

A large dam with a reservoir in a green valley. The dam is a long, low wall with several spillways. The reservoir is a large body of water behind the dam. The surrounding landscape is green and hilly.

Reforms Initiatives in Water Resources Sector in Maharashtra State – India

**IELRC Workshop on Legal Aspects of Water Sector Reforms
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Presentation by

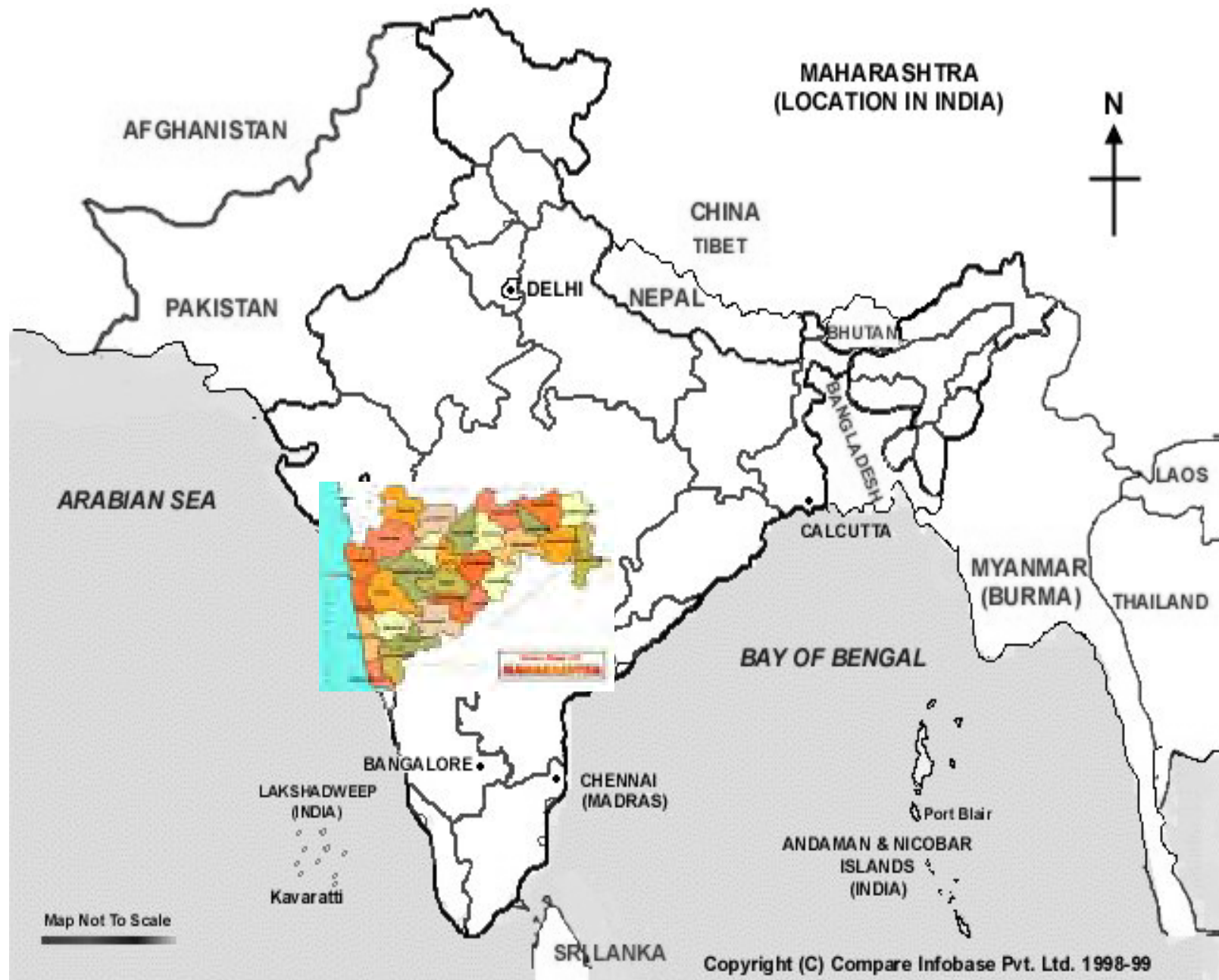
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Outline & Approach

- **General information about Maharashtra**
- **Macroeconomic Trends**
- **Problems / Challenges in water sector**
- **Reform initiative / action**
- **Necessity of Regulatory framework**
- **Outcome of reform initiative**



Salient Features of Maharashtra

- ▶ **Geographical Area -** 308 Th. Sq. Km.
- ▶ **Population -** 107 million
- ▶ **Urban Population -** 40 % +
- ▶ **Cultivable Area -** 22.5 million ha.
- ▶ **Coastal Line -** 720 km.
- ▶ **Administrative division -** 6 Regions & 35 Districts
- ▶ **Climate -** Tropical
- ▶ **Annual Rainfall -** 400 to 6000 mm
- ▶ **Seasons -** Summer, Rainy & Winter
(Rainy seasons 3 to 4 months duration)

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Salient Features of Maharashtra (contd.)

▶ **Rainy Days -**

Scarcity Zone - 40

Heavy Rainfall zone - 100

▶ **Major Physiography Divisions -**

i. Deccan Plateau

ii. Konkan West

(West Flowing Rivers)

River Basins -

Godawari,

Krishna,

Tapi,

Narmada &

Kokan (West Flowing)

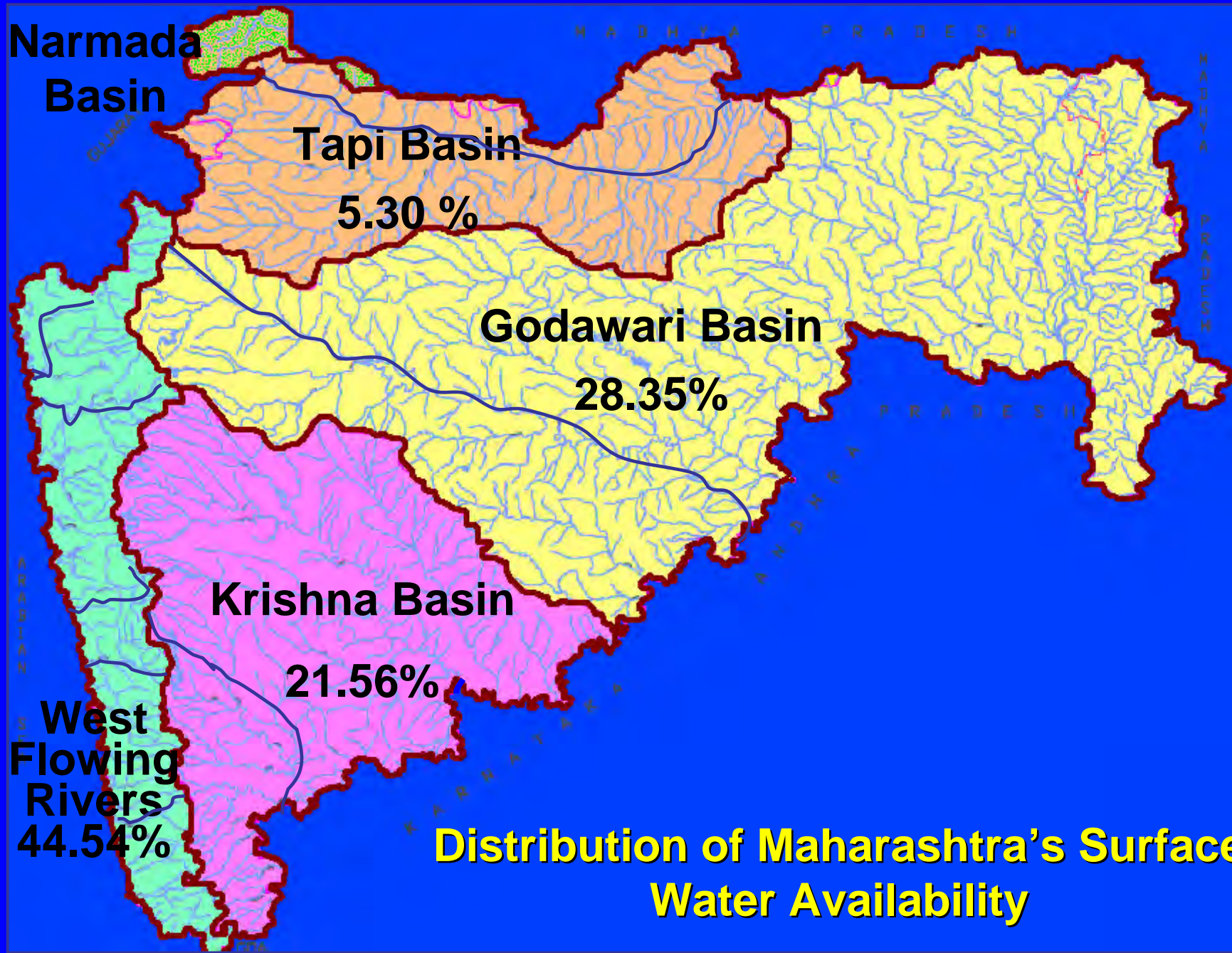
▶ **Ultimate Irrigation Potential (Surface)**

8.5 Mha.

▶ **Potential Created (6/05)**

5.267 Mha.

(State Sector- 4.003 MHa & Local Sector- 1.264



River Basins in Maharashtra

S.N.	Name of Basin	Geographical area % of Area w.r. to Maharashtra (Mha)	Culturable area (Mha)	Annual Average Availability (Mm3)	75% Dep'able yield (Mm3)	Permissible use as per Tribunal award (Mm3)
1	2	3	4	5	6	7
1	Godawari	15.43 / 49.5%	11.25	50880	37300	34185
2	Tapi	5.12 / 16.7%	3.73	9118	6977	5415
3	Narmada	0.16 / 0.5 %	0.06	580	315	308
4	Krishna	7.01 / 22.6%	5.63	34032	28371	16818
5	West Flowing	3.16 / 10.7%	1.86	69210	58599	* 69210
	Maharashtra	30.80 / 100.0%	22.53	163820	131562	125936

*** 45% of state's water resources is from West Flowing Rivers which drain into Arabian Sea and cannot be fully utilized**

Macroeconomic trends over the past two decades

Indicators (Average annual growth)	1982-92	1992-00 *	2001 *	2002 *	2003-04 ⁺
GDP	5.6	6.0 / 5.4	5.2 / 5.2	4.6 / 6.1	6.1
Agriculture	3.1	2.5 / - 1.8	1.8 / 5.1	-3.1/-1.7	-1.9
Industry	6.7	6.2 / 6	4.5 / 1.3	6.4 / 6.4	7.4
Services	6.8	7.5 / 6.3	8.1 / 7.2	7.1 / 8.4	7.6

India made significant advance initially for achieving rapid agricultural growth through green revolution and achieved self sufficiency in food in 1990 but after 1995 extensive & successive droughts & flooding in various states resulted into reduction in agriculture growth.

* = Figures in numerator are for national level and in denominator are for state level.

+ = Figures are for state level

Structure of Economy

% of GDP	1982	1992	2001	2002
Agriculture	35.9	30.9	25	22.7
Industry	25.8	26.7	25.7	26.6
Services	38.3	42.3	49.4	50.7

Note :

- 70-75 percent population of India live in rural area and large proportion depend on agriculture as a source of livelihood which contribute @ 25 % to GDP
- 25-30 percent population of India live in urban area and large proportion depend on industry and service which contribute @ 75 % to GDP
- Contribution from agricultural sector to GDP declining

Problems / Challenges in Water Sector

- 1. Multi-sector Water Use - Conflicts**
- 2. Water Use Efficiency - Low**
- 3. Irrigation Service Delivery - Not satisfactory**
- 4. Cost Recovery (Fiscal Strain) - 40 to 50%**

Action needed for sustainable growth in agricultural sector

- For increasing the productivity of water and ensuring sustainable growth of 4 % in agricultural sector and to reduce the poverty from present level of 26% to 11% by 2012 as proposed in 10th plan and beyond necessitates reform within irrigation sector.**
- There is an urgent need to formulate a new policy and regulatory framework at the state level to support integrated and sustainable water resources development and management, including the establishment of clearly defined transferable water rights and water entitlements for both surface and groundwater either for individuals or for user groups.**

Reforms initiatives in water sector

A. Policy Reform - State Water Policy 2003

- **Legal Reform -**
 - Participatory Irrigation Management through M.M.I.S.F. Act 2005
 - M.W.R.R.A. Act 2005
- **Institutional Reform - Formation of MWRRA & WUA**

B. Administrative Reforms

- Water auditing & Water pricing

C. Application of state of art technology

- Irrigation status report, Benchmarking report & Use of remote sensing for assessment

D. Capacity building & public awareness campaign

State Water Policy Unique Features

- | | |
|---|--|
| Multi-sectoral approach ----- | <ul style="list-style-type: none">- River basin based planning and management of water resources- Regulatory Authority- River Basin Agency |
| Improving Service Delivery---- | <ul style="list-style-type: none">- Involving the users (PIM)- Water Use Entitlement- Bulk Supply- Charging on Volumetric basis |
| Private Sector Participation ----- | <p>To introduce new technology & innovative financing wherever appropriate in water resources project</p> |

Participatory Irrigation Management

- **Maharashtra State is pioneer in implementation of PIM.**
- **Formation of WUAs has been made mandatory.**
- **State is keen to transfer the water management to WUAs, to give effect to PIM.**
- **Maharashtra has enacted separate legislation on PIM in May 2005.**

Salient Features of MMISF Act 2005

- **Water for irrigation shall be supplied to WUAs only**
- **Water supply on volumetric basis**
- **WUAs have freedom of cropping pattern**
- **Water rights of users at tail are ensured**
- **Women representation in WUAs is mandatory**

Present Status of WUA formation

- **For formation of WUAs on developed command area a Master Plan is prepared.**
- **It is planned to form WUAs on developed command area within a span of three years.**
- **According to this 12462 WUAs on developed command area of 4.04 Million ha in the State are to be formed.**
- **So far 1100 WUAs on 0.355 Million ha are actively working & 1794 WUAs on 0.65 Million ha are registered.**
- **Apart from this, 3266 WUAs on 1.05 Million ha are under various stages of formation.**

**Maharashtra
Water Resources Regulatory
Authority**

Maharashtra Water Resources Regulatory Authority Act 2005

Objectives

Establish an institutional framework to

- Regulate water resources within the state**
- Facilitate & ensure judicious, equitable & sustainable management, allocation & utilisation of water resources**
- Fix rates for use of water for agriculture, industrial, drinking & other purposes**

Functions of Authority (Section 11,12 & 22 of Act)

- **To determine, regulate and enforce the distribution of entitlement for various category of the use and the distribution of entitlement within each category of use**
- **To determine & regulate seasonal / annual water entitlements during scarcity**
- **To establish water tariff system for various categories of water uses for stable & self-sustainable management of service delivery**
- **To regulate water resource projects to ensure**
 - a) **Development as per Integrated State Water Plan (ISWP),**
 - b) **Economic, hydrologic & environmental viability**
 - c) **Statutory & other obligations of inter-state entitlement**
- **To facilitate the preservation & protection of water quality**
- **To promote sound water conservation practices**
- **To function as Appellate Authority for Dispute Resolution**

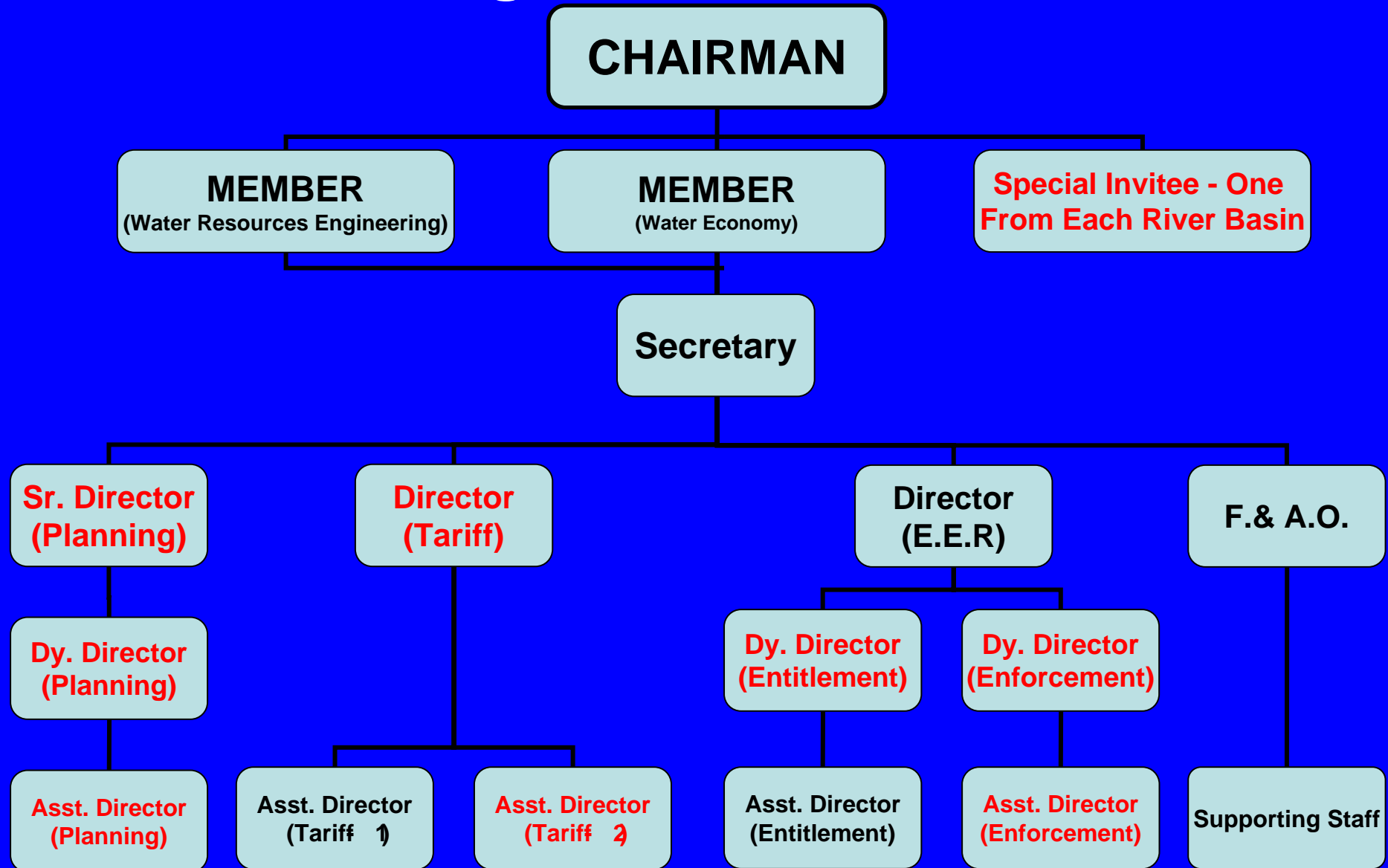
Special Powers of Authority for Removal of Backlog (Section 21 of Act) (For equitable development)

- **Authority has special responsibility in regard to districts & regions affected by backlog in Irrigation Sector as per Governor's Directives**
- **Authority shall ensure that sufficient man power is made available by Govt. for surveying, planning & designing new projects in Backlog area.**

Salient features of Authority

- Authority is quasi-judicial body established under the MWRRA Act 2005 passed by the state legislature
- MWRRA Act 2005 brought into force on 8th June 2005.
- Chairperson & Two Members appointed by Governor for a fixed period of 3 years
- Five special invitees one from each river basin for assisting Authority in policy matters (Yet to be appointed)
- These special invitees to have expertise in the fields of Engineering, Agriculture, Drinking Water, Industry, Law, Economics, Commerce, Finance or Management₂₁

Regulatory Authority Organisation Chart



Progress made by MWRRA

Entitlement

- **Concept of entitlement for various categories of use and within each category introduced in 6 pilot projects for 2 years (Kukadi, Ghod, Mangi, Wafgaon, Diwale & Benikre)**
- **Technical Manual for fixing , regulating & enforcing entitlement, prepared & circulated to field officers**
- **After 2 years, upscale the concept of entitlement in one basin on the basis of experience gained in pilot scheme**
- **From 5th year, upscale the concept for all the river basins in the state**

Contd³.....

Progress made by MWRRA Contd.

Establishment of Tariff System

- **Collected literature on tariff structure from various Countries / World Bank / Organisations (FAO, NCAER, CWC, Planning Commission, Wallingford UK, etc.)**
- **Collected information on present tariff structure & operational cost from water resources department GoM**
- **Prepared draft base paper on tariff structure on the basis of international best practices**
- **Interaction with various officers of water use department & stakeholders for downstream tariff fixation**
- **O & M manual proposed to be brought out by March 2008 with the help of WALMI, Aurangabad**

Contd.....

Progress made by MWRRA

Contd.

Integrated State Water Plan (ISWP) by RBA

- **Meeting held under Chairmanship of MoS of Water Resource with various Water use departments for preparing river basin plan with users participation – Starting with Godawari Basin**
- **Authority has drafted manual for preparation of State Water Plan to serve as guideline for river basin agency / corporation / consultant**
- **RBAs to draw up time frame for preparing basin plan & their approval. Authority will assist**

Outcome of Reform initiatives

Improvement in water use efficiency

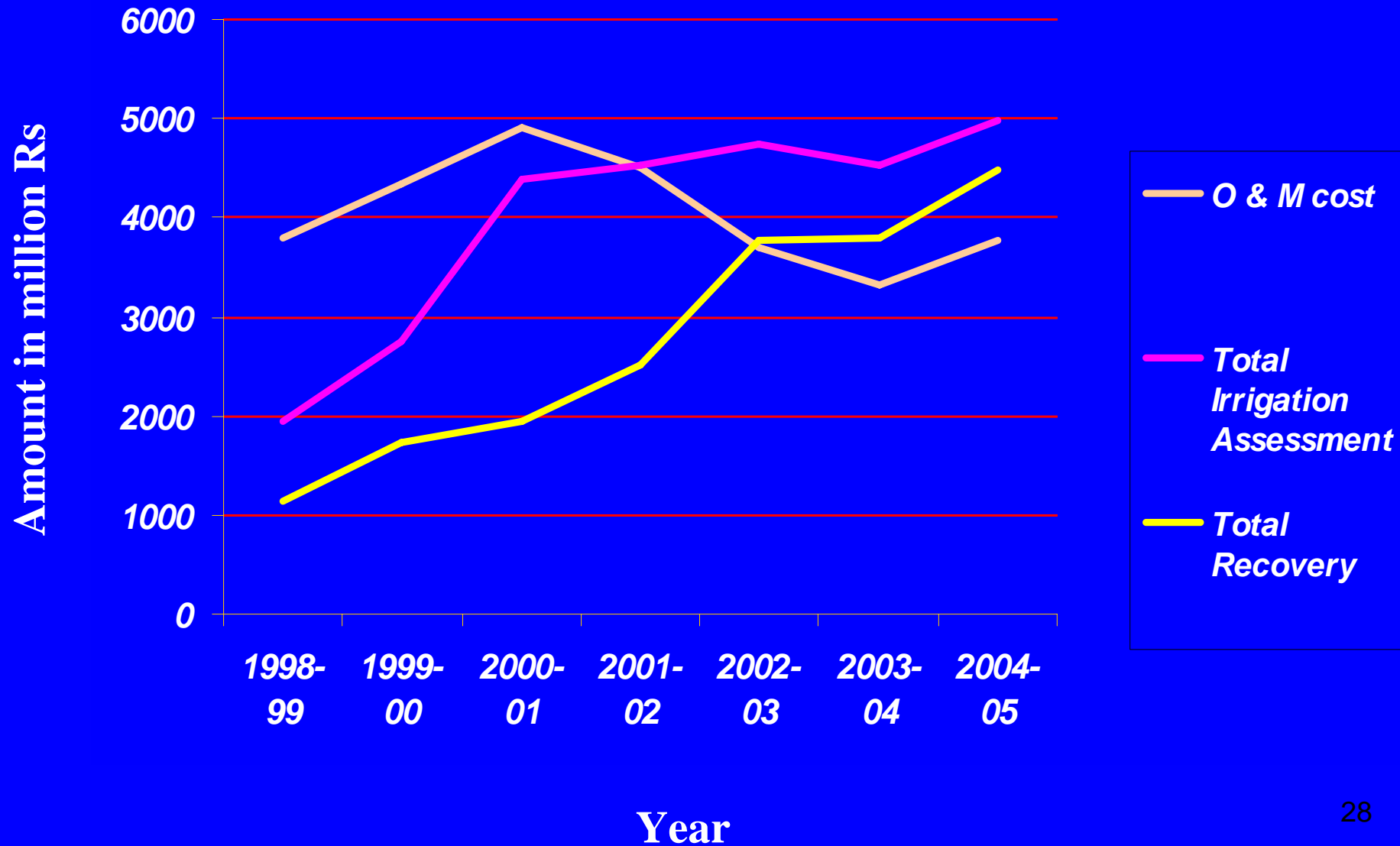
Sr. No	Year	Designed water storage Mm3	Water availability on 15 Oct. Mm3	% available storage with designed	Water used for irrigation Mm3	Irrigated area * on canal mha	Water use efficiency ha/Mm3
1	1999-00	26716	22715	85	16037	1.286	80
2	2000-01	26748	18947	71	13575	1.298	96
3	2001-02	28062	17817	63	12346	1.250	101
4	2002-03	28715	18936	66	12965	1.318	102
5	2003-04	28840	16941	59	10569	1.244	118
6	2004-05	28889	18298	63	10603	1.257	119
7	2005-06	29110	24860	85	13689	1.617	118

Improvement in financial performance

In Million Rs.

Sr. No	Year	Total assessment	O&M cost (Establishment + M&R)	Total Recovery	% of recovery with O & M cost
1	2000-2001	4370	4900	1950	40
2	2001-2002	4540	4500	2520	56
3	2002-2003	4440	3700	3780	102
4	2003-2004	4530	3330	3790	114
5	2004-2005	4970	3760	4480	119
6	2005-2006	4180	4530	4130	91

Improvement in Financial Performance



Conclusion

- **Establishment of regulatory mechanism in water sector is first of it's kind in India**
- **Authority will adopt the strategy of learning by experience & upscaling**
- **With all-round measures in water sector, Maharashtra State has emerged as one of the best performing state in India**
- **Productivity, Equity & Sustainability will be achieved in water sector in the years to come**
- **State will become a role model in water resources management in the country**



Thanks