundnut, Maize,	No Data
4	CADA Nashik	Mahirawani	Deficit	600	2.52	2.52	0	2.45	1974	949	576	9		Wheat, Gram Kh.Vegetables	No Data
4		Hiwarsinga	Deficit	675	No Data	1.37	No Data		1989	299	257	1	1.16	Sorghum, Bajri, Cotton, Sunflower, Groundnut	No Data
4		Bhutekarwadi	Deficit	855	2.870	3.37	0		1969	1013	809	4	1.90	Sorghum, Chilli, Maize, Vegetables, Wheat, Cotton	809
4	CADA Beed	Dhanori	Deficit	770	1.389	1.41	0		1974	467	343	1	1.10	Sugarcane	No Data
4		Wasur	Deficit	830	0.88	1.18	0		1971	213	171	2	3.32	Wheat, Gram, Sugarcane, Cotton, Groundnut, Sorghum	213
4		Daryapur	Deficit	875	1.02	1.57	0		1973	230	222	3	1.35	-do-	230
5	CADA Beed	Amthana	Normal	755	1.16	1.47	0		1966	413	344	4	2.9	-do-	No Data
6		Nichpur	Normal	1150	2.2	2.26	0.32		1973	525	385	2	4.77	Wheat, Gram, Sugarcane, Cotton, Groundnut, Sorghum	No Data

Overview of Projects selected for Benchmarking (Minor Projects)

SB No	Name of Circle	Name of Project	Plan Group	Avg. Annual Rainfall mm	Live Storage Mm^3	Water for Irrigation use Mm^3	Water for Non irrigation use Mm^3	Max.Live Storage observed during 2003-04	Year of Commencement of Irrigation	Culturable Command Area Ha	Irrigable command area Ha	No. of villages in benefit zone	Avg. farm size Ha	Main crops	Area covered under WUA Ha
6	NIC Nanded	Pimparala	Normal	750	2.43	3.39	0		1968	749	672	5	2.2	-do-	749
6		Pota	Normal	650	1.67	2.13	0		1972	718	432	4	3.43	-do-	No Data
6		Sawana	Normal	804	2.154	1.65	0.51		1979	431	410	3	1	-do-	No Data
6		Hirdi	Normal	82	1.34	1.34	0		1983	353	283	2	0.9	-do-	No Data
6		Singdoh	Normal	714	1.22	1.22	0		1976	246	185	3	1 to 2	Wheat, Gram, Cotton, Hy. Jawar.	209
7		Panchanadi	Normal	3320	1.481	1.46	0		1984-85	114	91	3	0.2	Beetlenut, Coconut, Paddy	No Data
7	NKIPC, Thane	Bhatala	Normal	1175	1.55	1.40	0	1.55	No Data	415	350	3	1.5 to 2	Paddy, Wheat	No Data
7		Lagam	Normal	1283	1.16	1.20	0	1.36	No Data	344	315	4	1.5 to 2	Paddy,	No Data
7		Wahi	Normal	1267	2.02	2.88	0		1992	442	402	5	0.85	-do-	No Data
8	NKIPC, Thane	Bambrud	Surplus	743	2.18	1.97	0	2.18	1975	579	461	1	0.8	-do-	No Data
8		Panshedwadi	Surplus	850	1.57	2.02	0		1975	320	263	3	1.16	-do-	No Data
8	BIPC Buldhana	Sawakhed Bhoi	Surplus	66	3.79	2.61	0	3.41	1988-99	589	445	7	3.0	Cotton, Chilly, Sunflower	445
8	CADA Nagpur	Urkudapar	Surplus	1214	4.75	4.75	0		1980	1265	1012	6	2	Paddy, Chilly, Wheat, Gram	No Data
8		Wani	Surplus	1190	2.021	1.98	0		1983	526	405	5	5	-do-	No Data
8		Bhadbhadya	Surplus	1284	2.85	2.85	0.19		1975	800	674	3	1.11	Paddy	No Data
9	SIC, Sangli	Atpadi	Abundant	300	7.95	6.74	1.21	3.79	1967-68	1619	1120	5	2	Cotton, Sorghum	755
9		B.Hipperga	Abundant	850	2.05	2.93	0		1973	481	481	3	2.09	-do-	No Data
9	CIPC Chandrapur	Ashti	Abundant	1100	1.64	1.36	0	0.86	1965	455	364	4	1.5 to 2	Wheat, Cotton, Gram	No Data
10		Mozari	Deficit	695	2.93	2.35	0		1977	675	475	2	1 to 2	Wheat, Gram, Cotton,	928
10		Shekdari	Deficit	911	4.56	4.88	0		1981	1975	1331	7	1.2	Cotton, Sorghum, Wheat, Gram, Orange.	1289
10	AIC Akola	Jamwadi	Deficit	1196	2.16	2.16	0		1978	580	406	4	1 to 2	Wheat, Gram, Cotton, Sorghum	No Data
10		Adol	Deficit	850	9..30	7.06	2.45	3.41	1991-92	1506	1585	10	3.0	-do-	1585
10		Vishwamitri	Deficit	772	10.75	13.91	1.25	6.66	1993-94	1882	1392	7	3.0	-do-	233

Overview of Projects selected for Benchmarking (Minor Projects)

SB No	Name of Circle	Name of Project	Plan Group	Avg. Annual Rainfall mm	Live Storage Mm^3	Water for Irrigation use Mm^3	Water for Non irrigation use Mm^3	Max.Live Storage observed during 2003-04	Year of Commencement of Irrigation	Culturable Command Area Ha	Irrigable command area Ha	No. of villages in benefit zone	Avg. farm size Ha	Main crops	Area covered under WUA Ha
10		Vyaghra	Deficit	747	7.14	7.86	1.35		1991-92	1993	1615	8	1.5	Cotton, Chilly,	204
10		Brahamanwada	Deficit	753	6.18	6.08	0.00		1995-96	1495	1196	4	3.0	Cotton, Chilly,	1311
11		Hatgaon-1	Deficit	743	1.4	1.52	0	0.97	1974-75	441	267	1	1.5	Cotton, Vegetables	No Data
11		Kunzar-2	Deficit	743	1.01	1.21	0	1.01	1991-92	223	178	1	1.5	-do-	No Data
11		Waghala-1	Deficit	743	1.21	1.21	0	1.21	1976-77	313	223	1	1.5	-do-	No Data
11		Galand	Deficit	743	1.87	2.01	0	1.87	1968	425	340	1	0.75	Cotton, Groundnut	No Data
11	CADA Jalgaon	Wakdi	Deficit	743	0.98	0.93	0	0.99	1975	228	183	1	0.8	-do-	No Data
11		Chavdi	Deficit	482	4.38	4.38	0		1972	388	323	2	1 to 2	Wheat, Gram, Onion, Groundnut	323
11		Dudhkheda	Deficit	6350	3.366	3.37	0		1972	480	303	4	0.4	Wheat, Cotton, Gram	No Data
15	KIC Kolhapur	Benikre	Abundant	1400	1.784	1.78	0		1990	358	286	1	1.5 to 2	Sorghum, Groundnut, Wheat	No Data
17	CADA Pune	Thoseghar	Normal	1158	1.84	1.84	0	1.91	1996	306	270	2	0.1	Paddy, Sorghum	No Data
17	PIC Pune	Rahu	Normal	364	9.79	9.79	0	8.21	1993	2300	1887	5	0.5 to 5	Sorghum, Bajri, Wheat, Maize, Vegetables, Paddy, Sugarcane	No Data
18		Titraj	Normal	685	1.14	1.47	0		1985	367	275	3	1 to 3	Sorghum, Groundnut. Wheat Sunflower	0
18		Tambve	Normal	500	4.85	4.85	0	4.59	1968	1354	750	7	0.4	Bajri, Sorghum, Kadwal	No Data
18		Chincholi patil	Normal	500	2.17	2.17	0		1977	569	455	3	0.83	Sorghum, Grain, Sunflowar, Maze	0
19		Pathari	Highly Deficit	500	11.62	10.63	0.99		1905	1012	647	7	0.5 to 4	Sorghum, Groundnut. Sugarcane, Wheat, Sunflower	352
19	CADA Solapur	Mangi	Highly Deficit	500	32.70	27.50	0		1966	4000	3117	21	0.5 to 4	Sorghum, Groundnut. Sugarcane, Maize, Sunflower	931

Overview of Projects selected for Benchmarking (Minor Projects)

SB No	Name of Circle	Name of Project	Plan Group	Avg. Annual Rainfall mm	Live Storage Mm^3	Water for Irrigation use Mm^3	Water for Non irrigation use Mm^3	Max.Live Storage observed during 2003-04	Year of Commencement of Irrigation	Culturable Command Area Ha	Irrigable command area Ha	No. of villages in benefit zone	Avg. farm size Ha	Main crops	Area covered under WUA Ha
19		Bagalwadi	Highly Deficit	685	1.33	1.65	0		1971	441	340	3	1 to 3	Sorghum, Groundnut. Wheat Sunflower	0
19		Incharna	Highly Deficit	589	1.93	1.93	0		1971	615	555	7	0.5 to 4	Sorghum, Groundnut, Sugarcane, Maize Sunflower	0
19		Kini	Highly Deficit	589	1.24	1.24	0		1967	385	380	3	0.5 to 4	Sorghum, Groundnut, Sugarcane, Maize Sunflower	0
21	NKIPC, Thane	Dhasai	Abundant	2200	4.478	4.20	0		1984-85	457	340	6	0.5	Paddy, Vegetables & fruits	No Data
21		Mohknurd	Abundant	3070	3.590	3.59	0	4.74	1975	213	173	5	0.35	-do-	No Data
21		Bhoj	Abundant	2472	1.620	1.62	0	1.56	1974	216	135	3	0.35	-do-	No Data
21	TIC, Thane	Khandpe	Abundant	2377	2.000	2.00	0	1.98	1985	202	120	2	0.40	-do-	120
22		Kalote Mokashi	Abundant	3623	4.190	4.19	0	4.19	1976-77	126	105	4	0.20	Paddy	105
22		Kondgaon	Abundant	3872	3.641	3.64	0	3.64	1979-80	212	188	5	NA	-do-	178
22		Pabhre	Abundant	3429	1.787	1.79	0	1.79	1978-79	174	133	3	0.20	-do-	133
23	KIC, Ratnagiri	Shirwal	Abundant	3800	3.630	2.35	0		1979	421	200	2	0.15 to 0.05	Coconut, Arecanut, Pepper, Spices, Paddy	200
23		Shivan kd.	Abundant	793	4.67	2.58	0	0.68	1995-96	712	605	6	2.0	-do-	No Data

Appendix XIV

Physiography & Agro Climatic zones of Maharashtra

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.

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 coast line. 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[1], Marathwada[2], Western Maharashtra and the western districts of Vidarbha[3] fall in this region.

4) Satpuda Ranges and Tapi – Purna basin on North

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

5) Eastern Region Consisting of Wainganga basin

Eastern Region comprises of eastern side of the State and flat paddy field region lies along both the banks of the river at an elevation of about 300 m. On the eastern side of this flat region along the Maharashtra - Chhattisgadh 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.

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 no rains. These are the initial months of the post-monsoon, *rabbi* 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

[1] Khandesh includes Dhule, Nandurbar & Jalgaon districts
[2] Marathwada includes Aurangabad, Jalna, Parbhani, Nanded, Osmanabad, Latur, Hingoli & Beed districts
[3] Vidarbha includes Akola, Washim, Amravati, Yavatmal, Wardha, Nagpur, Bhandara, Gondia, Chandrapur & Gadchiroli districts.

until end of February. Most of the *rabbi* 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 27^0C and 40^0C and 14^0C to 27^0C 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 26^0C to 39^0C and the minimum temperature between 8^0C to 23^0C. The relative humidity is 81% to 99% in August and only 20% to 39% in March.

3 The eastern part of the above four districts together with Ahmednagar, Sangli, Solapur, Aurangabad, Jalna, Beed and Osmanabad districts fall under the rain shadow of Sahyadri Mountains and therefore the beginning and end of the rainy season is quite uncertain in these parts. The rainfall is also meager. The climate is extreme. The summer temperature is high (maximum temperature 36^0C to 41^0C) but winter temperature is low (minimum temperature. 10^0C to 16^0C). 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 (39^0C to 43^0C) and minimum winter temperature is found to be 12^0C to 15^0C. 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 (39^0C to 45^0C) while it is cooler in winter as compared to other regions (12^0Cto14^0C).

Agro-climatic Zones

The Agriculture Department has divided the State into nine different agro-climatic zones depending upon the climate, foliage, topography, soil and cropping pattern in Maharashtra.

1) Very High Rainfall Zone with Lateritic Soils

This zone having lateritic soils situated between 0 to 500 m above the mean sea level and having very heavy rainfall, encompasses the South Konkan coastal region including Ratnagiri and the far-western parts of Satara and Kolhapur districts. The rainfall period in this zone exceeds 100 to 110 rainy days and the annual rainfall is between 2000 to 3000 mm. The soil is predominantly of lateritic type derived from Basalt. Small belts of saline soils are noticed to have been formed near the river mouths. Paddy is the main crop in the low lying areas while finger millet is cultivated on other areas. Horticulture is also practiced on a large scale.

2) Very High Rainfall Zone with Non-lateritic Soils

This is akin to the aforementioned lateritic soils and very high rainfall zone in respect of altitude from the sea level and incident rainfall. It encompasses Thane and northern part of Raigad districts and western-most parts of Nashik, Ahmednagar and Pune districts. Red to gray reddish loamy soils devoid of lateritic rocks occur predominantly in this area. Near the river deltas alluvium and saline soils occur. Paddy, finger millet and pulses are predominantly grown in this region. Similarly this region is also conducive to horticulture and for growing mango, coconut, areca nut, sapota, banana etc. Movements on the Bay of Bengal lead to very intense rains in Konkan. While receding to west these cyclonic storms reach to South Maharashtra, resulting in good rains in winter up to Kolhapur and Sangli.

3) *Ghat* Zone: Sahyadri ranges and the region with slope 500 to 1500 m on its west extends to the west of Nashik, Ahmednagar, Pune, Sangli and Kolhapur districts. Average annual rainfall in this part is of the order of 2500 to 4000 mm. The soils on slope of hill ranges are shallow, pale gray to dark gray and laden with silty alluvium. Hilly ranges on west of this region exhibit red to red gray lateritic soils. The principal crop of this area is finger millet.

4) Transition Zone–I: The part of 500 to 1000 m altitude on eastern slopes of Western *Ghat* belonging to Dhule, Nashik, Ahmednagar, Pune and Satara districts falls in Transition Zone - I. The rainfall of this zone ranges from1250 to 2500 mm. The reddish and black soil occurring in this area is derived from basaltic rocks. Heavy rains in winter are conducive to paddy growing. Pearl millet, sorghum and groundnut are the principal crops grown in low lying part.

5) Transition Zone - II:

The undulating terrain of the plains comprises the Transition Zone–II. The central part on west (middle-west part) of Dhule, Nashik, Ahmednagar, Pune, Satara, Sangli districts and north-east part of Kolhapur district fall in this zone. The altitude of this zone from sea level varies from 300 to 1000 m and rainfall variation is of the order of 700 to 1200 mm. The entire terrain is underlain by Deccan Trap. The soils are grayish to dark-grayish and varying in depth. The major *Kharif* crops are pearl millet, sorghum and groundnut while paddy is cultivated in scattered strips on small scale.

6) Scarcity Zone :

This vast scarcity plains zone is situated at an average altitude of 600 m. The zone encompasses eastern parts of Dhule, Nashik, Ahmednagar, Pune, Satara, Sangli and western parts of Jalgaon, Solapur, Beed and Osmanabad districts. The zone is bounded between isohyets of 500 and 700 mm. Moreover, the rainfall is unevenly distributed. The terrain of this zone too is underlain by Deccan Trap. The soils are calcareous grayish black in colour and are of varying depths and textures. The cropping pattern is of *Kharif*-cum-*Rabbi* type.

7) Assured Rainfall Zone:

The terrain is situated at an altitude lesser than 600 m. Major parts of Jalgaon, Aurangabad and Osmanabad and eastern parts of Beed, Parbhani, Nanded, Akola and Amravati are bounded within this zone. Rainfall range is between 700 to 900 mm. The rains necessary for *Kharif* crops are assured in this zone. The *Kharif* crops mainly include sorghum, cotton and groundnut. Calcareous clay of dark grayish to black colour formed of Deccan Trap occurs in this zone.

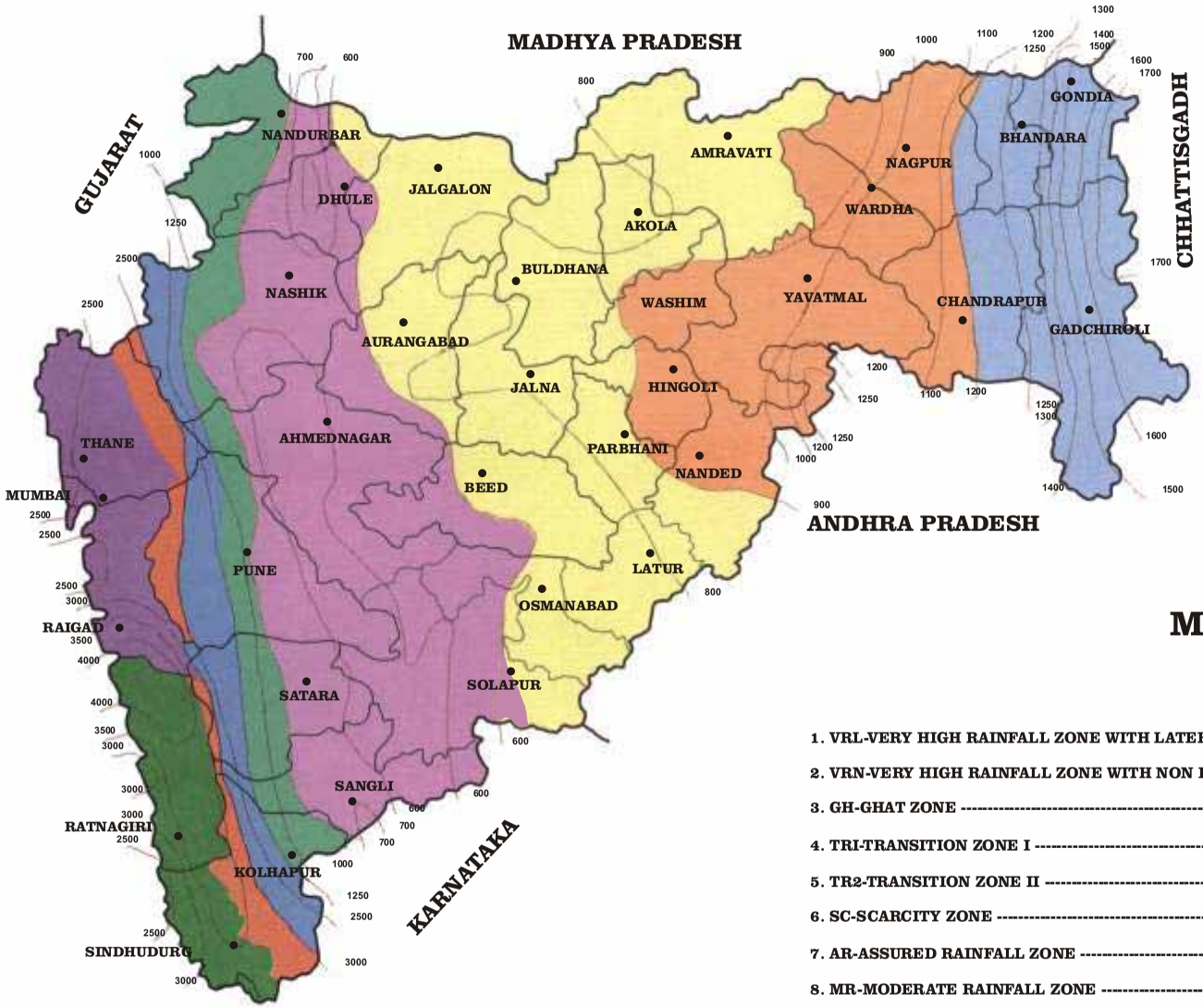
8) Moderate Rainfall Zone:

This zone, characterised by moderately assured rains and soft soils, is situated at an altitude the same as that of assured rainfall zone. Wardha, Nagpur, Yavatmal and part of Amravati fall in this zone. The rainfall ranges from 900 to 1250 mm and is evenly distributed in the south- west monsoon period. The depth and texture of soils formed of Deccan Trap vary in different parts of the zone. Alluvium occurs in Tapi, Wardha and Painganga river basins. *Kharif* crops are extensively grown in the very rich soils of these basins. Along with, *Rabbi* crops are also harvested. The low-pressure belt developed in the Bay of Bengal causes intense rains in this zone.

9) High Rainfall Zone with Soils from mixed parent material :

This zone of Wainganga basin, soils of which are formed from the composite parent rocks and which is characterised with high rainfall, extends over Chandrapur, Bhandara, Gadchiroli and eastern part of Nagpur with an assured rainfall between 700 to 1250 mm on an average. The soils of this zone are derived from gneisses, granites and other Dharwad and Vindhyan period mountainous rocks. It is formed into red sandy loams or black clayey soils. The predominant crop is paddy in *Kharif* season and wheat & sesame are main *Rabbi* crops.

MAP SHOWING AGRO-CLIMATIC ZONES



MAHARASHTRA STATE

1. VRL-VERY HIGH RAINFALL ZONE WITH LATERITIC SOILS ----------
2. VRN-VERY HIGH RAINFALL ZONE WITH NON LATERITIC SOILS ---
3. GH-GHAT ZONE ----------
4. TRI-TRANSITION ZONE I ----------
5. TR2-TRANSITION ZONE II ----------
6. SC-SCARCITY ZONE ----------
7. AR-ASSURED RAINFALL ZONE ----------
8. MR-MODERATE RAINFALL ZONE ----------
9. HRM-HIGH RAINFALL ZONE WITH SOILS FROM MIXED PARENT MATERIAL ----------

Appendix XV

Abstract of water rates of selected crops for different seasons (w. e. f. 1.7.2003)

A) Irrigation Use:

Rupees per ha

Sr. No.	Name of Crop	Water Rate
	Flow Irrigation	
1	Rabi wheat	476
2	Rabi Gr. nut, Hot Weather Paddy	724
3	Hot weather Gr. Nut, LS cotton	1438
4	Sugarcane, banana	6297
	Drip/sprinkler irrigation	
5	Sugarcane, banana	4205
	Lift Irrigation	
1	Sugarcane, banana (canal flow)	1810
2	Sugarcane, banana (drip irrigation)	1205

Water rates of canal water supplied of volumetric basis

Rs. per thousand m^3

Sr. No.	Location & Season	Rates from 1.7.2003
1	From Canal @ Minor Head Kharif	47.60
	Rabi	71.40
	Hot weather	144.80

B) Non Irrigation Use:

Water rates for water supplied by Irrigation Department for Industries using water as raw material for soft drink manufacturing and domestic use

Sr. No	Category	Water rates in Rs. per 10,000 litres.		
		For Industries manufacturing soft drinks using water or raw material	For Industrial use	For Domestic use
1	From Reservoir of dam on a river	145.00	29.00	1.30
2	From canals (by flow or lift)			
	a) If storage is as per norms	290.00	60.00	3.25
	b) If storage is not as per norms	360.00	71.50	5.00
3	From River down stream of dam			
	a) If storage is as per norms	220.00	47.00	2.50
	b) If storage is not as per norms	360.00	71.50	5.00
4.	In case capital investment is done by user/contributed in proportion of water use.	50.00	10.00	1.15

Appendix XVI
Data for Benchmarking report for Major Projects
Indicator I
Annual Irrigation Water Supply per unit Irrigated Area

Water: Mcum, Area : Ha

Sr. No	Project	Five year Average			2003-04		
		Water Utilised for Irrigation*	Area Irrigated	Water per unit area (cum/ha)	Water Utilised for Irrigation*	Area Irrigated	Water per unit area (cum/ha)
1	Arunavati	60.18	3579	16814	15.11	2347	6438
2	Asola Mendha	57.74	9919	5821	49.12	9919	4952
3	Bagh	167.35	27722	6037	150.04	30738	4881
4	Bhandardara	321.67	34330	9370	322.13	34732	9275
5	Bhatsa	46.53	986	47202	18.18	962	18898
6	Bhima	1080.54	90658	11919	374.98	32901	11397
7	Bor	65.54	16194	4047	67.06	16194	4141
8	Chanakapur	31.84	7098	4486	27.67	7716	3586
9	Darna	499.96	22912	21821	509.47	26150	19483
10	Dina	53.82	11356	4739	52.35	11356	4610
11	Dudhganga	168.54	14831	11365	147.40	14338	10280
12	Gangapur	30.67	1805	16991	341.01	2710	125834
13	Ghod	132.03	16206	8147	108.10	18891	5722
14	Girna	128.86	10537	12229	58.25	4434	13137
15	Hatnur	155.31	37838	4104	64.93	37838	1716
16	Itiahdoh	277.50	25445	10906	222.00	25240	8796
17	Jayakwadi (PLBC)	537.86	26983	19933	137.22	10595	12951
18	Jayakwadi PRBC	96.12	6416	14982	0.00	0	0
19	Kadva	41.08	1470	27948	52.34	2455	21320
20	Kal	180.34	4368	41284	115.40	4085	28250
21	Katepurna	33.66	3943	8535	0.00	0	0
22	Khadakwasla	329.77	19704	16736	345.27	16213	21296
23	Krishna	392.86	54974	7146	269.09	49396	5448
24	Kukadi	389.26	58649	6637	377.97	61683	6128
25	Lower Terna	28.41	2476	11475	0.00	0	0
26	Lower Wunna	115.02	5473	21015	78.84	5927	13302
27	Majalgaon	132.30	8963	14760	2.63	494	5324
28	Manar	92.12	9207	10005	83.13	11166	7445
29	Manjra	67.04	7596	8825	0.00	0	0
30	Mula	482.56	36910	13074	261.80	37329	7013
31	Nalganga	21.37	2504	8534	25.13	3338	7528
32	NLBC	407.09	39111	10409	365.87	34199	10698
33	NRBC	711.29	64931	10955	668.97	77539	8628
34	Ozerkhed	33.59	3037	11060	155.73	3182	48941
35	Palkhed	90.91	11596	7840	74.91	15851	4726
36	Pawana	31.21	2994	10425	25.31	3083	8210
37	Pench	682.40	65305	10449	791.00	85134	9291
38	Purna	549.01	39538	13885	353.30	38757	9116
39	Pus	66.15	4745	13942	52.85	5621	9402
40	Radhanagari	210.87	23947	8806	328.38	26274	12498
41	Rajanala	24.41	2143	11390	31.28	2087	14988
42	Surya	110.56	1739	63567	70.48	2333	30210
43	Tulashi	29.16	2632	11082	34.35	2560	13418
44	Upper Penganga	439.49	17607	24962	330.00	33913	9731
45	Upper Wardha	137.47	7582	18132	262.65	13233	19848
46	Vishnupuri	75.21	7002	10742	51.27	9876	5191
47	Waghad	32.66	3410	9579	34.49	2264	15234
48	Wan	20.60	1879	10962	66.97	9481	7064
49	Warna	288.46	27757	10392	306.65	29151	10519

* Includes water used by lift

Indicator II
Potential Utilised and Created

Irrigation Potential: ha

Sr. No.	Project	Five Year Average			2003-04		
		Utilised Irrigation Potential	Created Irrigation Potential	Ratio	Utilised Irrigation Potential	Created Irrigation Potential	Ratio
1	Arunavati	3579	20788	0.17	2347	21441	0.11
2	Asola Mendha	9919	9919	1.00	9919	9919	1.00
3	Bagh	27722	38471	0.72	30738	38471	0.80
4	Bhandardara	34330	23077	1.49	34732	23077	1.51
5	Bhatsa	986	5142	0.19	962	5982	0.16
6	Bhima	90658	209494	0.43	32901	214485	0.15
7	Bor	16194	16194	1.00	16194	16194	1.00
8	Chanakapur	7098	18460	0.38	7716	18460	0.42
9	Darna	22912	33170	0.69	26150	33170	0.79
10	Dina	11356	11356	1.00	11356	11356	1.00
11	Dudhganga	14831	38388	0.39	14338	38388	0.37
12	Gangapur	1805	12190	0.15	2710	12190	0.22
13	Ghod	16206	20500	0.79	18891	20500	0.92
14	Girna	10537	69350	0.15	4434	69350	0.06
15	Hatnur	37838	37838	1.00	37838	37838	1.00
16	Itiahdoh	25445	29192	0.87	25240	31730	0.80
17	Jayakwadi (PLBC)	26983	141640	0.19	10595	141640	0.07
18	Jayakwadi PRBC	6416	41682	0.15	0	41682	0.00
19	Kadva	1470	8473	0.17	2455	8811	0.28
20	Kal	4368	7964	0.55	4085	7964	0.51
21	Katepurna	3943	8325	0.47	0	8325	0.00
22	Khadakwasla	19704	60660	0.32	16213	62146	0.26
23	Krishna	54974	69269	0.79	49396	69269	0.71
24	Kukadi	58649	104391	0.56	61683	114271	0.54
25	Lower Terna	2476	7991	0.31	0	8775	0.00
26	Lower Wunna	5473	19427	0.28	5927	22146	0.27
27	Majalgaon	8963	47442	0.19	494	51840	0.01
28	Manar	9207	24475	0.38	11166	24475	0.46
29	Manjra	7596	18223	0.42	0	18223	0.00
30	Mula	36910	82920	0.45	37329	82920	0.45
31	Nalganga	2504	8741	0.29	3338	8741	0.38
32	NLBC	39111	60656	0.64	34199	60656	0.56
33	NRBC	64931	65506	0.99	77539	65506	1.18
34	Ozerkhed	3037	10400	0.29	3182	10400	0.31
35	Palkhed	11596	41580	0.28	15851	43154	0.37
36	Pawana	2994	6365	0.47	3083	6365	0.48
37	Pench	65305	104476	0.63	85134	104476	0.81
38	Purna	39538	57988	0.68	38757	57988	0.67
39	Pus	4745	9183	0.52	5621	9183	0.61
40	Radhanagari	23947	35422	0.68	26274	26274	1.00
41	Rajanala	2143	2542	0.84	2087	2542	0.82
42	Surya	1739	12188	0.14	2333	12188	0.19
43	Tulashi	2632	4720	0.56	2560	4720	0.54
44	Upper Penganga	17607	63205	0.28	33913	66935	0.51
45	Upper Wardha	7582	60300	0.13	13233	62848	0.21
46	Vishnupuri	7002	15630	0.45	9876	15630	0.63
47	Waghad	3410	6750	0.51	2264	6750	0.34
48	Wan	1879	12524	0.15	9481	18735	0.51
49	Warna	27757	54610	0.51	29151	54610	0.53

Indicator III
Output per unit Irrigated Area

Annual Output: Rs. Lakh, Irrigation Potential: ha

Sr. No.	Project	Five Year Average			2003-04		
		Annual Output	Utilised Irigation Potential	Output per unit area Rs./ha	Annual Output	Utilised Irigation Potential	Output per unit area Rs./ha
1	Arunavati	592.97	3579	16568	408.20	2347	17392
2	Asola Mendha	2804.61	9919	28275	2899.33	9919	29230
3	Bagh	6305.29	27722	22745	6046.33	30738	19671
4	Bhandardara	5476.35	34330	15952	5112.71	34732	14720
5	Bhatsa	204.80	986	20775	201.01	962	20895
6	Bhima	35807.00	90658	39497	13610.00	32901	41367
7	Bor	1420.03	16194	8769	1157.87	16194	7150
8	Chanakapur	3607.44	7098	50820	4232.74	7716	54857
9	Darna	9444.78	22912	41221	8729.30	26150	33382
10	Dina	2624.37	11356	23110	2611.79	11356	22999
11	Dudhganga	6726.00	14831	45352	5856.00	14338	40843
12	Gangapur	1130.33	1805	62615	2357.20	2710	86982
13	Ghod	5514.80	16206	34030	5370.00	18891	28426
14	Girna	1418.33	10537	13460	800.72	4434	18059
15	Hatnur	5548.94	37838	14665	16216.90	37838	42859
16	Itiahdoh	5262.34	25445	20681	6426.74	25240	25463
17	Jayakwadi (PLBC)	3965.27	26983	14695	1390.75	10595	13126
18	Jayakwadi PRBC	1242.24	6416	19362	0.00	0	0
19	Kadva	371.23	1470	25254	647.70	2455	26383
20	Kal	1858.48	4368	42544	1927.30	4085	47180
21	Katepurna	936.33	3943	23746	0.00	0	0
22	Khadakwasla	2072.05	19704	10516	1566.14	16213	9660
23	Krishna	14974.80	54974	27240	9681.00	49396	19599
24	Kukadi	22423.40	58649	38233	16005.00	61683	25947
25	Lower Terna	880.22	2476	35550	0.00	0	0
26	Lower Wunna	594.67	5473	10865	617.41	5927	10417
27	Majalgaon	1542.02	8963	17204	57.83	494	11706
28	Manar	2269.48	9207	24649	2698.38	11166	24166
29	Manjra	3998.73	7596	52641	0.00	0	0
30	Mula	5817.42	36910	15761	3721.28	37329	9969
31	Nalganga	518.55	2504	20710	910.94	3338	27290
32	NLBC	11845.85	39111	30288	10334.00	34199	30217
33	NRBC	17045.81	64931	26252	17131.03	77539	22093
34	Ozerkhed	872.14	3037	28717	1613.30	3182	50701
35	Palkhed	3470.24	11596	29927	4062.93	15851	25632
36	Pawana	325.87	2994	10885	388.83	3083	12612
37	Pench	15614.60	65305	23910	21105.60	85134	24791
38	Purna	7761.61	39538	19631	8113.03	38757	20933
39	Pus	1071.76	4745	22588	903.21	5621	16068
40	Radhanagari	12437.20	23947	51937	9081.00	26274	34563
41	Rajanala	783.83	2143	36573	669.30	2087	32070
42	Surya	306.88	1739	17645	733.13	2333	31424
43	Tulashi	1376.40	2632	52303	716.00	2560	27969
44	Upper Penganga	5804.00	17607	32965	13500.00	33913	39808
45	Upper Wardha	1008.65	7582	13304	4085.21	13233	30871
46	Vishnupuri	2139.60	7002	30557	3062.10	9876	31005
47	Waghad	2371.53	3410	69555	1866.64	2264	82449
48	Wan	296.40	1879	15771	661.68	9481	6979
49	Warna	17264.80	27757	62199	13953.00	29151	47865

Indicator IV
Output per unit Irrigation Water supply

Annual Output: Rs.Lakh, Water: Mcum

Sr. No.	Project	Five Year Average			2003-04		
		Annual Output	Water Utilised*	Output per unit water Rs./cum	Annual Output	Water Utilised*	Output per unit water Rs./cum
1	Arunavati	592.97	60.18	0.99	408.20	15.11	2.70
2	Asola Mendha	2804.61	57.74	4.86	2899.33	49.12	5.90
3	Bagh	6305.29	167.35	3.77	6046.33	150.04	4.03
4	Bhandardara	5476.35	321.67	1.70	5112.71	322.13	1.59
5	Bhatsa	204.80	46.53	0.44	201.01	18.18	1.11
6	Bhima	35807.00	1080.54	3.31	13610.00	374.98	3.63
7	Bor	1420.03	65.54	2.17	1157.87	67.06	1.73
8	Chanakapur	3607.44	31.84	11.33	4232.74	27.67	15.30
9	Darna	9444.78	499.96	1.89	8729.30	509.47	1.71
10	Dina	2624.37	53.82	4.88	2611.79	52.35	4.99
11	Dudhganga	6726.00	168.54	3.99	5856.00	147.40	3.97
12	Gangapur	1130.33	30.67	3.69	2357.20	341.01	0.69
13	Ghod	5514.80	132.03	4.18	5370.00	108.10	4.97
14	Girna	1418.33	128.86	1.10	800.72	58.25	1.37
15	Hatnur	5548.94	155.31	3.57	16216.90	64.93	24.98
16	Itiahdoh	5262.34	277.50	1.90	6426.74	222.00	2.89
17	Jayakwadi (PLBC)	3965.27	537.86	0.74	1390.75	137.22	1.01
18	Jayakwadi PRBC	1242.24	96.12	1.29	0.00	0.00	0.00
19	Kadva	371.23	41.08	0.90	647.70	52.34	1.24
20	Kal	1858.48	180.34	1.03	1927.30	115.40	1.67
21	Katepurna	936.33	33.66	2.78	0.00	0.00	0.00
22	Khadakwasla	2072.05	329.77	0.63	1566.14	345.27	0.45
23	Krishna	14974.80	392.86	3.81	9681.00	269.09	3.60
24	Kukadi	22423.40	389.26	5.76	16005.00	377.97	4.23
25	Lower Terna	880.22	28.41	3.10	0.00	0.00	0.00
26	Lower Wunna	594.67	115.02	0.52	617.41	78.84	0.78
27	Majalgaon	1542.02	132.30	1.17	57.83	2.63	2.20
28	Manar	2269.48	92.12	2.46	2698.38	83.13	3.25
29	Manjra	3998.73	67.04	5.97	0.00	0.00	0.00
30	Mula	5817.42	482.56	1.21	3721.28	261.80	1.42
31	Nalganga	518.55	21.37	2.43	910.94	25.13	3.62
32	NLBC	11845.85	407.09	2.91	10334.00	365.87	2.82
33	NRBC	17045.81	711.29	2.40	17131.03	668.97	2.56
34	Ozerkhed	872.14	33.59	2.60	1613.30	155.73	1.04
35	Palkhed	3470.24	90.91	3.82	4062.93	74.91	5.42
36	Pawana	325.87	31.21	1.04	388.83	25.31	1.54
37	Pench	15614.60	682.40	2.29	21105.60	791.00	2.67
38	Purna	7761.61	549.01	1.41	8113.03	353.30	2.30
39	Pus	1071.76	66.15	1.62	903.21	52.85	1.71
40	Radhanagari	12437.20	210.87	5.90	9081.00	328.38	2.77
41	Rajanala	783.83	24.41	3.21	669.30	31.28	2.14
42	Surya	306.88	110.56	0.28	733.13	70.48	1.04
43	Tulashi	1376.40	29.16	4.72	716.00	34.35	2.08
44	Upper Penganga	5804.00	439.49	1.32	13500.00	330.00	4.09
45	Upper Wardha	1008.65	137.47	0.73	4085.21	262.65	1.56
46	Vishnupuri	2139.60	75.21	2.84	3062.10	51.27	5.97
47	Waghad	2371.53	32.66	7.26	1866.64	34.49	5.41
48	Wan	296.40	20.60	1.44	661.68	66.97	0.99
49	Warna	17264.80	288.46	5.99	13953.00	306.65	4.55

* Includes water used by lift.

Indicator V
Cost Recovery Ratio

Revenue, O&M Cost: Rs Lakh

Sr. No.	Project	Five Year Average			2003-04		
		Revenue	O&M Cost	Ratio	Revenue	O&M Cost	Ratio
1	Arunavati	3.30	21.18	0.16	6.14	25.87	0.24
2	Asola Mendha	20.92	59.81	0.35	16.64	42.54	0.39
3	Bagh	34.08	334.34	0.10	90.76	226.83	0.40
4	Bhandardara	217.78	172.75	1.26	242.88	18.69	13.00
5	Bhatsa	1671.27	49.32	33.89	3154.00	45.11	69.92
6	Bhima	787.81	545.45	1.44	614.38	534.58	1.15
7	Bor	29.73	308.29	0.10	20.72	957.80	0.02
8	Chanakapur	95.97	60.33	1.59	126.18	41.23	3.06
9	Darna	419.71	300.40	1.40	489.36	118.28	4.14
10	Dina	16.84	80.93	0.21	25.61	49.85	0.51
11	Dudhganga	164.10	281.73	0.58	172.65	286.17	0.60
12	Gangapur	1598.24	130.92	12.21	2013.02	29.77	67.62
13	Ghod	90.99	101.36	0.90	81.11	92.33	0.88
14	Girna	127.11	311.07	0.41	159.51	155.87	1.02
15	Hatnur	918.93	206.36	4.45	1268.70	131.93	9.62
16	Itiahdoh	42.51	463.93	0.09	78.41	291.71	0.27
17	Jayakwadi (PLBC)	300.25	828.65	0.36	1434.17	833.25	1.72
18	Jayakwadi PRBC	59.90	192.94	0.31	31.89	208.84	0.15
19	Kadva	77.70	86.70	0.90	62.80	77.57	0.81
20	Kal	1553.51	114.36	13.58	2214.00	32.88	67.34
21	Katepurna	58.97	76.06	0.78	15.98	56.53	0.28
22	Khadakwasla	1371.95	782.92	1.75	1930.92	701.88	2.75
23	Krishna	277.83	291.71	0.95	396.90	239.75	1.66
24	Kukadi	137.52	440.51	0.31	274.57	440.50	0.62
25	Lower Terna	18.43	35.58	0.52	4.25	170.23	0.02
26	Lower Wunna	85.07	33.77	2.52	188.61	39.82	4.74
27	Majalgaon	573.06	137.31	4.17	942.38	66.08	14.26
28	Manar	14.93	195.30	0.08	27.29	221.52	0.12
29	Manjra	128.82	166.64	0.77	43.92	118.41	0.37
30	Mula	173.43	607.71	0.29	237.70	557.23	0.43
31	Nalganga	12.23	27.17	0.45	29.86	35.53	0.84
32	NLBC	384.73	220.57	1.74	432.50	130.71	3.31
33	NRBC	484.23	222.80	2.17	576.44	130.37	4.42
34	Ozerkhed	14.08	54.21	0.26	41.80	62.00	0.67
35	Palkhed	163.58	201.79	0.81	260.93	260.93	1.00
36	Pawana	1127.80	115.10	9.80	1847.90	85.11	21.71
37	Pench	988.37	631.26	1.57	2147.00	700.90	3.06
38	Purna	122.62	529.76	0.23	275.36	366.08	0.75
39	Pus	15.84	52.99	0.30	86.83	50.56	1.72
40	Radhanagari	512.66	95.81	5.35	801.87	94.23	8.51
41	Rajanala	1.41	38.24	0.04	1.91	12.22	0.16
42	Surya	326.57	101.75	3.21	921.43	38.79	23.75
43	Tulashi	17.11	46.22	0.37	18.64	52.12	0.36
44	Upper Penganga	105.65	464.72	0.23	174.73	534.19	0.33
45	Upper Wardha	59.64	33.83	1.76	102.41	97.39	1.05
46	Vishnupuri	41.81	176.34	0.24	138.78	93.41	1.49
47	Waghad	6.64	47.88	0.14	11.92	19.16	0.62
48	Wan	2.96	17.80	0.17	15.00	20.27	0.74
49	Warna	252.82	82.11	3.08	396.76	73.41	5.40

Indicator VI
O&M Cost per unit Area

O&Mcost: Rs.Lakhs, Area: ha

Sr. No.	Project	Five Year Average			2003-04		
		O&M Cost	Area Irrigated	O&M Cost per unit area Rs./ha	O&M Cost	Area Irrigated	O&M Cost per unit area Rs./ha
1	Arunavati	21.18	3579	591.79	25.87	2347	1102.26
2	Asola Mendha	59.81	9919	603.02	42.54	9919	428.87
3	Bagh	334.34	27722	1206.05	226.83	30738	737.95
4	Bhandardara	172.75	34330	503.21	18.69	34732	53.81
5	Bhatsa	49.32	986	5002.84	45.11	962	4689.19
6	Bhima	545.45	90658	601.66	534.58	32901	1624.81
7	Bor	308.29	16194	1903.71	957.80	16194	5914.54
8	Chanakapur	60.33	7098	849.88	41.23	7716	534.34
9	Darna	300.40	22912	1311.09	118.28	26150	452.31
10	Dina	80.93	11356	712.66	49.85	11356	438.97
11	Dudhganga	281.73	14831	1899.65	286.17	14338	1995.89
12	Gangapur	130.92	1805	7252.60	29.77	2710	1098.52
13	Ghod	101.36	16206	625.45	92.33	18891	488.75
14	Girna	311.07	10537	2952.09	155.87	4434	3515.34
15	Hatnur	206.36	37838	545.38	131.93	37838	348.67
16	Itiahdoh	463.93	25445	1823.29	291.71	25240	1155.74
17	Jayakwadi (PLBC)	828.65	26983	3070.97	833.25	10595	7864.60
18	Jayakwadi PRBC	192.94	6416	3007.33	208.84	0	0.00
19	Kadva	86.70	1470	5898.23	77.57	2455	3159.67
20	Kal	114.36	4368	2617.80	32.88	4085	804.90
21	Katepurna	76.06	3943	1928.94	56.53	0	0.00
22	Khadakwasla	782.92	19704	3973.33	701.88	16213	4329.12
23	Krishna	291.71	54974	530.64	239.75	49396	485.36
24	Kukadi	440.51	58649	751.09	440.50	61683	714.14
25	Lower Terna	35.58	2476	1436.79	170.23	0	0.00
26	Lower Wunna	33.77	5473	617.06	39.82	5927	671.84
27	Majalgaon	137.31	8963	1531.96	66.08	494	13376.52
28	Manar	195.30	9207	2121.21	221.52	11166	1983.88
29	Manjra	166.64	7596	2193.68	118.41	0	0.00
30	Mula	607.71	36910	1646.46	557.23	37329	1492.75
31	Nalganga	27.17	2504	1085.07	35.53	3338	1064.41
32	NLBC	220.57	39111	563.97	130.71	34199	382.20
33	NRBC	222.80	64931	343.14	130.37	77539	168.13
34	Ozerkhed	54.21	3037	1784.92	62.00	3182	1948.46
35	Palkhed	201.79	11596	1740.18	260.93	15851	1646.14
36	Pawana	115.10	2994	3844.94	85.11	3083	2760.62
37	Pench	631.26	65305	966.64	700.90	85134	823.29
38	Purna	529.76	39538	1339.87	366.08	38757	944.55
39	Pus	52.99	4745	1116.76	50.56	5621	899.48
40	Radhanagari	95.81	23947	400.11	94.23	26274	358.64
41	Rajanala	38.24	2143	1784.34	12.22	2087	585.53
42	Surya	101.75	1739	5850.39	38.79	2333	1662.67
43	Tulashi	46.22	2632	1756.27	52.12	2560	2035.94
44	Upper Penganga	464.72	17607	2639.49	534.19	33913	1575.18
45	Upper Wardha	33.83	7582	446.16	97.39	13233	735.96
46	Vishnupuri	176.34	7002	2518.39	93.41	9876	945.83
47	Waghad	47.88	3410	1404.39	19.16	2264	846.29
48	Wan	17.80	1879	947.22	20.27	9481	213.80
49	Warna	82.11	27757	295.80	73.41	29151	251.83

Indicator VII
Total O&M Cost per unit Water

O&M Cost : Rs. Lakhs, Water : Mcum

Sr. No.	Project	Five Year's Average			2003-04		
		Total O&M Cost Rs. Lakh	Water Utilised*	Total O&M per unit water Rs./cum	Total O&M Cost Rs. Lakh	Water Utilised*	Total O&M per unit water Rs./cum
1	Arunavati	21.18	60.18	0.04	25.87	28.76	0.09
2	Asola Mendha	59.81	57.74	0.10	42.54	49.12	0.09
3	Bagh	334.34	167.35	0.20	226.83	150.04	0.15
4	Bhandardara	172.75	321.67	0.05	18.69	322.13	0.01
5	Bhatsa	49.32	402.54	0.01	45.11	501.00	0.01
6	Bhima	545.45	1718.25	0.03	534.58	971.65	0.06
7	Bor	308.29	66.77	0.46	957.80	73.41	1.31
8	Chanakapur	60.33	61.79	0.10	41.23	62.19	0.07
9	Darna	300.40	499.96	0.06	118.28	509.47	0.02
10	Dina	80.93	53.82	0.15	49.85	52.34	0.10
11	Dudhganga	281.73	179.04	0.16	286.17	182.40	0.16
12	Gangapur	130.92	30.67	0.43	29.77	343.84	0.01
13	Ghod	101.36	136.98	0.07	92.33	111.54	0.08
14	Girna	311.07	194.30	0.16	155.87	150.63	0.10
15	Hatnur	206.36	273.77	0.08	131.93	169.22	0.08
16	Itiahdoh	463.93	277.50	0.17	291.71	222.00	0.13
17	Jayakwadi (PLBC)	828.65	600.93	0.14	833.25	403.94	0.21
18	Jayakwadi PRBC	192.94	107.03	0.18	208.84	22.14	0.94
19	Kadva	86.70	41.08	0.21	77.57	52.34	0.15
20	Kal	114.36	0.00	0.00	32.88	478.25	0.00
21	Katepurna	76.06	56.44	0.13	56.53	32.65	0.17
22	Khadakwasla	782.92	708.39	0.11	701.88	728.49	0.10
23	Krishna	291.71	413.98	0.07	239.75	280.56	0.09
24	Kukadi	440.51	401.55	0.11	440.50	579.76	0.08
25	Lower Terna	35.58	32.12	0.11	170.23	0.00	0.00
26	Lower Wunna	33.77	119.83	0.03	39.82	90.84	0.05
27	Majalgaon	137.31	145.87	0.09	66.08	5.34	1.24
28	Manar	195.30	97.77	0.20	221.52	87.55	0.25
29	Manjra	166.64	105.45	0.16	118.41	6.36	1.86
30	Mula	607.71	482.56	0.13	557.23	269.09	0.21
31	Nalganga	27.17	25.09	0.11	35.53	30.30	0.12
32	NLBC	220.57	426.65	0.05	130.71	387.75	0.03
33	NRBC	222.80	749.95	0.03	130.37	710.22	0.02
34	Ozerkhed	54.21	33.59	0.16	62.00	155.73	0.04
35	Palkhed	201.79	90.91	0.22	260.93	74.91	0.35
36	Pawana	115.10	195.40	0.06	85.11	188.87	0.05
37	Pench	631.26	873.60	0.07	700.90	1005.00	0.07
38	Purna	529.76	565.15	0.09	366.08	390.21	0.09
39	Pus	52.99	52.25	0.10	50.56	57.97	0.09
40	Radhanagari	95.81	278.39	0.03	94.23	328.38	0.03
41	Rajanala	38.24	0.00	0.00	12.22	0.00	0.00
42	Surya	101.75	138.51	0.07	38.79	98.43	0.04
43	Tulashi	46.22	34.40	0.13	52.12	74.62	0.07
44	Upper Penganga	464.72	458.71	0.10	534.19	384.00	0.14
45	Upper Wardha	33.83	167.99	0.02	97.39	330.56	0.03
46	Vishnupuri	176.34	92.41	0.19	93.41	66.17	0.14
47	Waghad	47.88	32.66	0.15	19.16	34.49	0.06
48	Wan	17.80	20.60	0.09	20.27	66.97	0.03
49	Warna	82.11	317.84	0.03	73.41	396.76	0.02

* Includes water used by lift.

Indicator VIII
Revenue per unit of water supplied

Revenue: Rs. Lakhs, Water : Mcum

Sr. No.	Project	Five Year Average			2003-04		
		Revenue	Total Water Utilised*	Revenue per unit of Water Supplied Rs./cum	Revenue	Total Water Utilised*	Revenue per unit of Water Supplied Rs./cum
1	Arunavati	3.30	60.18	0.01	6.14	23.76	0.02
2	Asola Mendha	20.92	57.74	0.04	16.64	49.12	0.03
3	Bagh	34.08	167.35	0.02	90.76	150.04	0.06
4	Bhandardara	217.78	321.67	0.07	242.88	322.13	0.08
5	Bhatsa	1671.27	402.54	0.42	3154.00	501.00	0.63
6	Bhima	787.81	1718.25	0.05	614.38	971.65	0.06
7	Bor	29.73	66.77	0.04	20.72	73.41	0.03
8	Chanakapur	95.97	61.79	0.16	126.18	62.19	0.20
9	Darna	419.71	499.96	0.08	489.36	509.47	0.10
10	Dina	16.84	53.82	0.03	25.61	52.34	0.05
11	Dudhganga	164.10	179.04	0.09	172.65	182.40	0.10
12	Gangapur	1598.24	30.67	5.21	2013.02	343.84	0.59
13	Ghod	90.99	136.98	0.07	81.11	111.54	0.07
14	Girna	127.11	194.30	0.07	159.51	150.63	0.11
15	Hatnur	918.93	273.77	0.34	1268.70	169.22	0.75
16	Itiahdoh	42.51	277.50	0.02	78.41	222.00	0.04
17	Jayakwadi (PLBC)	300.25	600.93	0.05	1434.17	403.94	0.36
18	Jayakwadi PRBC	59.90	107.03	0.06	31.89	22.14	0.14
19	Kadva	77.70	41.08	0.19	62.80	52.34	0.12
20	Kal	1553.51	0.00	0.00	2214.00	478.25	0.46
21	Katepurna	58.97	56.44	0.10	15.98	32.65	0.05
22	Khadakwasla	1371.95	708.39	0.19	1930.92	728.49	0.27
23	Krishna	277.83	413.98	0.07	396.90	280.56	0.14
24	Kukadi	137.52	401.55	0.03	274.57	579.76	0.05
25	Lower Terna	18.43	32.12	0.06	4.25	0.00	0.00
26	Lower Wunna	85.07	119.83	0.07	188.61	90.84	0.22
27	Majalgaon	573.06	145.87	0.39	942.38	5.34	17.65
28	Manar	14.93	97.77	0.02	27.29	87.55	0.03
29	Manjra	128.82	105.45	0.12	43.92	6.36	0.69
30	Mula	173.43	482.56	0.04	237.70	269.09	0.09
31	Nalganga	12.23	25.09	0.05	29.86	30.30	0.10
32	NLBC	384.73	426.65	0.09	432.50	387.75	0.11
33	NRBC	484.23	749.95	0.06	576.44	710.22	0.08
34	Ozerkhed	14.08	33.59	0.04	41.80	155.73	0.03
35	Palkhed	163.58	90.91	0.18	260.93	74.91	0.35
36	Pawana	1127.80	195.40	0.58	1847.90	188.87	0.98
37	Pench	988.37	873.60	0.11	2147.00	1005.00	0.21
38	Purna	122.62	565.15	0.02	275.36	390.21	0.07
39	Pus	15.84	52.25	0.03	86.83	57.97	0.15
40	Radhanagari	512.66	278.39	0.18	801.87	328.38	0.24
41	Rajanala	1.41	0.00	0.00	1.91	0.00	0.00
42	Surya	326.57	138.51	0.24	921.43	98.43	0.94
43	Tulashi	17.11	34.40	0.05	18.64	74.62	0.03
44	Upper Penganga	105.65	458.71	0.02	174.73	384.00	0.05
45	Upper Wardha	59.64	167.99	0.04	102.41	330.56	0.03
46	Vishnupuri	41.81	92.41	0.05	138.78	66.17	0.21
47	Waghad	6.64	32.66	0.02	11.92	34.49	0.03
48	Wan	2.96	20.60	0.01	15.00	66.97	0.02
49	Warna	252.82	317.84	0.08	396.76	396.76	0.10

* Includes water used by lift.

Indicator IX
Mandays for O&M per unit area

Area: ha

Sr. No.	Project	Five Year Average			2003-04		
		Mandays	Area Irrigated	Mandays per unit area	Mandays	Area Irrigated	Mandays per unit area
1	Arunavati	42671	3579	11.92	51634	2347	22.00
2	Asola Mendha	10889	9919	1.10	10220	9919	1.03
3	Bagh	116746	27722	4.21	109623	30738	3.57
4	Bhandardara	151798	34330	4.42	151430	34732	4.36
5	Bhatsa	47	986	0.05	60	962	0.06
6	Bhima	236228	90658	2.61	249660	32901	7.59
7	Bor	39858	16194	2.46	39420	16194	2.43
8	Chanakapur	637	7098	0.09	617	7716	0.08
9	Darna	131035	22912	5.72	131035	26150	5.01
10	Dina	24455	11356	2.15	22265	11356	1.96
11	Dudhganga	137970	14831	9.30	121545	14338	8.48
12	Gangapur	27375	1805	15.16	27375	2710	10.10
13	Ghod	60623	16206	3.74	60468	18891	3.20
14	Girna	92898	10537	8.82	89667	4434	20.22
15	Hatnur	2397	37838	0.06	3016	37838	0.08
16	Itiahdoh	92927	25445	3.65	94313	25240	3.74
17	Jayakwadi (PLBC)	382155	26983	14.16	393835	10595	37.17
18	Jayakwadi PRBC	88987	6416	13.87	104025	0	0.00
19	Kadva	25187	1470	17.13	31025	2455	12.64
20	Kal	389	4368	0.09	253	4085	0.06
21	Katepurna	7884	3943	2.00	9125	0	0.00
22	Khadakwasla	235430	19704	11.95	224910	16213	13.87
23	Krishna	87970	54974	1.60	122233	49396	2.47
24	Kukadi	202867	58649	3.46	231775	61683	3.76
25	Lower Terna	27740	2476	11.20	49275	0	0.00
26	Lower Wunna	8976	5473	1.64	12240	5927	2.07
27	Majalgaon	46081	8963	5.14	31755	494	64.28
28	Manar	106248	9207	11.54	120100	11166	10.76
29	Manjra	53565	7596	7.05	56575	0	0.00
30	Mula	264632	36910	7.17	257550	37329	6.90
31	Nalganga	5840	2504	2.33	5840	3338	1.75
32	NLBC	57816	39111	1.48	48906	34199	1.43
33	NRBC	113880	64931	1.75	122275	77539	1.58
34	Ozerkhed	41192	3037	13.56	50005	3182	15.71
35	Palkhed	158333	11596	13.65	125925	15851	7.94
36	Pawana	36865	2994	12.31	34675	3083	11.25
37	Pench	182336	65305	2.79	181440	85134	2.13
38	Purna	174178	39538	4.41	172645	38757	4.45
39	Pus	27740	4745	5.85	27740	5621	4.94
40	Radhanagari	20402	23947	0.85	19910	26274	0.76
41	Rajanala	48	2143	0.02	46	2087	0.02
42	Surya	758	1739	0.44	1143	2333	0.49
43	Tulashi	12308	2632	4.68	13870	2560	5.42
44	Upper Penganga	236109	17607	13.41	278892	33913	8.22
45	Upper Wardha	52998	7582	6.99	57195	13233	4.32
46	Vishnupuri	50986	7002	7.28	56825	9876	5.75
47	Waghad	34529	3410	10.13	35770	2264	15.80
48	Wan	11580	1879	6.16	23034	9481	2.43
49	Warna	30879	27757	1.11	31390	29151	1.08

Indicator X
Land Damage Index

Area: ha

Sr. No.	Project	Five Year Average			2003-04		
		Land Damaged	Area irrigated	Land Damage Index	Land Damaged	Area irrigated	Land Damage Index
1	Arunavati	0	3579	0.00	0	2347	0.00
2	Asola Mendha	0	9919	0.00	0	9919	0.00
3	Bagh	0	27722	0.00	0	30738	0.00
4	Bhandardara	348	34330	1.51	343	34732	106.48
5	Bhatsa	0	986	0.00	0	962	0.00
6	Bhima	4377	90658	2.09	2974	32901	793.11
7	Bor	32	16194	0.20	30	16194	44.74
8	Chanakapur	0	7098	0.00	0	7716	0.00
9	Darna	219	22912	0.66	222	26150	43.57
10	Dina	0	11356	0.00	0	11356	0.00
11	Dudhganga	0	14831	0.00	0	14338	0.00
12	Gangapur	18	1805	0.15	18	2710	55.69
13	Ghod	0	16206	0.00	0	18891	0.00
14	Girna	0	10537	0.00	0	4434	0.00
15	Hatnur	0	37838	0.00	0	37838	0.00
16	Itiahdoh	0	25445	0.00	0	25240	0.00
17	Jayakwadi (PLBC)	938	26983	0.66	425	10595	309.72
18	Jayakwadi PRBC	698	6416	1.67	387	0	0.00
19	Kadva	0	1470	0.00	0	2455	0.00
20	Kal	0	4368	0.00	0	4085	0.00
21	Katepurna	61	3943	0.74	0	0	0.00
22	Khadakwasla	449	19704	0.74	449	16213	130.04
23	Krishna	1214	54974	1.75	1166	49396	445.58
24	Kukadi	0	58649	0.00	0	61683	0.00
25	Lower Terna	16	2476	0.20	13	0	0.00
26	Lower Wunna	31	5473	0.16	37	5927	46.93
27	Majalgaon	502	8963	1.06	388	494	14752.85
28	Manar	245	9207	1.00	235	11166	283.17
29	Manjra	557	7596	3.05	122	0	0.00
30	Mula	1029	36910	1.24	1021	37329	389.99
31	Nalganga	2	2504	0.02	0	3338	0.00
32	NLBC	1378	39111	2.27	1248	34199	341.10
33	NRBC	2419	64931	3.69	1886	77539	281.93
34	Ozerkhed	29	3037	0.28	30	3182	106.16
35	Palkhed	110	11596	0.26	91	15851	121.48
36	Pawana	0	2994	0.00	0	3083	0.00
37	Pench	334	65305	0.32	60	85134	7.59
38	Purna	851	39538	1.47	703	38757	198.98
39	Pus	0	4745	0.00	0	5621	0.00
40	Radhanagari	194	23947	0.55	972	26274	378.14
41	Rajanala	0	2143	0.00	0	2087	0.00
42	Surya	0	1739	0.00	0	2333	0.00
43	Tulashi	0	2632	0.00	0	2560	0.00
44	Upper Penganga	0	17607	0.00	139	33913	42.21
45	Upper Wardha	0	7582	0.00	0	13233	0.00
46	Vishnupuri	0	7002	0.00	0	9876	0.00
47	Waghad	4	3410	0.06	0	2264	0.00
48	Wan	0	1879	0.00	0	9481	0.00
49	Warna	0	27757	0.00	0	29151	0.00

Indicator XI
Equity Performance

Sr. No.	Project	Five Years Average Ratio of Utilised to Created Potential			Ratio of Utilised to Created Potential 2003-04		
		Head	Middle	Tail	Head	Middle	Tail
1	Arunavati	0.40	0.25	0.04	0.32	0.17	0.00
2	Asola Mendha	0.96	1.09	1.42	1.01	0.95	1.35
3	Bagh	1.18	0.59	0.57	1.34	0.62	0.63
4	Bhandardara	0.96	1.00	1.00	1.00	1.00	1.00
5	Bhatsa	0.28	0.20	0.07	0.00	0.00	0.00
6	Bhima	0.70	0.77	0.53	0.28	0.09	0.06
7	Bor	0.34	0.43	0.41	0.36	0.41	0.38
8	Chanakapur	0.19	0.28	0.27	0.14	0.23	0.16
9	Darna	0.69	0.69	0.66	0.79	0.79	0.76
10	Dina	0.80	1.28	0.69	0.84	1.26	0.69
11	Dudhganga	0.24	0.35	0.51	0.26	0.36	0.45
12	Gangapur	0.09	0.10	0.31	0.13	0.15	0.47
13	Ghod	0.70	0.71	0.96	0.63	0.63	0.68
14	Girna	0.17	0.15	0.12	0.07	0.06	0.05
15	Hatnur	0.88	0.24	0.08	1.06	0.29	0.10
16	Itiahdoh	0.94	0.96	0.77	0.94	0.79	0.74
17	Jayakwadi (PLBC)	0.47	0.09	0.15	0.46	0.00	0.00
18	Jayakwadi PRBC	0.16	0.13	0.17	0.00	0.00	0.00
19	Kadva	0.10	0.17	0.41	0.09	0.11	1.00
20	Kal	0.66	0.51	0.54	0.52	0.49	0.55
21	Katepurna	0.40	0.37	0.39	0.00	0.00	0.00
22	Khadakwasla	0.34	0.37	0.28	0.27	0.33	0.20
23	Krishna	0.73	0.55	0.28	0.61	0.39	0.26
24	Kukadi	0.95	0.93	0.85	0.97	0.96	0.60
25	Lower Terna	0.06	0.05	0.05	0.00	0.00	0.00
26	Lower Wunna	0.47	0.33	0.04	0.52	0.38	0.05
27	Majalgaon	0.26	0.14	0.11	0.02	0.00	0.00
28	Manar	0.58	0.43	0.14	0.77	0.52	0.11
29	Manjra	0.12	0.11	0.07	0.00	0.00	0.00
30	Mula	0.86	0.87	0.84	0.96	0.96	1.00
31	Nalganga	0.34	0.17	0.20	0.63	0.23	0.26
32	NLBC	0.64	0.64	0.64	0.62	0.77	0.33
33	NRBC	0.97	0.82	1.01	1.00	0.98	1.01
34	Ozerkhed	0.00	0.00	0.00	0.00	0.00	0.00
35	Palkhed	0.00	0.00	0.00	0.00	0.00	0.00
36	Pawana	0.00	0.00	0.00	0.00	0.00	0.00
37	Pench	0.63	0.67	0.57	0.84	0.94	0.67
38	Purna	0.78	0.64	0.69	0.76	0.56	0.69
39	Pus	0.31	0.39	0.08	0.39	0.42	0.07
40	Radhanagari	0.63	0.69	0.70	0.67	0.74	0.82
41	Rajanala	1.00	0.70	0.87	0.97	0.70	0.81
42	Surya	0.53	0.54	0.39	0.19	0.19	0.19
43	Tulashi	0.58	0.55	0.55	0.71	0.68	0.23
44	Upper Penganga	0.18	0.89	0.17	0.52	0.50	0.54
45	Upper Wardha	0.40	0.20	0.05	0.57	0.34	0.11
46	Vishnupuri	0.46	0.63	0.21	0.54	1.27	0.24
47	Waghad	0.00	0.00	0.00	0.00	0.00	0.00
48	Wan	0.40	0.16	0.05	0.90	0.80	0.27
49	Warna	0.60	0.47	0.56	0.77	0.46	0.62

Indicator XII - A
Assessment Recovery Ratio (Irrigation)

Recovery & Assessment : Rs Lakhs

Sr. No.	Project	Five Year Average			2003-04		
		Irrigation Recovery	Assess-ment Irrigation	Ratio Recovery/ assess-ment	Irrigation Recovery	Assess-ment Irrigation	Ratio Recovery/ assess-ment
1	Arunavati	3.24	16.83	0.19	3.78	17.67	0.21
2	Asola Mendha	6.80	20.42	0.33	8.67	34.36	0.25
3	Bagh	8.15	69.46	0.12	18.82	57.78	0.33
4	Bhandardara	35.50	97.46	0.36	14.53	140.40	0.10
5	Bhatsa	2.61	3.78	0.69	3.82	9.88	0.39
6	Bhima	394.74	462.58	0.85	128.77	795.47	0.16
7	Bor	7.92	19.38	0.41	12.68	26.03	0.49
8	Chanakapur	8.85	10.83	0.82	9.67	8.41	1.15
9	Darna	69.21	82.58	0.84	110.06	113.53	0.97
10	Dina	9.51	20.93	0.45	14.66	33.57	0.44
11	Dudhganga	36.23	193.42	0.19	44.81	266.69	0.17
12	Gangapur	45.78	55.06	0.83	39.69	75.69	0.52
13	Ghod	26.84	61.96	0.43	5.46	90.35	0.06
14	Girna	22.12	26.48	0.84	13.28	35.26	0.38
15	Hatnur	26.06	65.83	0.40	15.33	75.05	0.20
16	Itiahdoh	16.34	80.77	0.20	23.63	73.51	0.32
17	Jayakwadi (PLBC)	74.72	499.11	0.15	26.69	537.31	0.05
18	Jayakwadi PRBC	19.32	104.47	0.18	193.20	1044.68	0.18
19	Kadva	2.49	2.37	1.05	3.44	5.02	0.69
20	Kal	0.00	0.00	0.00	0.00	0.00	0.00
21	Katepurna	11.20	12.76	0.88	27.10	18.18	1.49
22	Khadakwasla	87.51	142.94	0.61	94.45	205.32	0.46
23	Krishna	162.64	0.00	0.00	155.20	0.00	0.00
24	Kukadi	92.46	116.67	0.79	153.91	273.60	0.56
25	Lower Terna	4.83	42.29	0.11	0.00	0.00	0.00
26	Lower Wunna	0.00	0.00	0.00	0.00	0.00	0.00
27	Majalgaon	37.41	105.21	0.36	0.00	2.33	0.00
28	Manar	10.04	123.27	0.08	20.39	64.60	0.32
29	Manjra	14.77	162.28	0.09	0.00	0.00	0.00
30	Mula	69.37	105.35	0.66	82.04	135.56	0.61
31	Nalganga	7.95	8.30	0.96	14.26	19.37	0.74
32	NLBC	183.25	233.76	0.78	171.29	220.47	0.78
33	NRBC	230.08	304.98	0.75	208.81	215.61	0.97
34	Ozerkhed	14.06	16.35	0.86	4.75	4.75	1.00
35	Palkhed	25.52	35.91	0.71	26.65	26.65	1.00
36	Pawana	5.86	6.87	0.85	8.57	9.78	0.88
37	Pench	71.28	133.08	0.54	134.50	226.52	0.59
38	Purna	106.17	506.29	0.21	123.76	708.03	0.17
39	Pus	11.85	45.64	0.26	33.13	28.36	1.17
40	Radhanagari	167.32	267.00	0.63	213.97	392.22	0.55
41	Rajanala	1.30	8.24	0.16	1.96	0.00	0.00
42	Surya	1.88	7.94	0.24	3.19	29.62	0.11
43	Tulashi	17.11	37.62	0.45	18.64	40.55	0.46
44	Upper Penganga	81.66	390.25	0.21	144.54	345.53	0.42
45	Upper Wardha	12.69	22.36	0.57	37.11	61.26	0.61
46	Vishnupuri	0.94	50.30	0.02	1.65	58.50	0.03
47	Waghad	5.41	5.58	0.97	7.18	7.18	1.00
48	Wan	2.57	6.21	0.41	14.36	33.96	0.42
49	Warna	114.19	243.61	0.47	147.26	509.00	0.29

Indicator XII - B
Assessment Recovery Ratio (Non-Irrigation)

Recovery & Assessment : Rs Lakhs

Sr. No.	Project	Five Year Average			2003-04		
		Irrigation Recovery	Assess-ment Irrigation	Ratio Recovery/ assess-ment	Irrigation Recovery	Assess-ment Irrigation	Ratio Recovery/ assess-ment
1	Arunavati	0.64	1.38	0.46	1.08	1.08	1.00
2	Asola Mendha	0.00	0.00	0.00	0.00	0.00	0.00
3	Bagh	0.07	12.13	0.01	10.08	10.55	0.96
4	Bhandardara	22.87	372.13	0.06	5.75	278.06	0.02
5	Bhatsa	1578.68	2133.94	0.74	2966.69	1424.11	2.08
6	Bhima	392.06	599.08	0.65	476.54	642.10	0.74
7	Bor	14.50	14.38	1.01	0.00	31.38	0.00
8	Chanakapur	66.79	72.91	0.92	81.17	85.13	0.95
9	Darna	478.50	561.01	0.85	220.75	691.85	0.32
10	Dina	0.00	0.00	0.00	0.00	0.00	0.00
11	Dudhganga	96.77	106.39	0.91	221.92	320.34	0.69
12	Gangapur	1581.30	1733.01	0.91	1772.33	2079.29	0.85
13	Ghod	31.88	75.83	0.42	53.07	61.09	0.87
14	Girna	99.95	174.32	0.57	145.27	209.57	0.69
15	Hatnur	887.95	1232.02	0.72	1253.37	2227.40	0.56
16	Itiahdoh	0.27	15.78	0.02	5.36	6.46	0.83
17	Jayakwadi (PLBC)	225.07	259.97	0.87	1397.16	192.72	7.25
18	Jayakwadi PRBC	38.26	87.60	0.44	28.26	157.68	0.18
19	Kadva	0.00	0.01	0.00	0.00	0.80	0.00
20	Kal	0.00	0.00	0.00	0.00	0.00	0.00
21	Katepurna	544.84	787.58	0.69	1327.40	1041.90	1.27
22	Khadakwasla	1158.92	1597.04	0.73	1650.02	1917.29	0.86
23	Krishna	94.56	0.00	0.00	237.78	0.00	0.00
24	Kukadi	25.12	28.77	0.87	39.71	68.33	0.58
25	Lower Terna	2.35	12.03	0.20	0.47	7.22	0.07
26	Lower Wunna	0.00	0.00	0.00	0.00	0.00	0.00
27	Majalgaon	293.81	366.92	0.80	697.48	1326.57	0.53
28	Manar	0.96	13.17	0.07	1.83	29.74	0.06
29	Manjra	34.38	191.54	0.18	23.72	30.42	0.78
30	Mula	77.50	124.40	0.62	105.98	259.43	0.41
31	Nalganga	4.28	4.52	0.95	15.60	5.67	2.75
32	NLBC	254.14	327.71	0.78	367.63	363.12	1.01
33	NRBC	242.46	327.71	0.74	363.12	363.12	1.00
34	Ozerkhed	4.07	5.70	0.71	8.59	8.69	0.99
35	Palkhed	207.89	404.66	0.51	464.10	464.10	1.00
36	Pawana	1121.94	1298.05	0.86	1835.70	1920.10	0.96
37	Pench	559.03	919.88	0.61	1642.15	1681.77	0.98
38	Purna	22.78	239.70	0.10	127.32	91.95	1.38
39	Pus	3.99	9.13	0.44	53.70	18.32	2.93
40	Radhanagari	345.34	549.31	0.63	587.90	847.77	0.69
41	Rajanala	0.91	0.91	1.00	6.69	6.69	1.00
42	Surya	437.19	537.59	0.81	916.94	1085.28	0.84
43	Tulashi	0.00	12.80	0.00	0.00	1.32	0.00
44	Upper Penganga	20.03	106.15	0.19	30.19	321.42	0.09
45	Upper Wardha	44.86	60.35	0.74	65.31	67.18	0.97
46	Vishnupuri	12.66	49.58	0.26	26.68	94.51	0.28
47	Waghad	2.32	5.43	0.43	3.98	21.15	0.19
48	Wan	0.39	0.39	1.00	0.65	0.65	1.00
49	Warna	138.63	190.95	0.73	134.64	231.18	0.58

Appendix –XVII

State target values for indicators

I) Annual Irrigation Water Supply Per Unit Irrigated Area:

Prescribed water use efficiency in Rabi and Hot weather season is 150 and 110 ha/Mm^3 respectively. As there are Rabi and Hot weather crops in most of the major and medium projects, average water use efficiency works out to (150+110)/2=130 ha/Mm^3

Thus the water requirement per unit area = 1000000/130 = 7692 m^3/ ha.

In case of minor project as there are no crops irrigated in Hot weather the water requirement per unit area = 1000000/150 = 6666.67 m^3 / ha. Say 6667 m^3 / ha.

Hence in broad sense the water requirement per unit area works out to 7692 m^3 per ha in case of major and medium projects and 6667 m^3 per ha in case of minor projects.

II) Potential Created And Utilised:

Ideally, the State target should be 1, but practically it depends on availability of water in the reservoirs. Water availability in the reservoir was only sixty percent of gross storage during 2003-04. Therefore, the State target set for this indicator was 0.6 instead of 1.

III) Output Per Unit Irrigated Area:

As per the study conducted by WALMI, Aurangabad, output per ha of irrigated area (for all nine Agroclimatic Zones) comes to Rs. 30000/- per ha with perennial crops on some area.

The income for eight monthly cropping works out to Rs. 25000/- per ha. Therefore, Rs. 30000/- per ha is selected as a target for major and medium projects and Rs. 25000/- per ha for minor projects.

IV) Output Per Unit Irrigation Water Supply:

Considering for Major/Medium projects outpt as Rs. 30000 per ha with water use efficiency as 130 ha/ Mm^3 total income from 1 Mm^3 = 130x30000 = Rs. 39,00,000/-

From 1 m^3, income will be = 3900000/1000000= Rs. 3.90/ m^3

And for Minor irrigation projects the income per cum will be

= 150 x 25000 / 1000000 = Rs.3.75/ m^3

V) Cost Recovery Ratio:

Ideally this ratio should be equal to 1 so as to meet the annual O&M cost through recovery of water charges. Due to increase in water rates and special drive for recovery of arrears, the recovery has substantially increased. Therefore, the ratio has gone above 1.

VI) Total O&M Cost Per Unit Area:

Government has decided Rs. 250/ha (excluding establishment expenditure) as a norm for O&M of irrigation projects.

As per norms prescribed recently by GOM, for staffing pattern of management section one Sectional Engineer, one Civil Engineering Assistant, 2 Dafter Karkoons,

8 Canal inspectors and 10 other staff i.e. totaling 22 persons for managing 3000 to 5000 ha command, the establishment cost works out to Rs. 450/ha. Thus total O&M cost = Rs. 250 + Rs. 450 = Rs. 700/ha.

VII) Total O&M Cost Per Unit Water Supplied:

The O&M cost for 2003-04 was Rs. 3.3 billions The total water use in 2003-04 was to the tune of 15359 Mm^3

Therefore, total O&M cost per unit of water = $3.3 \times 10^9 / 15359 \times 10^6$

= Rs. 0.217 per m^3

Say Rs. 0.22 per m^3

VIII) Revenue Per Unit of Water Supplied:

During 2003-04 the average water use for various purposes in the State was as under.

A) Irrigation purpose: 10569 Mm^3

B) Non Irrigation purpose: Domestic use:3058 Mm^3**, Industrial use:** 445 Mm^3 **Other use :** 1287 Mm^3 (Total 4790 Mm^3)

Total water use = (A) + (B) = 10569 + 4790 = 15359 Mm^3

The revenue from various water uses with prevailing water rates was as under.

A) Irrigation purpose: Rs. 428.90 Millions

B) Non Irrigation Purpose : Rs. 3347.40 Millions

Revenue per unit

water supplied = $\frac{\text{Total recovery of water charges}}{\text{Total water use}}$

$= \frac{(428.90 + 3347.40) \times 10^6}{15359 \times 10^6} = \frac{3776.30}{15359} =$ Rs. 0.245/m^3

Say Rs. 0.25 per m^3

IX) Mandays For O&M Per Unit Area:

As per prescribed norms, O&M charges = Rs. 250 per ha.

Considering 40% labour component = Rs. 250 x 0.4 = Rs. 100/- Assuming Rs. 50 per manday as labour charges, mandays required will be two mandays + 1 manday from establishment totaling to 3 mandays per ha.

X) Land Damage Index:

It should be minimum for all the projects.

XI) Equity Performance (head, middle and tail)

The performance for this indicator can be judged on the basis of distribution of available water in head, middle and tail reach equitably. The performance is considered as “Very good” if the variation in the distribution of water at head, middle & tail reach is equal or within 5%, “Good” if difference is upto 10%, “Moderate” if the difference is up to 15% and “Fair” if the difference is more than 15% of the maximum value in any one of the reaches.

XII-A) Assessment Recovery Ratio (Irrigation):

Ideally this ratio should be equal to 1 so as to meet the annual O & M cost through recovery of water charges.

XII-B) Assessment Recovery Ratio (Non Irrigation):

The State target for this ratio is set as equal to 1.

Appendix XVIII

Abstract of guidelines issued by GOM for

Benchmarking of Irrigation Projects – 2003-04

Government of Maharashtra, Irrigation 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. The abstract of these guidelines is given below:

i) The five-year average values from 1998-99 to 2002-03 and values for 2003-04 be considered for comparison, for all the indicators. Absurd (nil or very high values) need not be considered while calculating the average.

ii) This year a new indicator viz. 'Assessment Recovery Ratio' has been introduced so as to know the performance of a circle in respect of actual assessment & recovery. The assessment & recovery for (a) Irrigation (b) Non irrigation uses be shown separately & arrears of recovery should not be taken into consideration.

iii) In respect of minor projects, project wise detailed benchmarking be done at circle level. Indicatorwise abstract data be submitted to MWI Commission's office. Indicatorwise information in respect of the best minor projects be given by the concerned circle.

iv) MWIC office will compile the indicator wise data for Major / Medium / Minor projects submitted by all the circles & prepare a report representing the Benchmarking of the projects in the State, so that the performance of all circles can be evaluated at a glance.

While submitting the indicatorwise information to Chief Engineer, MWIC Aurangabad, Superintending Engineers should verify the correctness of the data at their level.

In continuation to above guidelines further clarification in this respect given by GOM vide letter dated 27.12.2004 is as follows:

i. The benchmarking report for 2003-04 will comprise benchmarking of irrigation projects under 25 circles as the management of the Irrigation Projects under the administrative control of Irrigation Development corporations, has been taken over by Government from 1.1.2005.

ii. The prevailing market prices have been considered while calculating the values for output per unit irrigated area. In order to know the exact increase in production using minimum quantity of water cropwise prices of 1998-99 be considered as base year price and made applicable for remaining five years. The yearly increase in market prices need not be considered.

iii In case of minor projects, the projects considered in the benchmarking report of 2002-03 be also considered in year 2003-04 for comparison in successive years.

BENCHMARKING
OF
WATER AND LAND MANAGEMENT INSTITUTE (WALMI), AURANGABAD

1.0 INTRODUCTION

WALMI, Aurangabad (Maharashtra) is a premier training institute of its kind in India established on 1st 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 inservice 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 Irrigation 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 recently 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 longterm courses (Participants)

The number of participants actually participated in long term courses (25/20 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 1999 – 2004)

(i) Strength of teaching staff

The strength of teaching staff shows a declining trend in last five years because of the retirement of core faculty and lesser proportions of deputationist. The existence of sizeable core faculty is one of the vital factors of this institute's strength and performance.

(ii) Annual training workload (trainee days)

Achievement in last five years is more than the planned training workload except for the year 2001 - 2002 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 about 31000. This is because of the faculty strength lower than the sanctioned strength.

(iii) Annual training workload of long term courses (participants)

The number of participants actually attended in LTC for the year 2002-03 were less than the potential strength. This is because of poor response from the participants working in irrigation management.

(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 lesser 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 around four, which indicates that overall quality of training as excellent.

(vi) Research activities

This indicator shows a declining trend over the last 3 - 4 years and needs to be improved. There is a some improvement in the year 2003 – 04. Research studies need to be 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.

(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.

(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. The cost of training is expected to be around Rs.2000 per trainee day.

(x) Central assistance for training programme

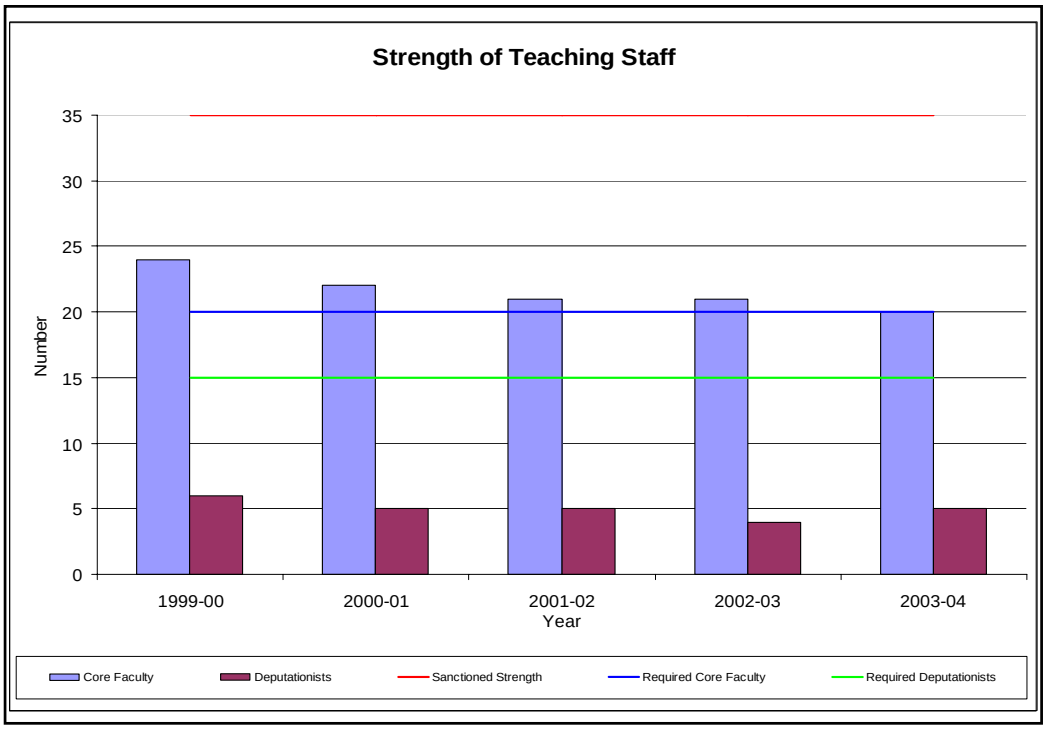
Central assistance started from the year 1999- 2000 for CAD activities including training & research. There is a substantial achievement during the year 2003 – 04.

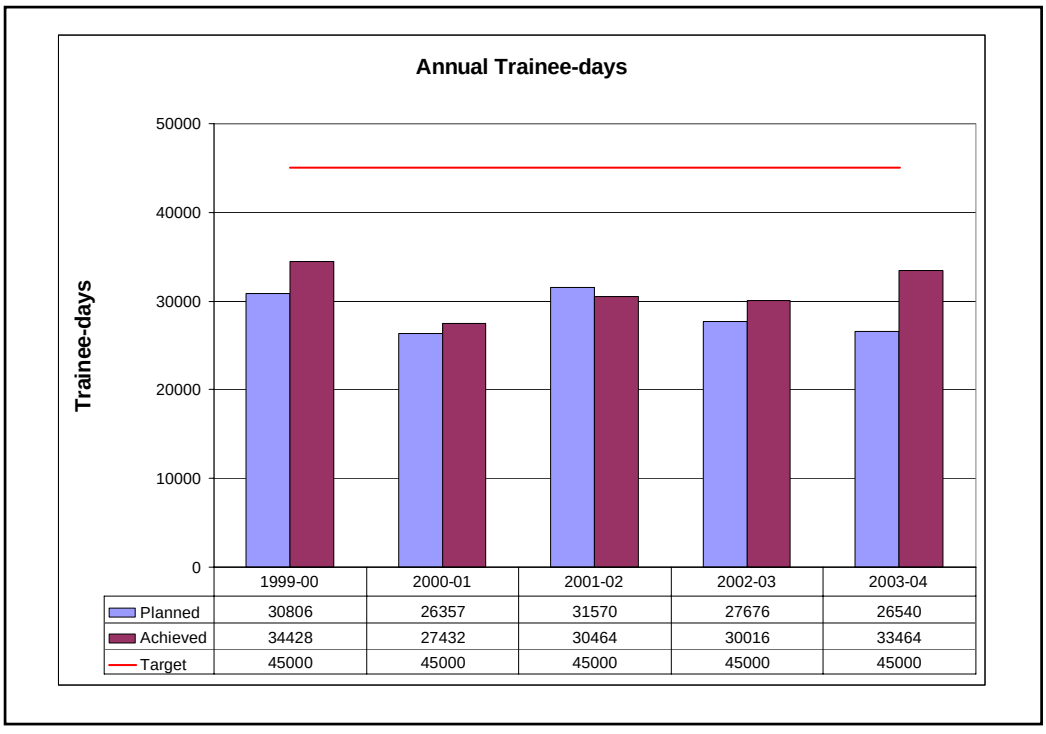
(xi) Referencing WALMI Library

This indicates that use of library is increasing among the faculties , training participants and visitors.

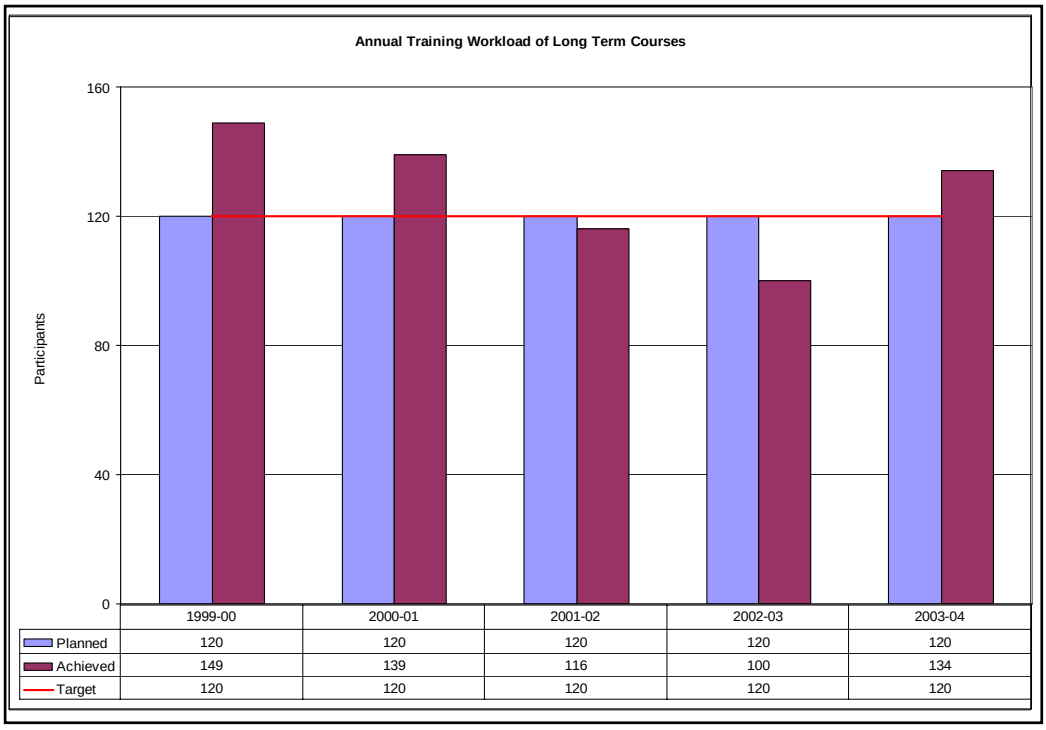
(xii) Visitors in WALMI

The visitors in WALMI are increasing year after year which is a good indicator for the capabilities of the WALMI.

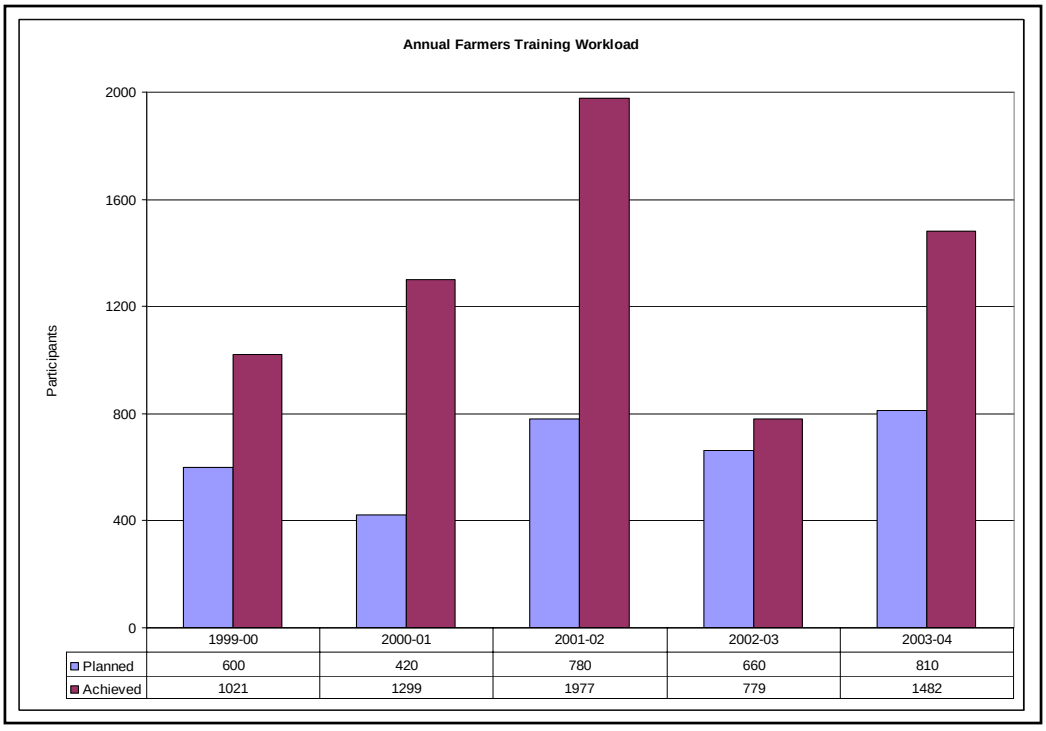




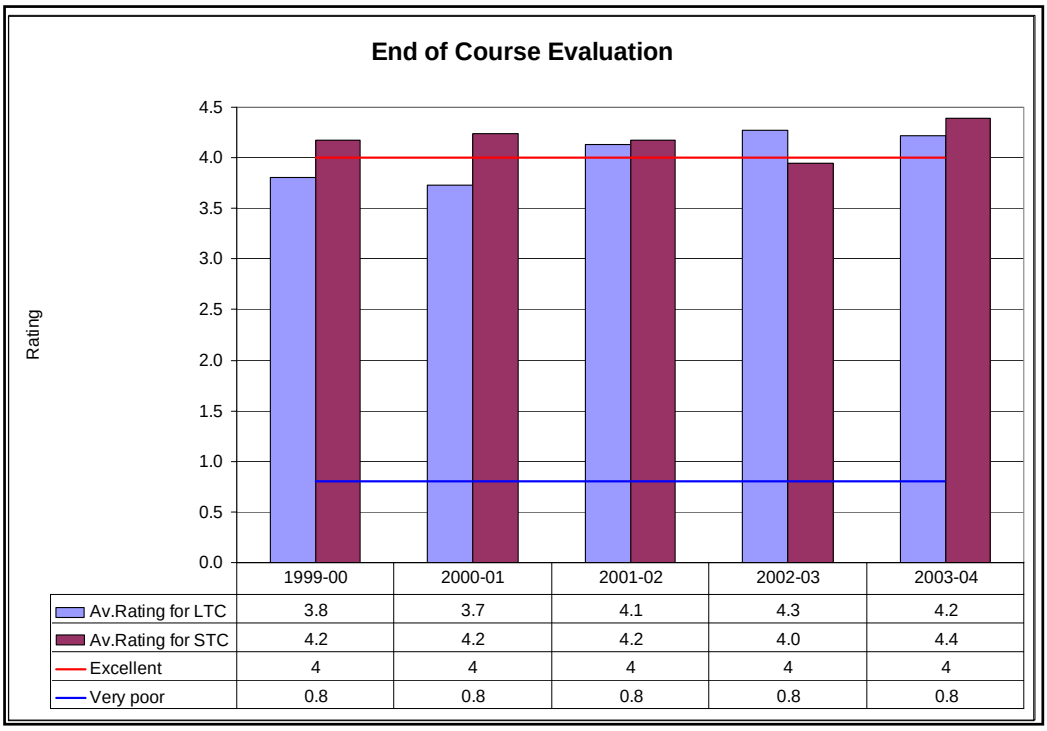
	1999-00	2000-01	2001-02	2002-03	2003-04
Planned	30806	26357	31570	27676	26540
Achieved	34428	27432	30464	30016	33464
Target	45000	45000	45000	45000	45000



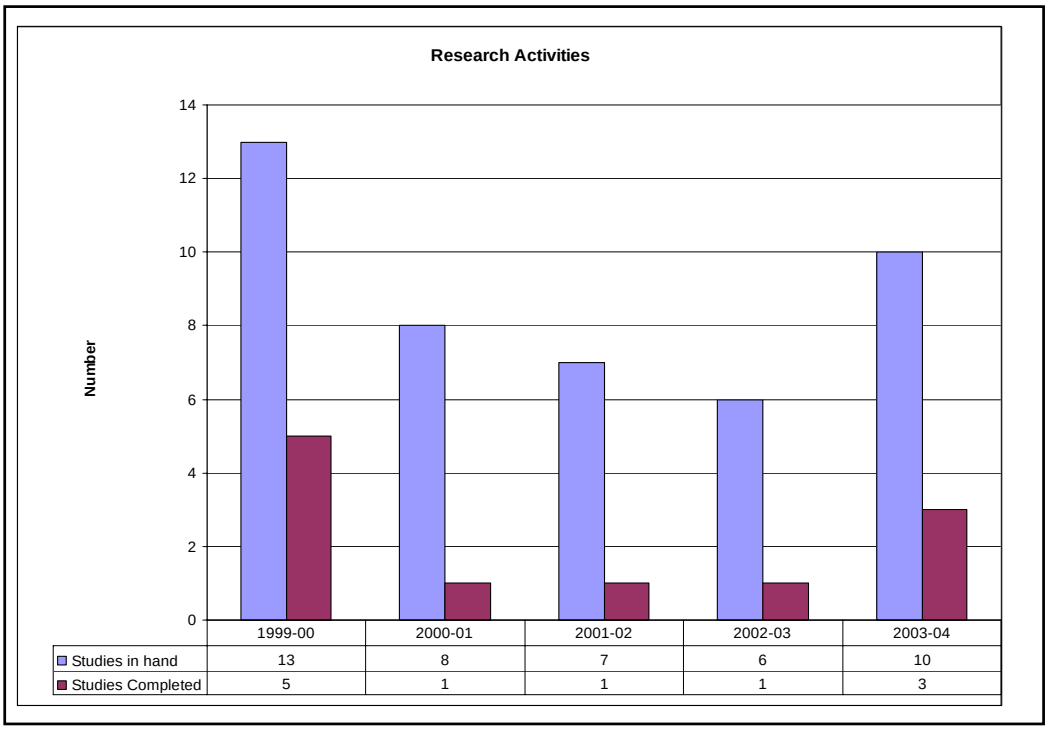
	1999-00	2000-01	2001-02	2002-03	2003-04
Planned	120	120	120	120	120
Achieved	149	139	116	100	134
Target	120	120	120	120	120



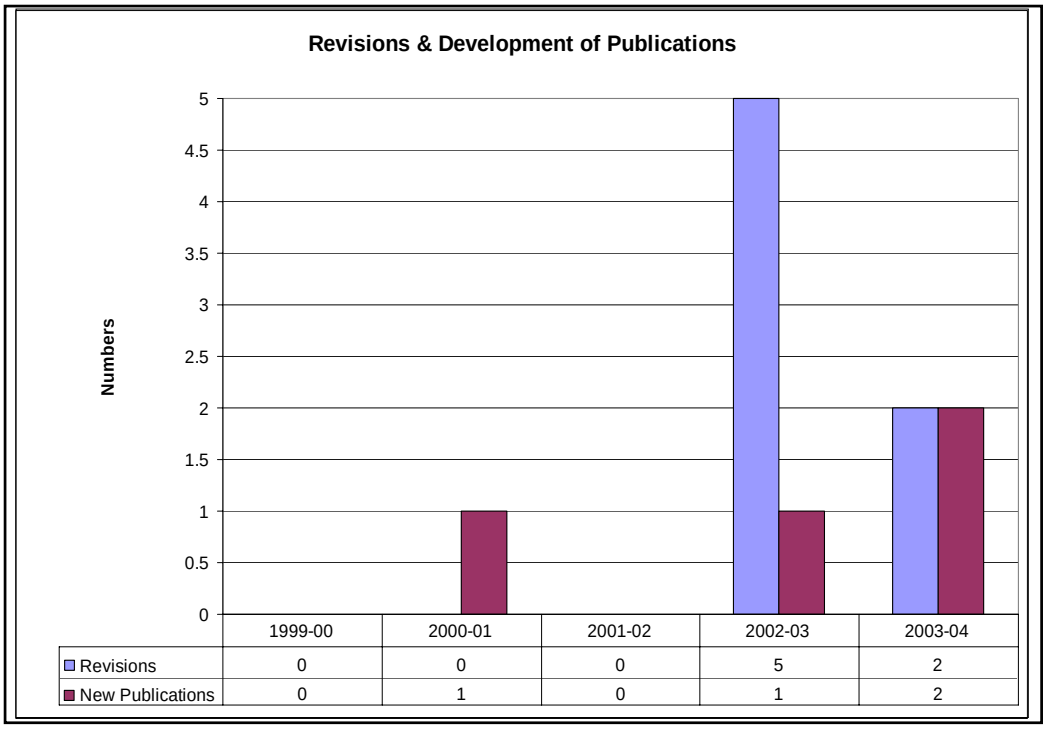
	1999-00	2000-01	2001-02	2002-03	2003-04
Planned	600	420	780	660	810
Achieved	1021	1299	1977	779	1482

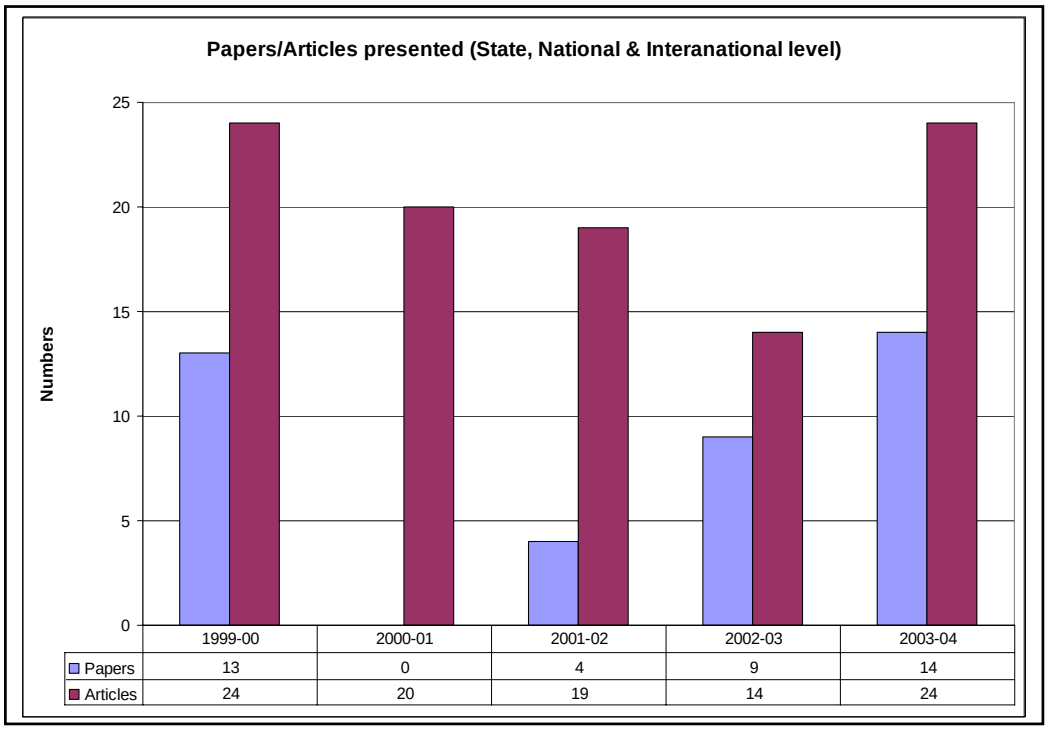


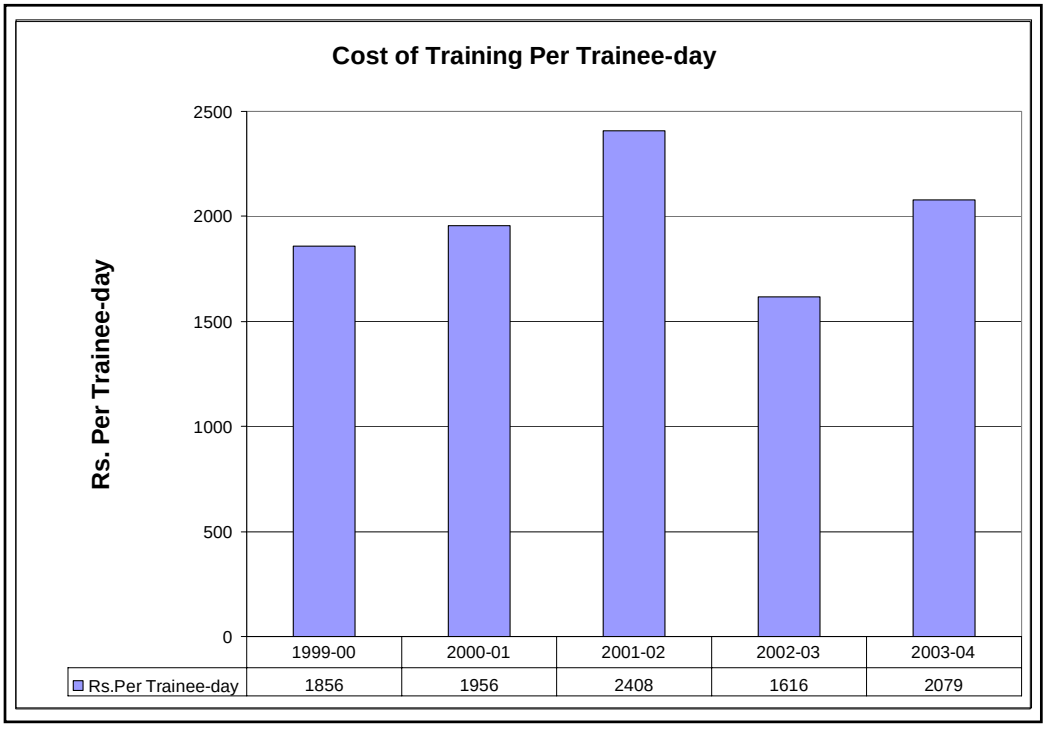
	1999-00	2000-01	2001-02	2002-03	2003-04
Av.Rating for LTC	3.8	3.7	4.1	4.3	4.2
Av.Rating for STC	4.2	4.2	4.2	4.0	4.4
Excellent	4	4	4	4	4
Very poor	0.8	0.8	0.8	0.8	0.8

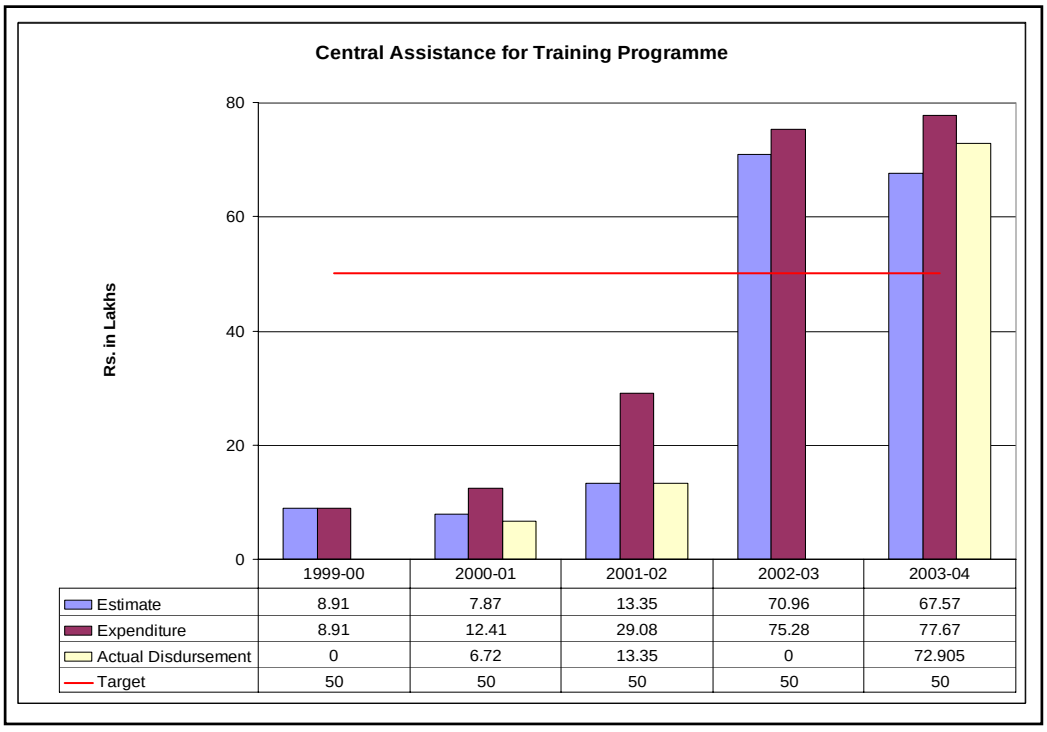


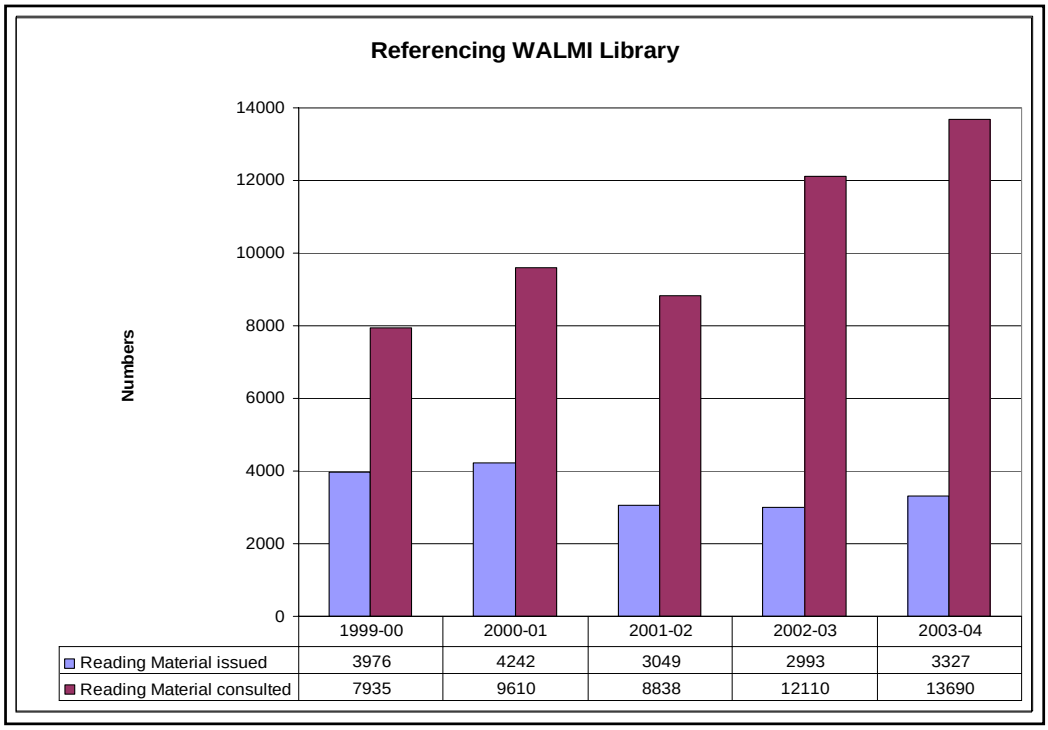
	1999-00	2000-01	2001-02	2002-03	2003-04
Studies in hand	13	8	7	6	10
Studies Completed	5	1	1	1	3


Revisions & Development of Publications
Numbers
5
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
1999-00
2000-01
2001-02
2002-03
2003-04
Revisions 0 0 0 5 2
New Publications 0 1 0 1 2

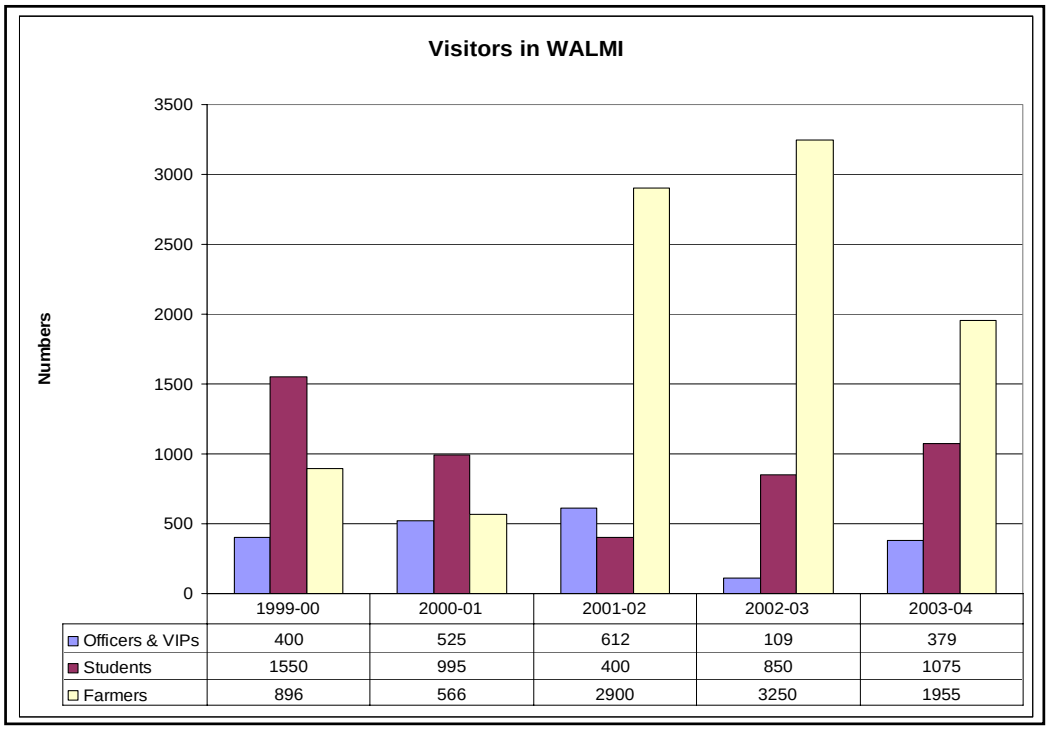

Papers/Articles presented (State, National & Interanational level)
Numbers
25
20
15
10
5
0
1999-00
2000-01
2001-02
2002-03
2003-04
Papers 13 0 4 9 14
Articles 24 20 19 14 24


Cost of Training Per Trainee-day
Rs. Per Trainee-day
2500
2000
1500
1000
500
0
1999-00
2000-01
2001-02
2002-03
2003-04
Rs.Per Trainee-day
1856
1956
2408
1616
2079


Central Assistance for Training Programme
Rs. in Lakhs
80
60
40
20
0
1999-00
2000-01
2001-02
2002-03
2003-04
Estimate
8.91
7.87
13.35
70.96
67.57
Expenditure
8.91
12.41
29.08
75.28
77.67
Actual Disdursement
0
6.72
13.35
0
72.905
Target
50
50
50
50
50



	1999-00	2000-01	2001-02	2002-03	2003-04
Reading Material issued	3976	4242	3049	2993	3327
Reading Material consulted	7935	9610	8838	12110	13690



	1999-00	2000-01	2001-02	2002-03	2003-04
Officers & VIPs	400	525	612	109	379
Students	1550	995	400	850	1075
Farmers	896	566	2900	3250	1955