GOVT . OF MAHARASHTRA

WATER RESOURCES DEPARTMENT

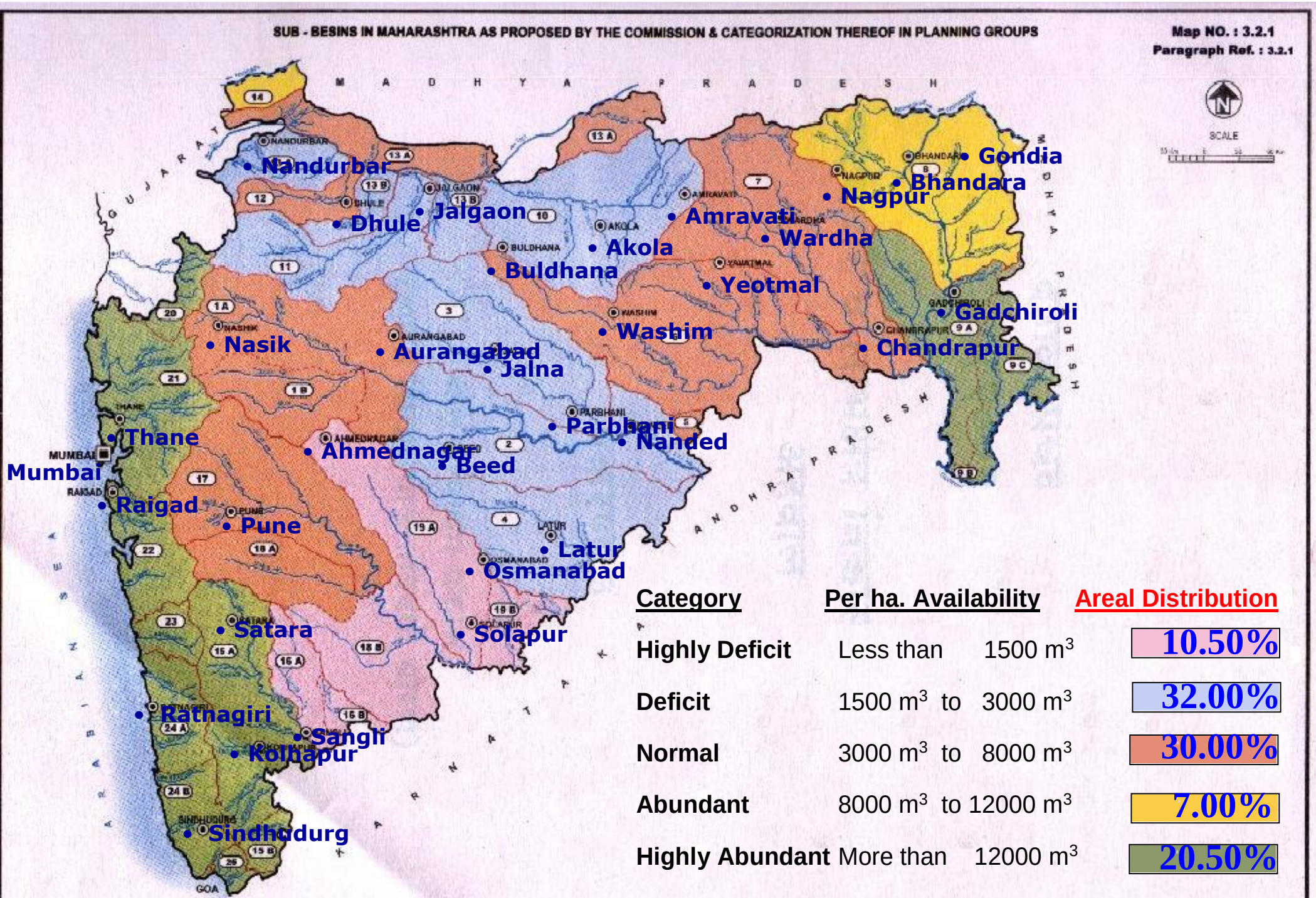
WELCOME

01/01/2016

Salient Features of Maharashtra

- **Geographical Area - 307 Lakh hect.**
- **Population - 112 million**
- **Urban Population - 45.20 %**
- **Cultivable Area - 225 Lakh ha.**
- **Coastal Line - 720 km.**
- **Administrative division - 6 Regions & 38 Districts**
- **Annual Rainfall - 400 to 6000 mm**
- **Major Physiography Divisions - i. Deccan Plateau**
  ii. Konkan West
- **River Basins - Godavari, Krishna, Tapi, Narmada & West Flowing Rivers Kokan**

Water Availability in Maharashtra



Category	Per ha. Availability	Areal Distribution
Highly Deficit	Less than 1500 m^3	10.50%
Deficit	1500 m^3 to 3000 m^3	32.00%
Normal	3000 m^3 to 8000 m^3	30.00%
Abundant	8000 m^3 to 12000 m^3	7.00%
Highly Abundant	More than 12000 m^3	20.50%

Present Position

1.	No of Irrigation Projects completed	3023
2.	Total Water storage created	33070 Mm^3
3.	Irrigation potential created	49.77 Lakh ha.
4.	Irrigation potential utilised	32.52 Lakh ha.
5.	No of Hydro power projects completed	63
6.	Installed hydropower capacity	3623 MW
7.	No. of Water Users Association formed	4579
8.	Command Area handed over to WUAs	18.34 Lakh ha.
9.	Ultimate Potential	85 Lac ha (38% CA)

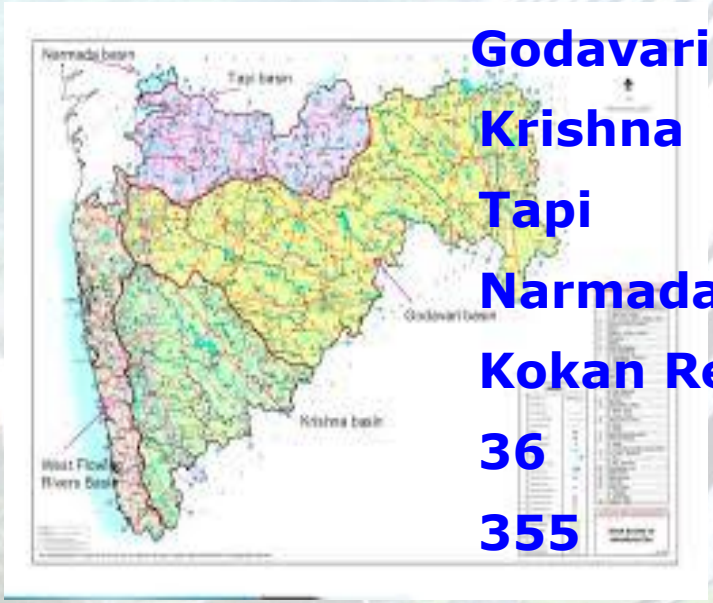
Regionwise Storages Developed

(Mm^3)

Region	Created Designed Live Storage
Konkan	3279
Nashik	4170
Pune	10973
Aurangabad	7003
Amaravati	2971
Nagpur	4674
Total	33070

Water Resources in Maharashtra : Basic Information

- **Climate** — Tropical climate
- **Rainy Days** — Drought prone area -40
  High Rainfall zone-100
- **River Basins** — Godavari
  Krishna
  Tapi
  Narmada
  Kokan Region (West Flowing Rivers)



Total Districts — 36

Total Talukas — 355

As per the Report of Technical Committee on Drought Prone Area Program & Desert Development Program, 1994

Drought Prone Talukas in Maharashtra	173
Drought Prone Talukas in India	971

River Basins in Maharashtra

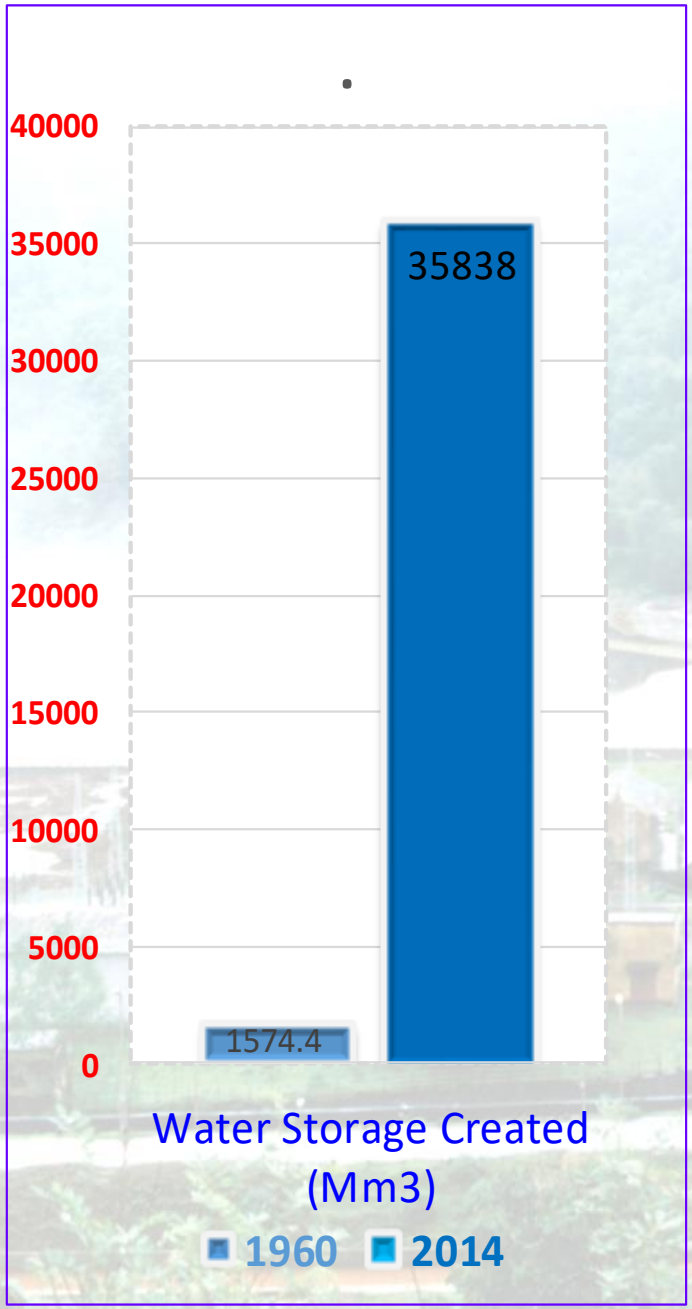
Sr. No	Name of Basin	Geographical area/ % of Area w.r.to Total (Lakh ha.)	Culturable area (Lakh ha.)	Annual Average Availability (Mm^3)	75% Dep'able yield (Mm^3)	Permissible use as per Tribunal award (Mm^3)
1	2	3	4	5	6	7
1	Godawari	154 / 49.5%	112.56	50880	37300	34185
2	Tapi	051 / 16.7%	37.31	9118	6977	5415
3	Narmada	001 / 0.5 %	00.64	580	315	308
4	Krishna	070 / 22.6%	56.27	34032	28371	16818
5	West Flowing *	031 / 10.7%	18.64	69210	58599	69210
	Maharashtra	308/ 100.0%	225.42	163820	131562	125936

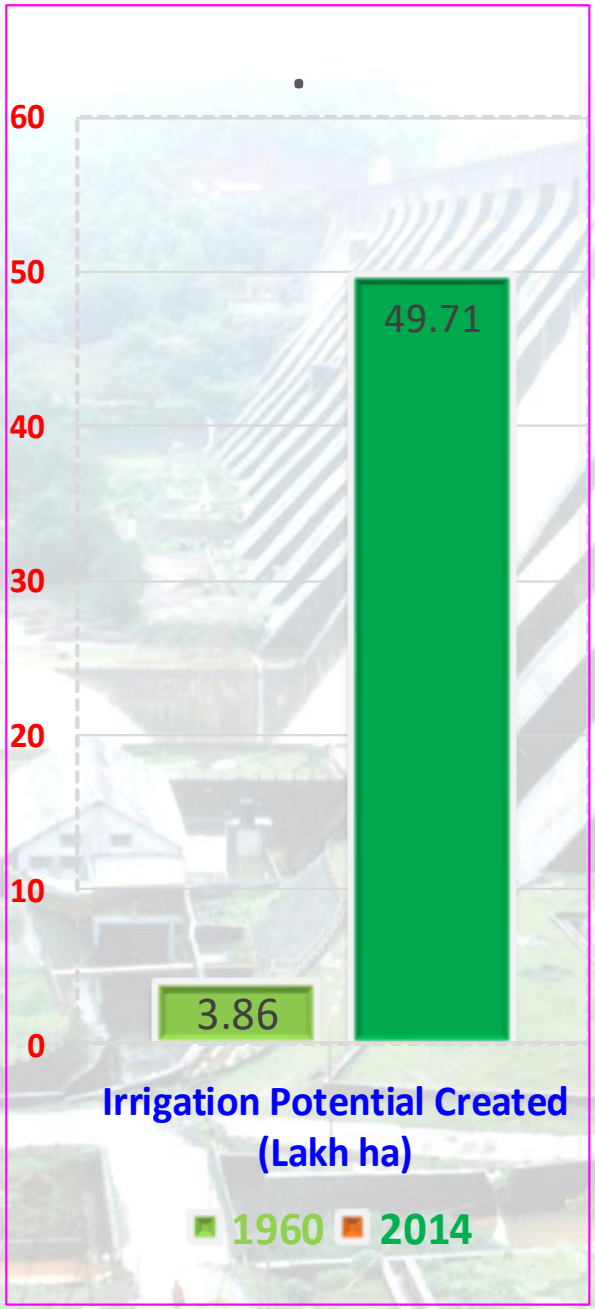
* No interstate aspect involved but geographical restrictions limit utilisation

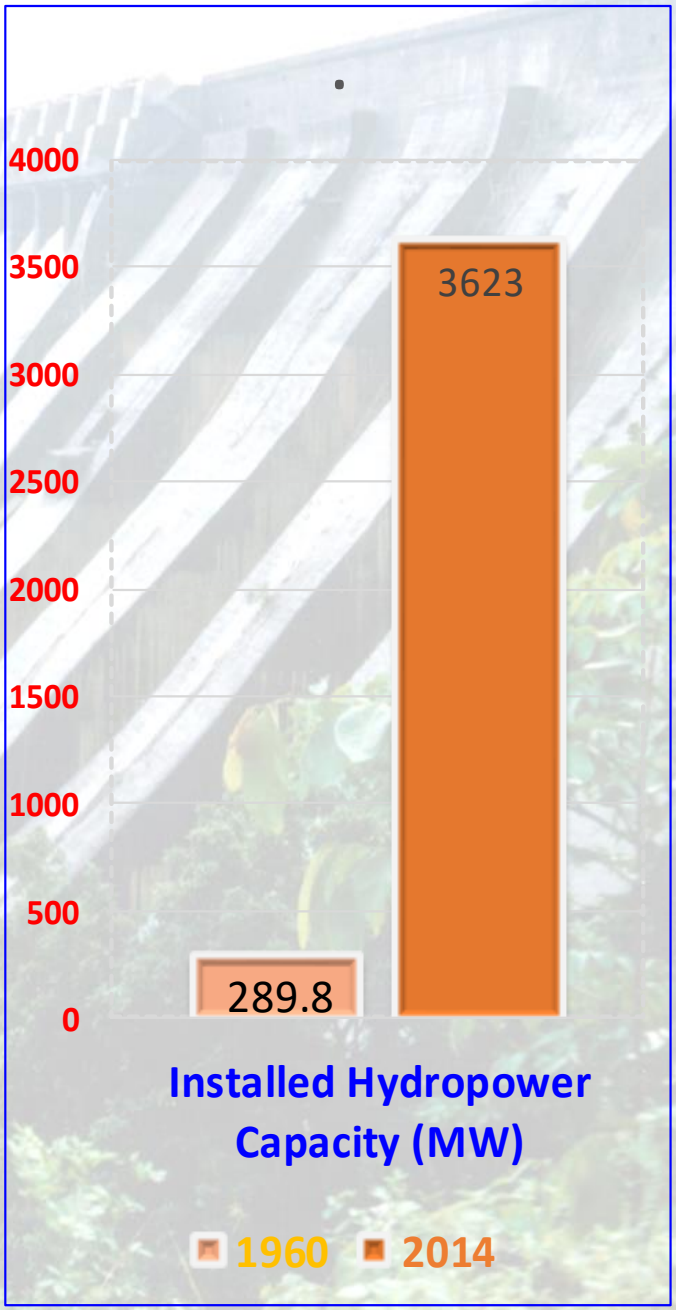
Development After 1960

Sr. No	Description	Position as on 1960	Present Position
1	Total Water storage created	1574.40 Mm3	33070 Mm3
2	Irrigation potential created	3.86 Lakh ha	49.77 Lakh ha
3	Installed hydropower capacity created	289.80 MW	3623 MW

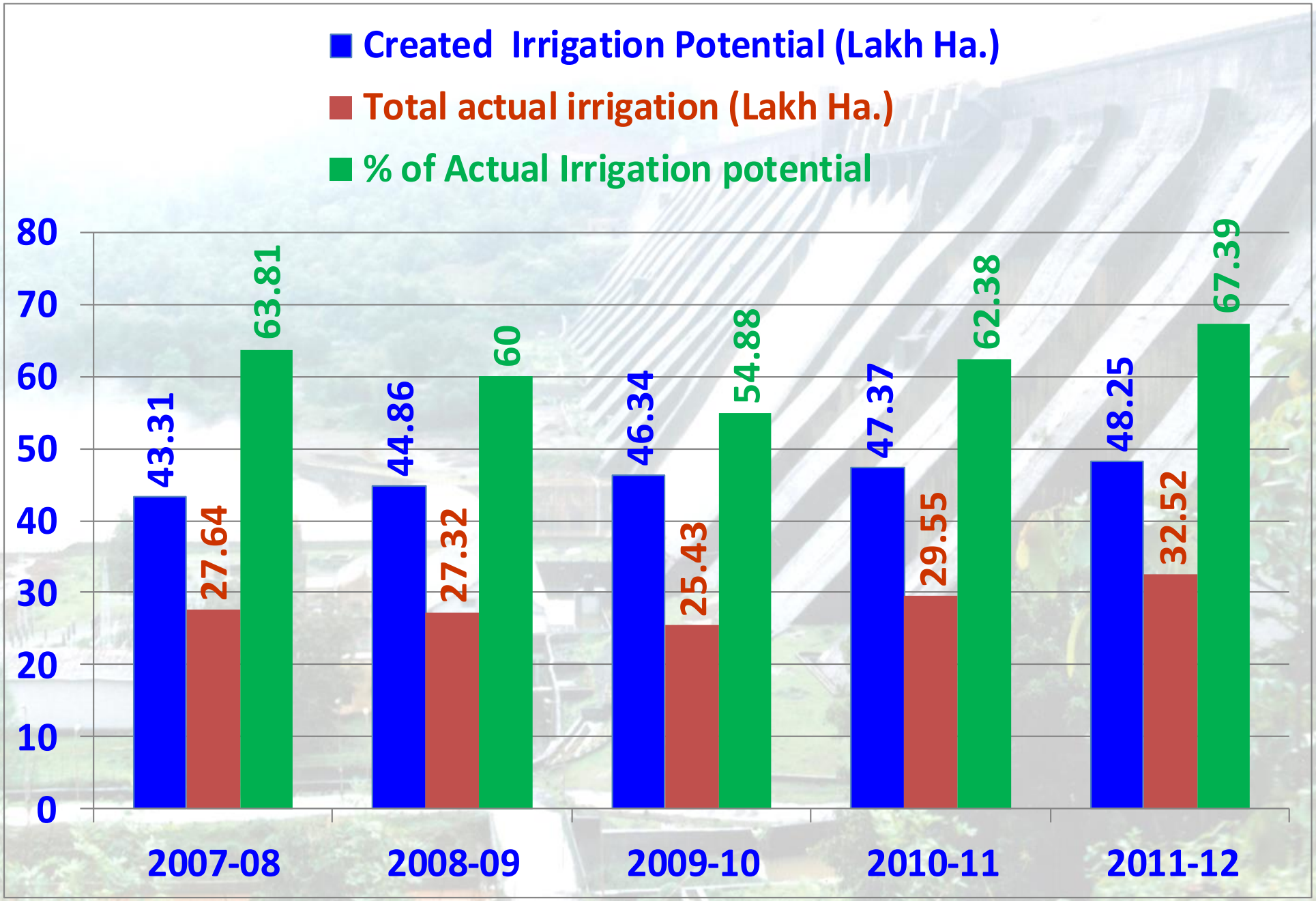
COMPARATIVE POSITION 1960 AND 2014







Scenario of IPC & IPU



Water Resources Development : Status

Completed Project :-	
Major	31
Medium	186
Minor	2806
Total	3023

Ongoing Projects :-	
Major	72
Medium	97
Minor	283
Total	452
Potential created(6/2013)	49.77 lakh ha
Investment (03/2014)	85,000 Cr.
Balance Cost	70,750 Cr.
Balance Potential of Ongoing Projects	32.64 lakh ha

Present Position : Hydropower

1. No of Hydro power projects completed 63 No.s

2. Installed hydropower capacity 3623 MW

(generate approximately 4000 million units annually)

Sr. No.	Type of Project	Nos.	Capacity in MW
1	Government	34	2637
2	Interstate	2	444
3	Private (Small Hydro)	22	95
4	TATA	5	447
	TOTAL	63	3623

3. Ongoing Hydro Project : 87 , Installed Capacity : 306.54 MW

Major Achievements in the Water Sector

1. Maharashtra Water Sector Improvement Project launched with the help of World Bank to rehabilitate 286 completed irrigation project to restore 6.7 Lakh Ha of command area.
2. Publishing Annual Irrigation Status Report, Water Audit Report and Benchmarking Report.

Major achievements in the Water Sector

National Level institutes Like …

- MERI - Maharashtra Engineering Research Institute,
- CDO - Central Designs Organization,
- WALMI -Water and Land Management Institute ,
- -Mechanical Organisation & Hydroelectric wing
- -Independent Quality Control Organisation.

- Double Lake Tapping (Stage-IV & Stage-IVB)is completed in Koyna Dam for first time in Asia to generate additional capacity of 1000 MW.

Policy Reform Initiatives in Maharashtra

- State Water Policy adopted in 2003.
- Maharashtra Management of Irrigation Systems by Farmers Act 2005 – enacted in March 2005
- The Maharashtra Water Resources Regulatory Authority Act enacted in 2005 (MWRRA)
- Maharashtra Ground Water (Development & Management) Bill 2009 passed by State Legislature in April 2012.

Policy Reform Initiatives in Maharashtra

Adoption of New Management Practices :

- Management of Irrigation System by elected WUAs.
- Bulk and volumetric supply to users as per water entitlements.
- Annual water audit report.
- Benchmarking of projects.
- Annual Irrigation Status Report
- Promotion of e - Governance (Integrated computer Information System)

STATE WATER POLICY

Unique features of State Water Policy

Multi-sectoral approach

River basin based planning and management of water resources

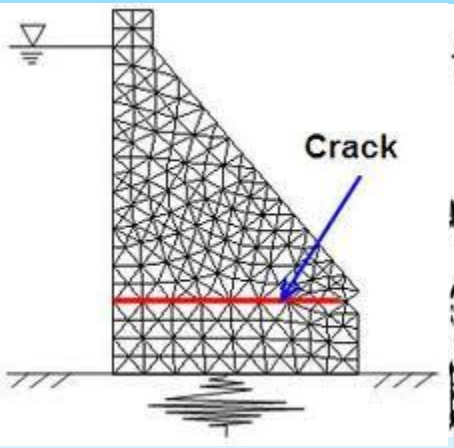
- Regulatory Authority
- River Basin Agency

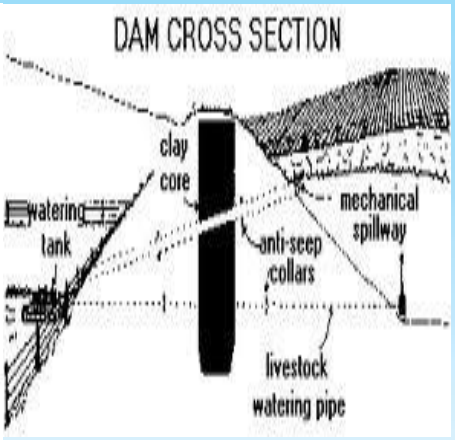
Improving Service Delivery

Involving the users (PIM)

- Water Use Entitlement
- Bulk Supply
- Charging on Volumetric basis
- Private Sector Participation

MAHARASHTRA ENGINEERING RESEARCH INSTITUTE,NASHIK (M.E.R.I.)
(Established in 1959)





FUNCTIONS :

To carry out Applied Research in the field of

- **Hydro-dynamics (model testing)**
- **Roads & Buildings**
- **Water Supply & Sanitary Engineering**
- **Remote Sensing**
- **Earthquake Engineering**
- **Material testing**

MAJOR ACHIEVEMENTS:-

- **Sedimentation survey of Bhakra Project**
- **Sugar cane crop mapping for command areas**
- **Established 35 seismological laboratories near selected river valleys**

MAHARASHTRA ENGINEERING TRAINING ACADEMY, NASHIK (META)

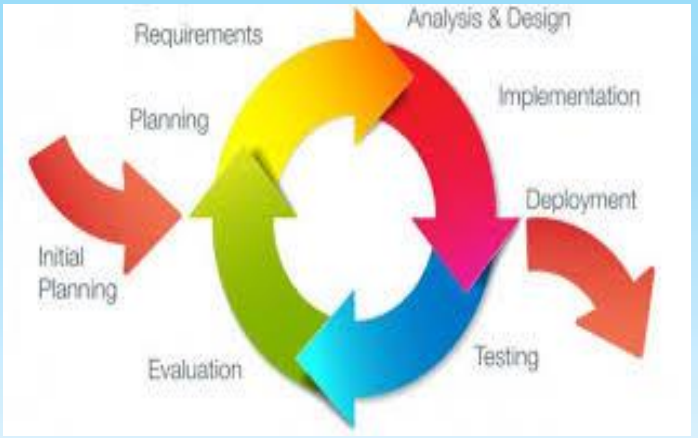
(Established in 1964)

FUNCTIONS :

- Impart Induction training to direct recruit engineers from Irrigation & Public Works Departments
- Impart training to in-service engineers from Irrigation & Public Works Departments in the field of Development of Irrigation Projects, Roads & Buildings
- Administration
- Personnel Management, etc.
- Conduct Professional Examinations

CENTRAL DESIGNS ORGANISATION,NASHIK (C.D.O.)

(Established in 1957)



FUNCTIONS :

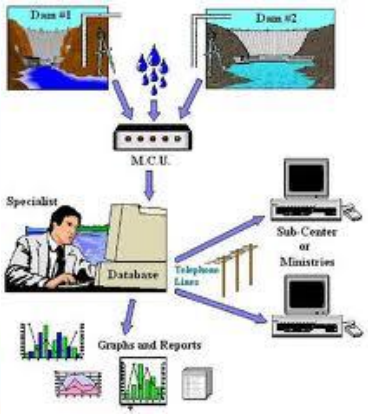
- **Design of Earthen Dams and Masonry Dams**
- **Design of Lift Irrigation Schemes**
- **Design of Hydro Electric Projects**
- **Design of Major Canal Structures including Gates & Outlets**

DAM SAFETY ORGANIZATION, NASHIK (DSO)

(Established in 1980)

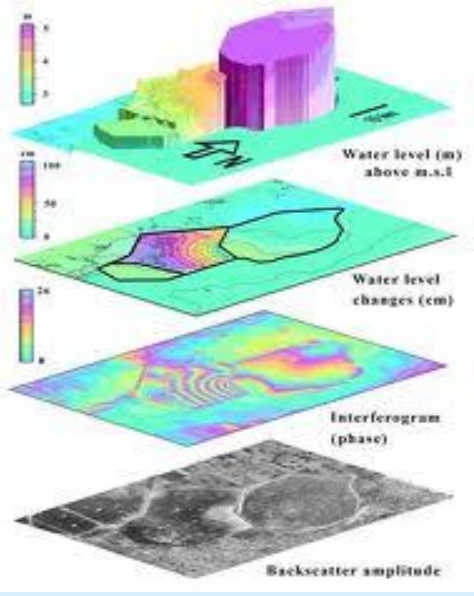
FUNCTIONS :-

- **Pre and post monsoon inspections of Large Dams**
- **Monitoring of pre and post-monsoon inspections carried out by field officers**
- **Analysis of deficiencies observed during the inspections and suggesting remedial measures**



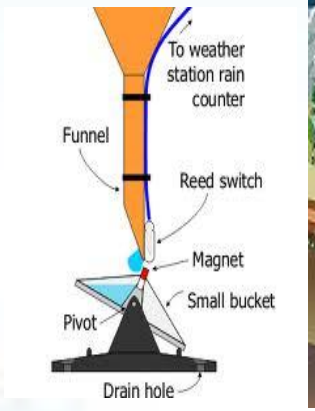
HYDROLOGY PROJECT, NASHIK

(Established in 1996)



FUNCTIONS :

- River gauging & Rain gauging
- Compilation & Analysis of data
- Creation of hydrological network in the State
- Improve Hydrological data base
- Assessment of basin / sub basin wise water availability



MECHANICAL ORGANISATION

(Established in 1959)

- Management of Earth Moving Machinery.
- Management of Hydraulic Gates & Hoists.
- Management of Pumping Machineries in Lift Irrigation Schemes.
- Management of Mechanical Workshops.
- Management of Stores.
- Emergency Services.

MECHANICAL ORGANISATION

(Established in 1959)

During this last 54 Years, Mechanical Organization has made valuable contribution for the development of the State in respect to Irrigation, Water Supply & Hydro-Power Projects.

- **Achievements of Mechanical Organization since 1959:**
- **Total Project Earthwork and Canal Cleaning - 3,45,085 tcm**
- **Gate Manufacturing Works - 1,49,282 Metric Tone**
- **Gate Erection Works - 1,27,828 Metric Tone**
- **Canal Cleaning since Oct. 2009 - 50,418 TCM**
- **Land Development - 1500 Ha.**

DIRECTORATE OF IRRIGATION RESEARCH & DEVELOPMENT, PUNE (DIRD)

History:-

Established in 1916 by C.C. INGLIS

FUNCTIONS :-

- **Pre-Irrigation Soil Survey in commands of projects.**
- **Periodical Monitoring and demarcation of water logged and salt area of project command.**

- **Execution and Maintenance of surface, sub-surface drainage schemes for reclamation of water logged and salt affected areas.**
- **To carryout Pre-Project soil survey & lab testing of soil samples.**

DIRECTORATE OF IRRIGATION RESEARCH & DEVELOPMENT, PUNE (DIRD)

Research Studies Under taken by DIRD:-

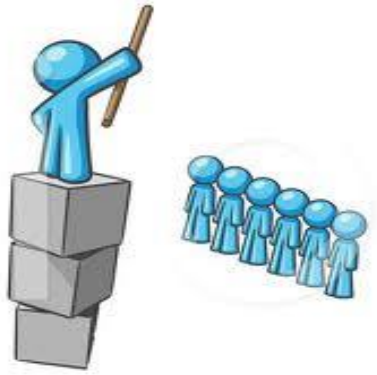
- **Ground water management-.**
  Study of percolation tanks, under ground weirs etc.
- **Soil management :-**
  Study of soil classification and development of saline land
- **Water management :-**
  Study of sprinkler Irrigation Drip Irrigation, Phad Irrigation etc
- **Special Studies (USAID Project) :-**
  Transit losses in canal water Management techniques for Agriculture, Alternative use of water in Dam.
  Study of use of chemical to control evaporation on MI tanks/ K.T. weirs & study for comparison of pan evaporimeter
- **Other Studies:-**
  Plantation of trees useful for medicine
  West water disposal
  study of efficiency of drainage scheme in black cotton soil etc.

WATER AND LAND MANAGEMENT INSTITUTE (WALMI) AURANGABAD

(Established in 1980)

OBJECTIVES :-

- In-service training of interdisciplinary nature to staff engaged in irrigation water management of WRD 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
- Organizing farmer's training programmes.



MAHARASHTRA WATER REOURCES REGULATORY AUTHORITY

Objectives:-

•To facilitate & ensure judicious, equitable and sustainable management, allocation and utilization of water resources

•Functions

- Approve water resource projects to ensure
  - a) Economic, hydrologic and environmental viability
  - b) Statutory and other obligations of inter-state entitlement
  - c) Development as per Integrated State Water Plan (ISWP)
- Support and aid the enhancement and preservation of water quality
- Promote sound water conservation & management practices
- To fix the rates for use of water for various purposes.

Major Achievements in the Water Sector

1. **Full Recovery of O & M Cost through ISF (since 10 years).**

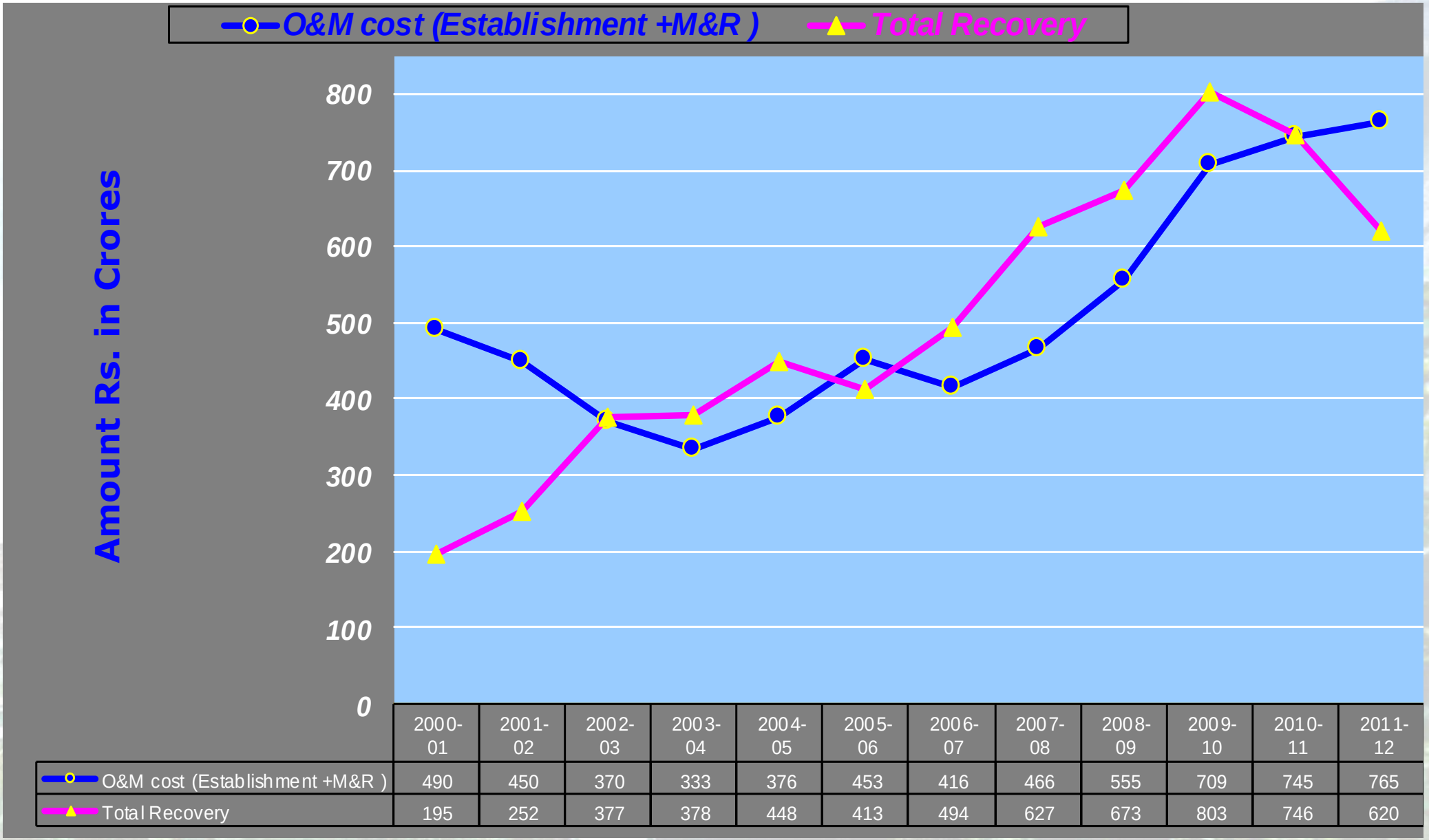
2. **First State in India to establish Water Resources Regulatory Authority.**

3. **Double Lake Tapping in Koyna Lake for first time in Asia for Capacity Addition of 1000 MW.**

4. **Completion of India's first RCC dam in Ghatghar PSS.**

5. **Capacity addition of 83.6 MW by developing 19 SHPs through Privatization Policy .**

O & M Cost and Recovery



	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12
O&M cost (Establishment +M&R)	490	450	370	333	376	453	416	466	555	709	745	765
Total Recovery	195	252	377	378	448	413	494	627	673	803	746	620

Year

Note-The water tariff reduced in 2011-12

MWSIP : Rehabilitation of old Irrigation Systems with World Bank Assistance

- **Total cost : Rs.1860 Cr.**
- **Loan period Expired on : 28.3.2014.**
- **Total expenditure (till March 2013) : Rs.1553.00 Cr.**
- **Canal rehabilitation works in the 163 schemes & dam safety works in 227 schemes completed.**
- **Distribution System is handed over to 801 WUAs covering area of 3,29,543 Ha.**
- **World Bank appointed consultant for Monitoring & Evaluation.**
- **As per the monitoring report**
  - **Increase in Water use efficiency : 96 to 132 ha/MCM (37.5% increase)**
  - **Increased Value of crop production per TCM : Rs.3532 to Rs.6564 (85.84 % increase)**

AIBP

- 68 Major/Medium & 186 MI projects included (since 1996-97)& CLA/CA Availed -Rs.11349 cr.
- 40 Major/Medium & 115 MI projects are completed.
- 28 Major/Medium projects & 71 MI projects planned to be completed till the end of XIIth Plan
- Irrigation potential created - 6.64 lakh ha.
- C. A. Proposed by GoI (2014-15) - Rs. 829 cr.
- Gosikhurd Project from Vidarbha Region declared as National project by GoI.

NATIONAL PROJECT FOR REPAIR, RENOVATION AND RESTORATION (RRR) OF WATER BODIES

- **Phase I : GoI sanctioned 258 Schemes amounting Rs.135.09 crs. & released Rs.80.53 crs., Expenduture : 19.22 Crs., Area Restored : 2154 Ha.**

Phase II: 124 Schemes amounting to RS. 146.43 Crs. submitted to GoI. Proposal yet to be approved.

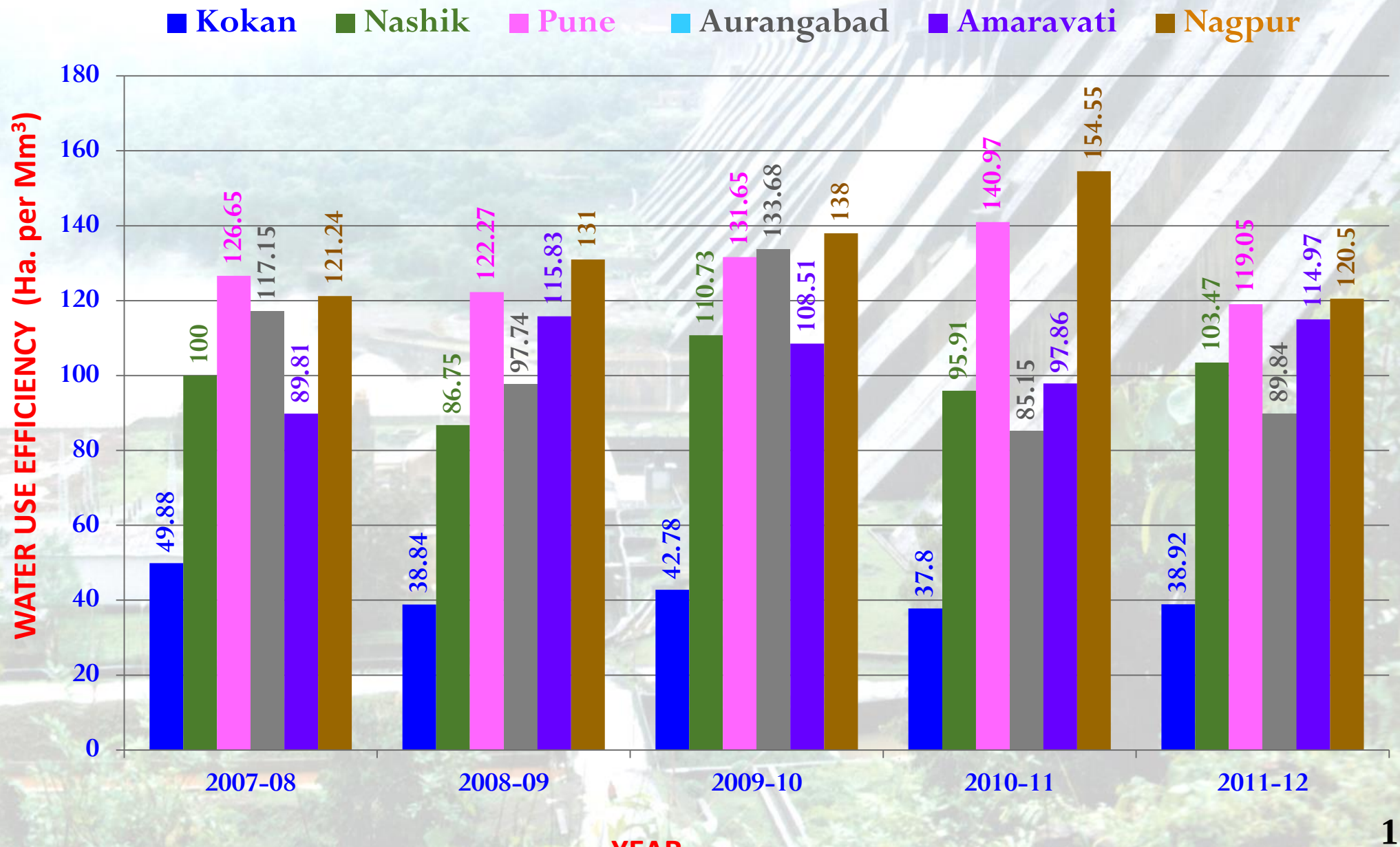
Ongoing Projects

Rs. in crores, Potentialin lakh Ha.

Corporation/ Project	No of Projects	Irrigation potential (Cropped Area)	Balance irrigation potential as on June 2014
Major			
KIDC	4	1.083	0.639
TIDC	10	3.643	2.795
MKVDC	29	19.537	12.016
GMIDC	13	5.934	2.604
VIDC	16	12.376	8.454
Total Major	**72**	**42.573**	**26.509**
Medium			
KIDC	11	0.840	0.754
TIDC	14	0.836	0.611
MKVDC	18	0.902	0.693
GMIDC	8	0.602	0.380
VIDC	46	2.497	1.721
Total Medium	97	5.677	4.158
Minor			
KIDC	48	0.493	0.399
TIDC	22	0.138	0.103
MKVDC	22	0.167	0.153
GMIDC	55	0.373	0.330
VIDC	136	1.238	0.992
Total Minor	**283**	**2.409**	**1.976**
KIDC	63	2.416	1.792
TIDC	46	4.618	3.509
MKVDC	69	20.605	12.862
GMIDC	76	6.909	3.313
VIDC	198	16.110	11.167
Total	**452**	**50.658**	**32.644**

DIVISIONWISE WATER USE EFFICIENCY

(Ha. per Mm³)



Study of interstate and intrastate linking of rivers.

- **Interstate linking of rivers**
  - Two links benefit Maharashtra
    - Damanganga – Pinjal
    - Par-Tapi-Narmada

  - MOU between Maharashtra and Gujarat state is under finalisation
  - Techno-economic viability of the proposal is being examined by the NWDA under GoI.


THANKS