



GOVERNMENT OF MAHARASHTRA | Office of Chief Auditor, Water & Irrigation

A Study of Water Auditing and Benchmarking of Irrigation Projects in Maharashtra State



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EXECUTIVE SUMMARY – KEY POINTS



Maharashtra is among the pioneering states in India to institutionalize **Water Auditing and Benchmarking of Irrigation Projects**.



Benchmarking:

initiated in **2000-01**



Water Auditing:

introduced in **2003-04**



The study evaluates irrigation project performance for the **2022-23 irrigation year**.



Water Audit covered
2,586 projects

Benchmarking covered
241 projects

under five
Irrigation Development
Corporations.





OBJECTIVES OF THE PRESENT STUDY

To evaluate the practices of **Water Auditing and Benchmarking** of irrigation projects in Maharashtra State.

1



Examine Methodology & Implementation

To examine the methodology and implementation process of water auditing in irrigation projects.

2



Assess Irrigation Performance

To assess performance using key water audit indicators (e.g., water availability, utilization, losses, conveyance efficiency, system performance).

3



Analyze Benchmarking Framework

To analyze the framework for evaluating irrigation system efficiency, productivity, financial sustainability, and equity in water distribution.

4



Evaluate Utilization & Water Use Efficiency

To evaluate the utilization of created irrigation potential and analyze water use efficiency across different plan groups.

5



Identify Variations & Deficiencies

To identify regional variations and operational deficiencies affecting irrigation performance and project management.

6



Suggest Measures for Improvement

To suggest measures to enhance irrigation efficiency and improve water management practices under varying conditions.



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WATER AUDIT: CONCEPT AND SCOPE



- Water Audit is a systematic, scientific process that tracks water availability, distribution, and losses in irrigation systems.
- By identifying inefficiencies and evaluating overall performance, it guides data-driven corrective actions to optimize management and efficiency.
- The scope of water audit includes assessment of water use pattern, Irrigation achievement and it also extends to Revenue assessment and recovery.



BENCHMARKING OF IRRIGATION PROJECTS AND ITS NECESSITY



Benchmarking is an internationally accepted approach to evaluate irrigation system performance using standard indicators and improve efficiency.

1

WHAT IS BENCHMARKING?



It is a systematic process to compare performance with standards, past trends, targets and similar systems.

2

PROMOTED BY



Maharashtra State adopted benchmarking in irrigation management from 2000–01, becoming a pioneering state in India.

3

WHY IS IT IMPORTANT?



- Enables comparison with **dynamic** standards and past performance
- Helps identify performance gaps
- Promotes best practices
- Improves operational efficiency and service delivery

4

WHY IS IT NECESSARY?



Growing pressure to achieve **higher agricultural productivity** with limited water availability makes benchmarking essential in irrigation management.

5

HOW BENCHMARKING SUPPORTS IRRIGATION MANAGEMENT



Promotes efficient use of water resources



Supports "More Crop per Drop" concept

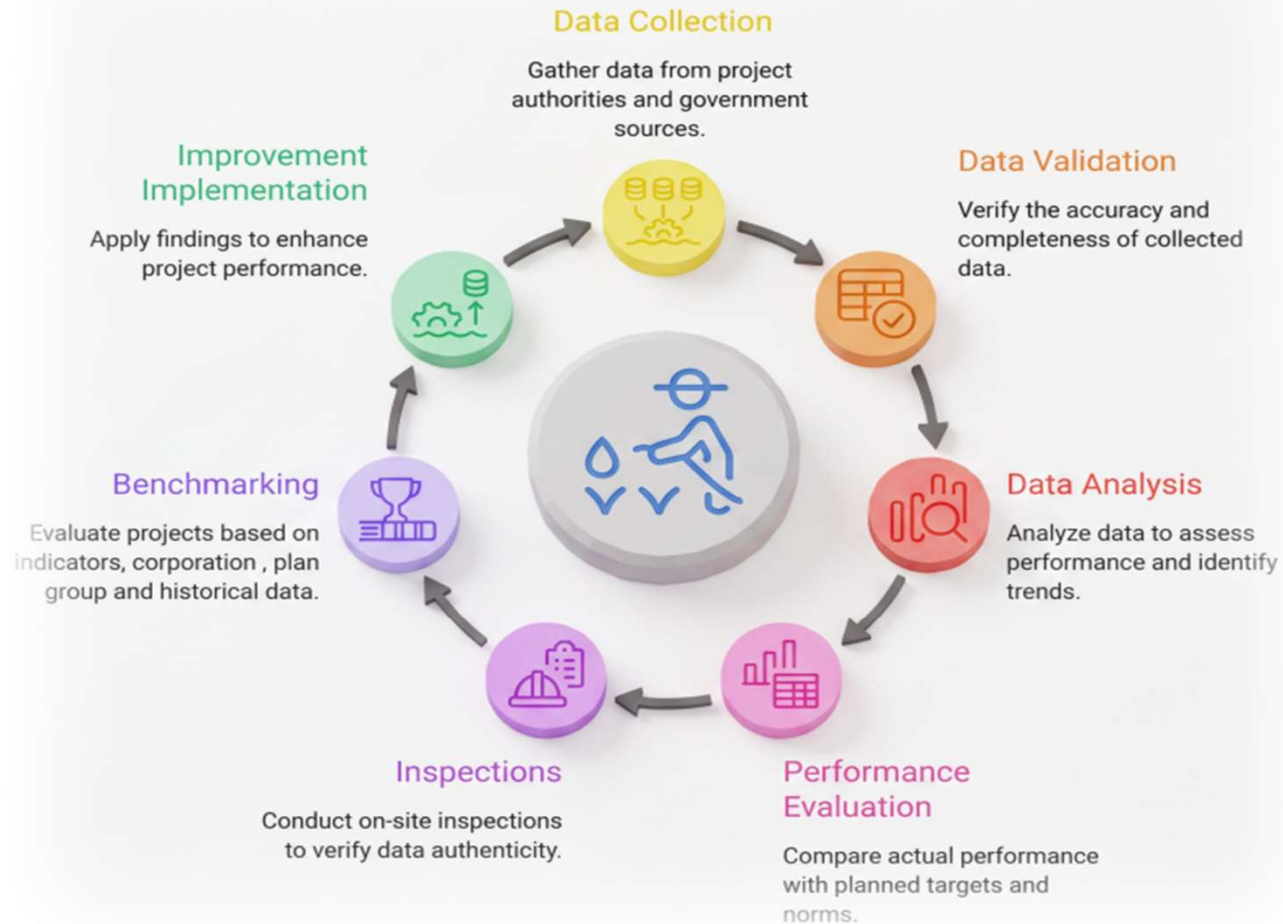


Improves service delivery and system performance

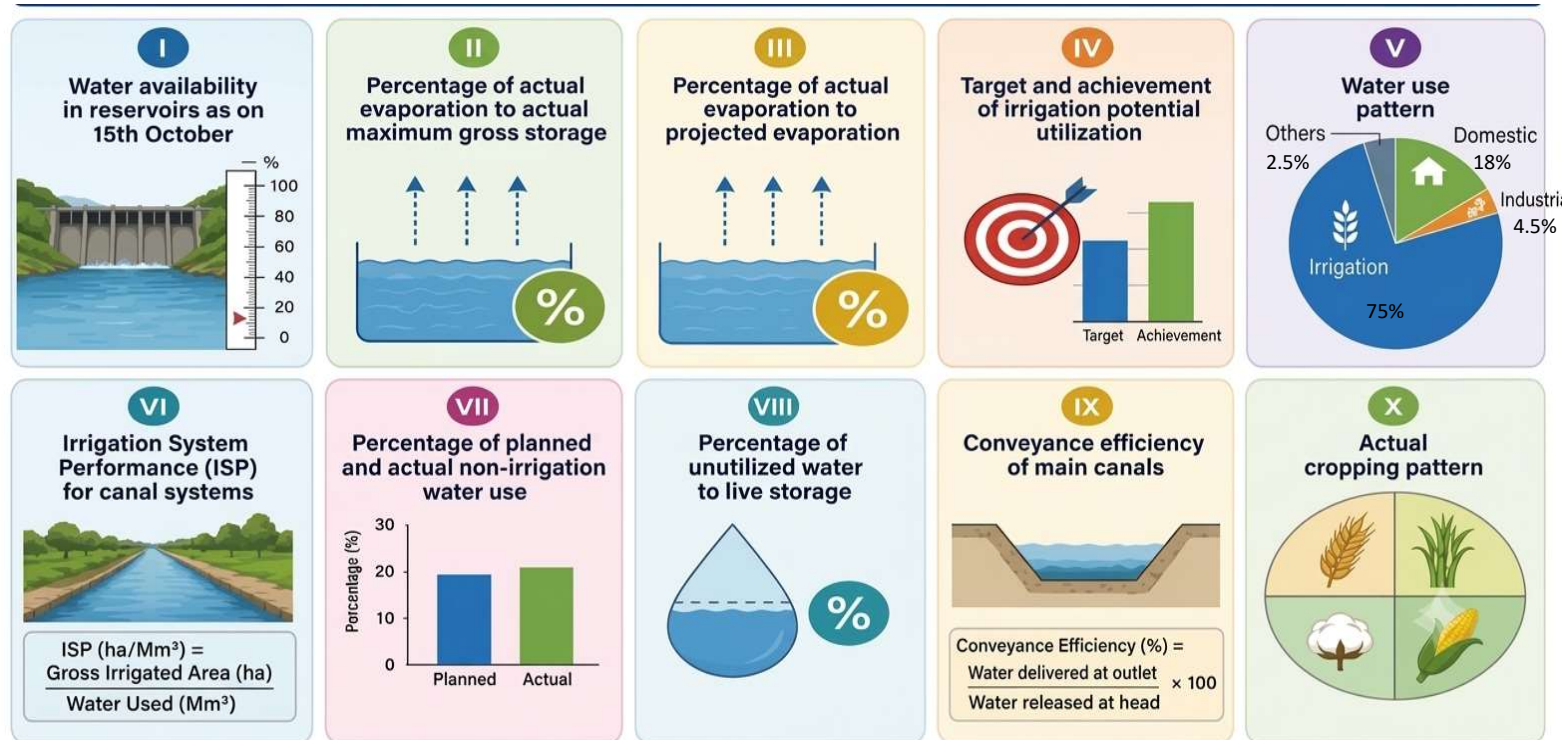


Facilitates evidence-based decision-making in irrigation management

Methodology of Water Audit & Benchmarking



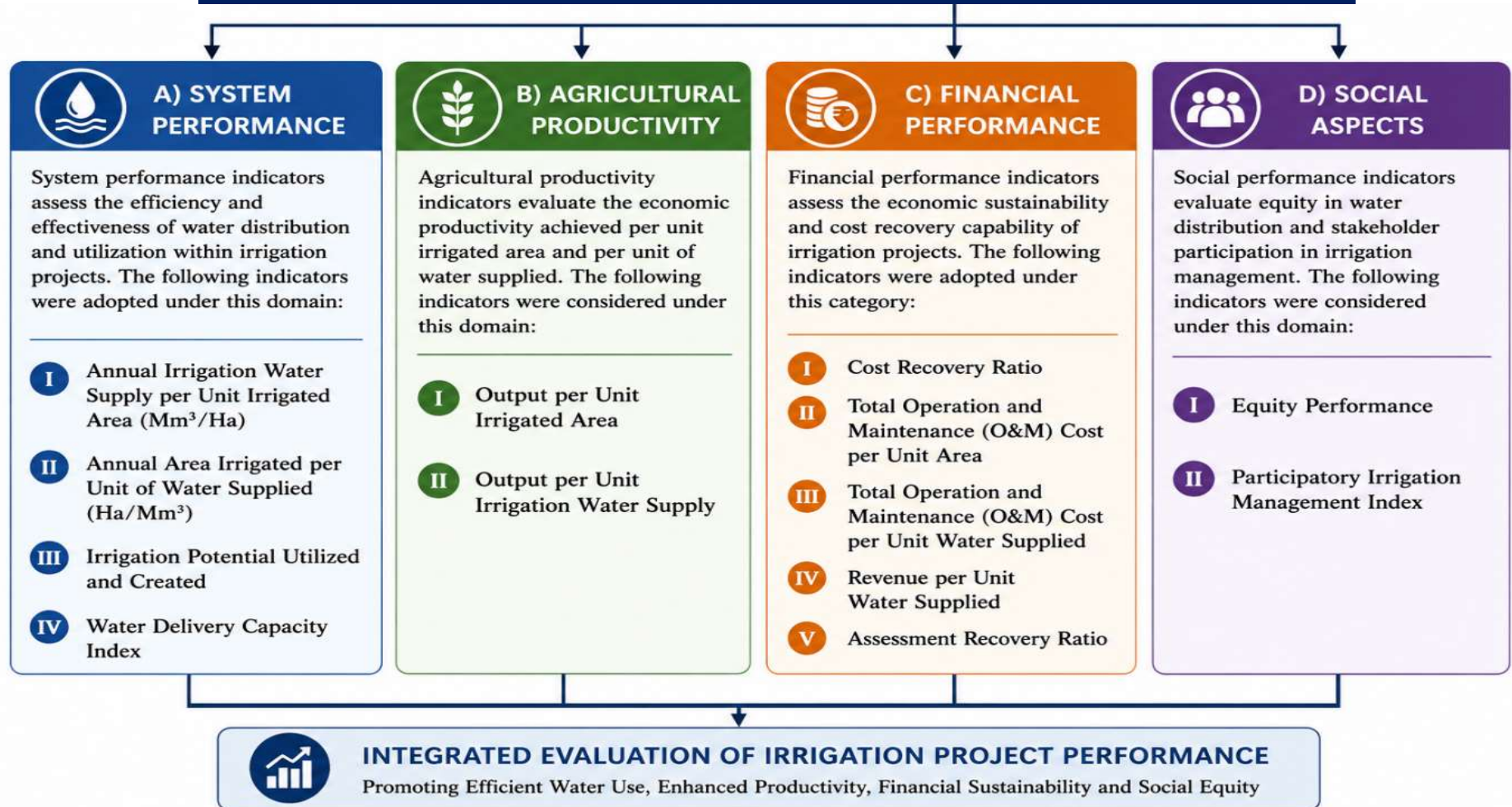
Performance Indicators adopted for Water Audit



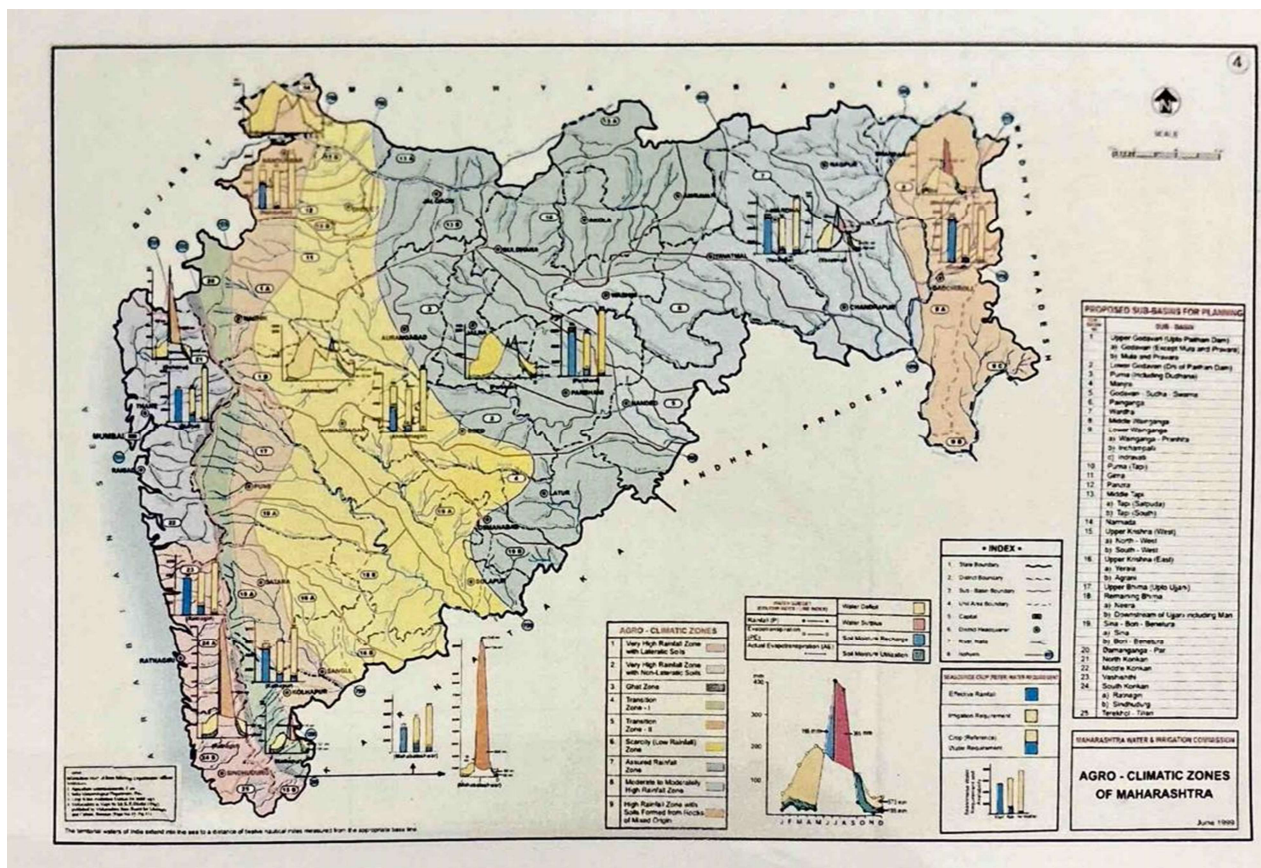
Key Findings from Water Audit Data

Indicators	Parameter	Amravati	Aurangabad	Konkan	Nagpur	Nashik	Pune	Maharashtra State
Water Availability in reservoirs	Live Storage (Mm ³)	2,892.88	7,598.20	3,371.83	4,090.90	4,758.34	10,193.45	34,336.17
	Storage Availability (%)	95	94	95	91	97	97	95
% of actual evaporation to actual maximum gross storage	Evaporation (Mm ³)	592.23	1,579.43	196.21	693.53	661.35	1,340.45	5,063.20
	Maximum Gross Storage (Mm ³)	3,407.17	9,767.21	3,588.02	6,401.94	5,509.86	13,040.03	41,714.22
	Evaporation Loss (%)	17	16	5	11	12	10	12
Target and achievement of irrigation potential utilization	Targeted Utilization (ha)	121,678.38	627,408.13	8,896.12	361,836.69	218,447.25	1,099,312.43	2,437,579.00
	Actual Utilization (ha)	131,365.66	237,203.88	9,898.22	326,689.10	165,141.82	1,855,906.16	2,726,204.84
	Achievement (%)	108	38	111	90	76	169	112
Water use pattern	Irrigation Use (Mm ³)	911.97	3,335.65	408.7	2,402.88	1,681.32	8,884.77	17,625.20
	Non-Irrigation Use (Mm ³)	251.33	379.96	1,423.93	315.99	1,027.50	1,599.58	4,998.29
	Unutilized Storage (%)	18	15	13	14	12	6	11
Irrigation System Performance	ISP (ha/Mm ³)	144	71	24	136	98	209	155
	State Norm (ha/Mm ³)	130	130	130	130	130	130	130
	Performance Ratio	1.11	0.55	0.19	1.05	0.76	1.61	1.19
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Performance Indicators adopted for Benchmarking

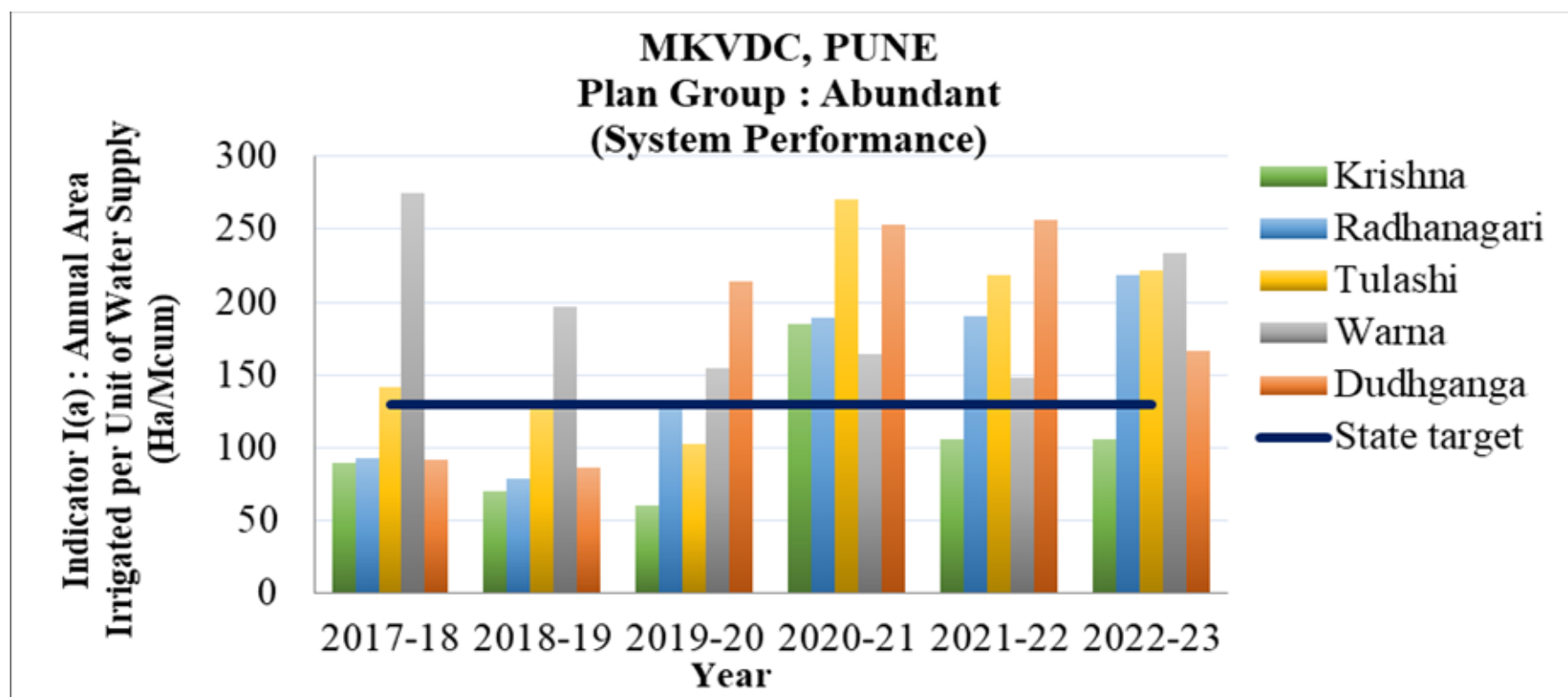


Plan Groupwise Map of State of Maharashtra

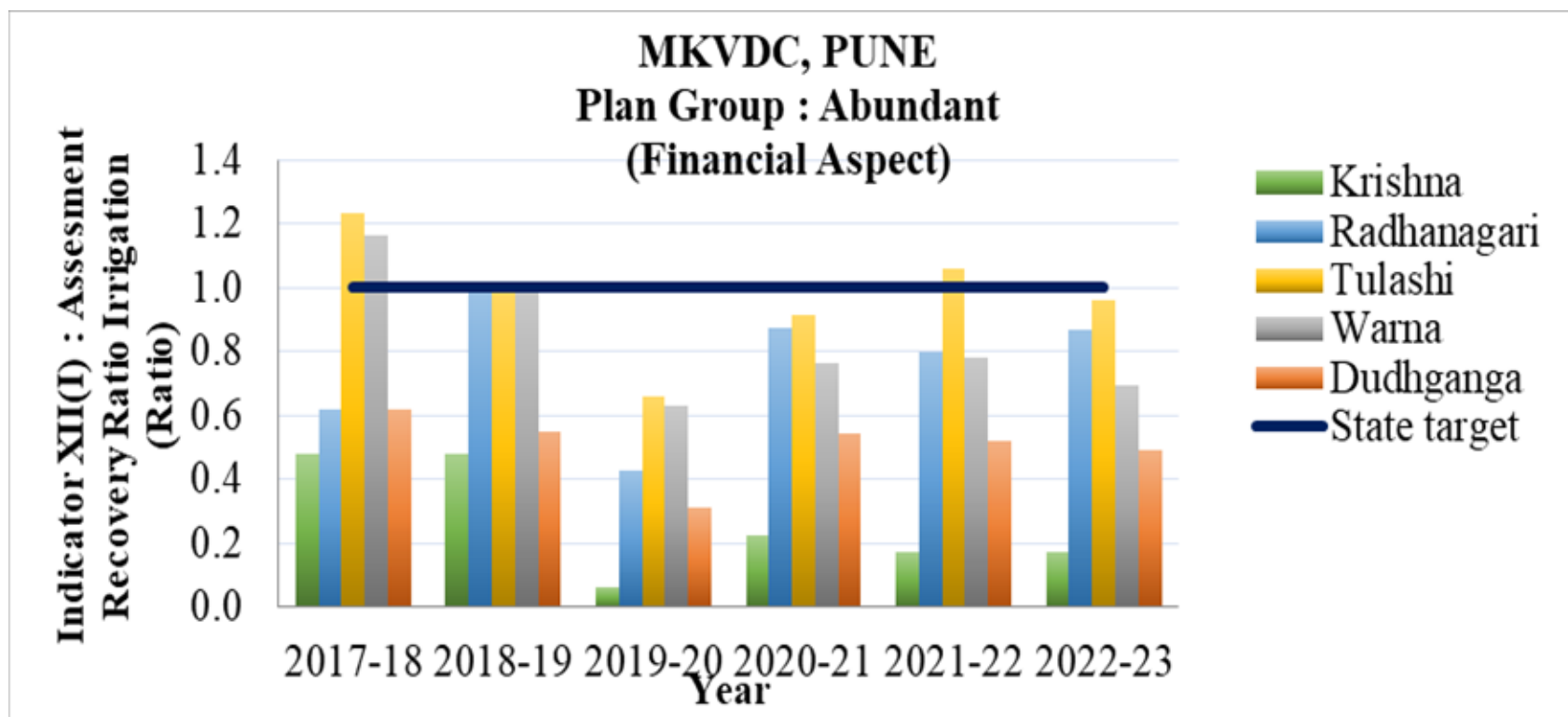


Sr. No.	Plan Group	Per Ha Availability of Water (m ³)
1	Highly Deficit Area	Below 1500
2	Deficit area	1501-3000
3	Normal area	3001-8000
4	Surplus area	8001-12000
5	Abundant area	Above 12000

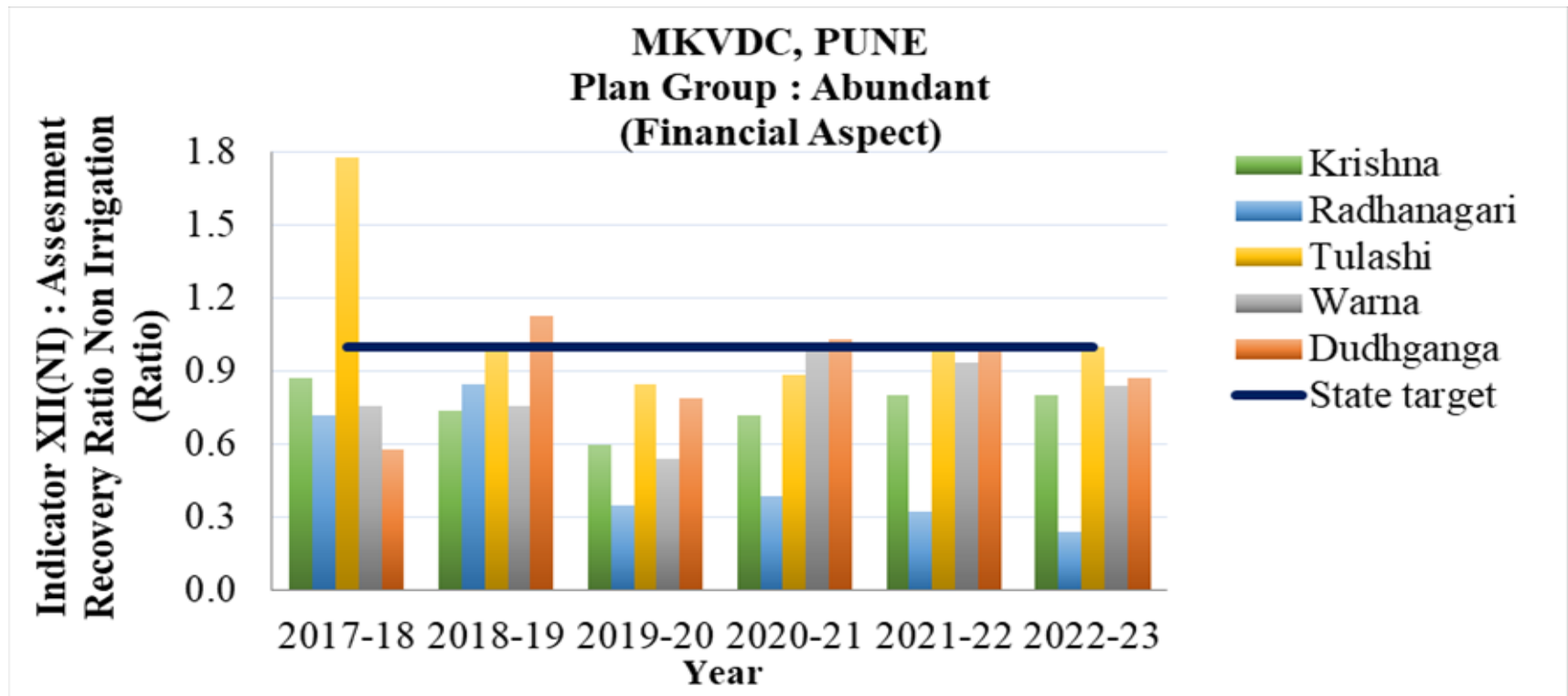
Indicator IA– Annual Area Irrigate per Unit Water Supply (Ha/Mcum) (Major Projects)



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



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



Conclusion

- The results indicate continuous progress in irrigation potential utilization, with significant variations in water-use efficiency, agricultural productivity, and financial performance across projects.
- Water auditing facilitated the assessment of water availability, utilization, and losses, while benchmarking enabled comparison of project performance using standardized indicators.
- The findings demonstrate that continuous performance monitoring supports informed decision-making, enhances accountability, improves water-use efficiency, and contributes to sustainable irrigation and water resources management in the state.

Questions & Discussion

Water Auditing and Benchmarking Serve as Vital Decision-support Tools for Enhancing Transparency, Water Use Efficiency, and Sustainable Irrigation Management in Maharashtra.

Thank you!

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