

Master Plan for Integrated Development & Management of Water Resources of Godavari Basin.

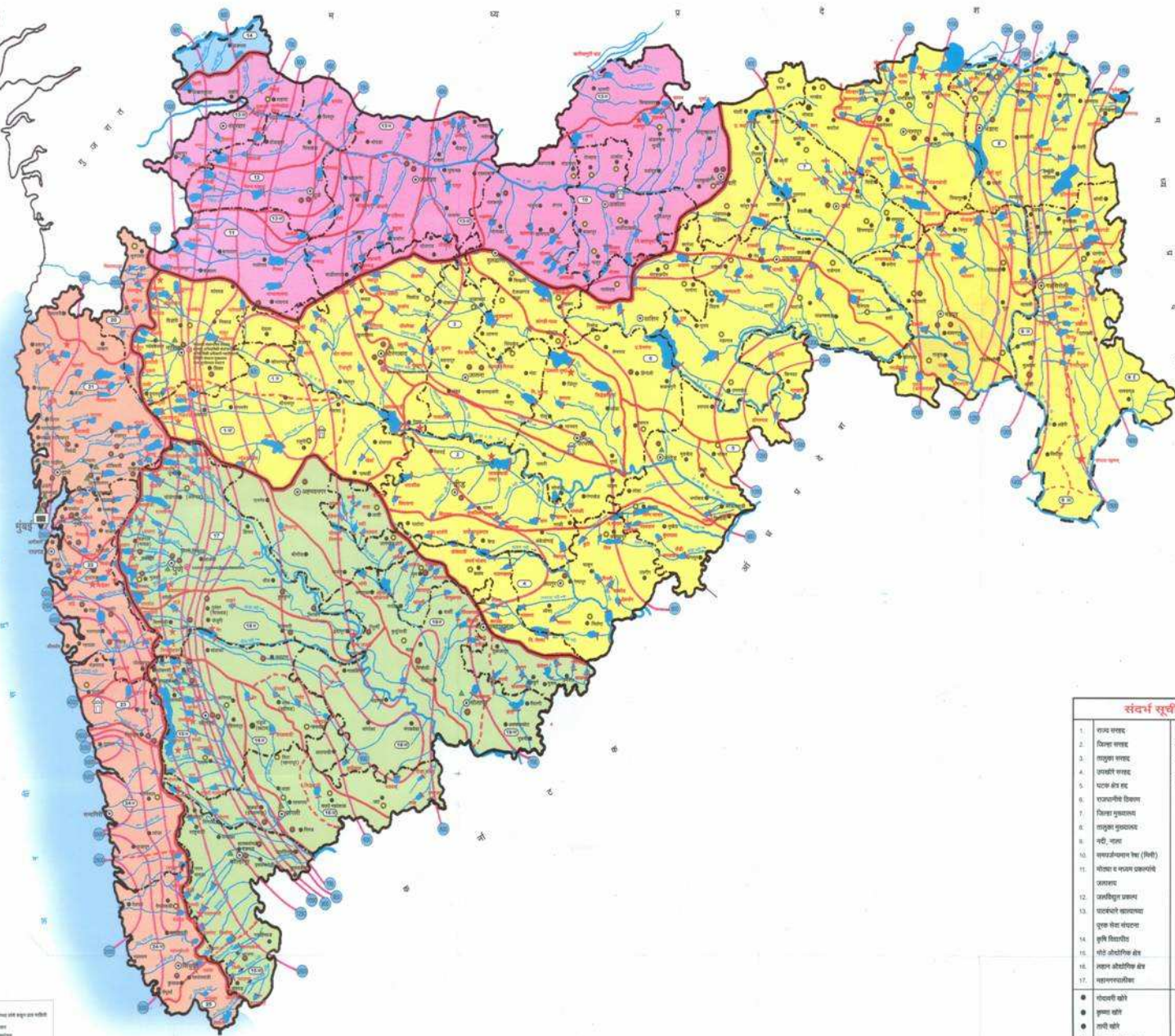
Dr. D.M. More Dt. 9.8..2011

Technical Adviser to GOM ■

(Ppp for Delhi)



प्रमाण
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संकेत
● स्थल बिन्दु / स्थल / समुद्र तल से उन्नत स्थिति
1 समुद्र तल से, समुद्र तल
2 समुद्र तल से उन्नत स्थिति
3 स्थल बिन्दु, स्थल

The territorial waters of India extend into the sea to a distance of twelve nautical miles measured from the appropriate base line.

संदर्भ सूची	
1. राज्य सरحد	—
2. विभाग सरحد	—
3. समुद्र सरحد	—
4. उपखंड सरحد	—
5. पट्टा क्षेत्र सरحد	—
6. राजधानी विभाग	—
7. विभाग मुख्यालय	—
8. समुद्र मुख्यालय	—
9. नदी, नाल	—
10. समुद्र तल से उन्नत स्थिति (मीटर)	—
11. सीमा व समुद्र उपखंड	—
12. उपखंड उपखंड	—
13. उपखंड क्षेत्र	—
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25. उपखंड क्षेत्र	—

नियोजनसूची प्रस्तावित उपखंड	
उपखंड क्रमांक	उपखंड
1	उत्तर गोदावरी (वेणुगुडम पर्यंत) उपखंड
2	गोदावरी (वेणुगुडम पर्यंत) उपखंड
3	गोदावरी (वेणुगुडम पर्यंत) उपखंड
4	गोदावरी (वेणुगुडम पर्यंत) उपखंड
5	गोदावरी - सुभा - स्वर्ण उपखंड
6	वेणुगुडम उपखंड
7	वेणुगुडम उपखंड
8	वेणुगुडम उपखंड
9	वेणुगुडम उपखंड
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23	वेणुगुडम उपखंड
24	वेणुगुडम उपखंड
25	वेणुगुडम उपखंड

महाराष्ट्र राज्य व सिंधु प्रदेश
महाराष्ट्र राज्य
पृष्ठ 1999

Govt. of Maharashtra by an act called MWRRA – Act 2005 has created an autonomous authority (Maharashtra water resources regulatory authority) mainly for according 1. Clearance to the projects 2. Framing guide lines for water tariff and 3. Fixing water entitlements, rights. The act vide clauses 15 & 16 provides for preparation of Integrated State Water Plan for the State of Maharashtra

Steps :

- River Basin Agency (RBA-Godavari) to prepare plan for Godavari Basin and submit to State Water Board.
- State Water Board to prepare an Integrated Water Plan for the State and submit to State Water Council.
- State Water Council to accord approval to the individual basin plan and also to Integrated State Water Plan.
- Plan may be reviewed after five years.

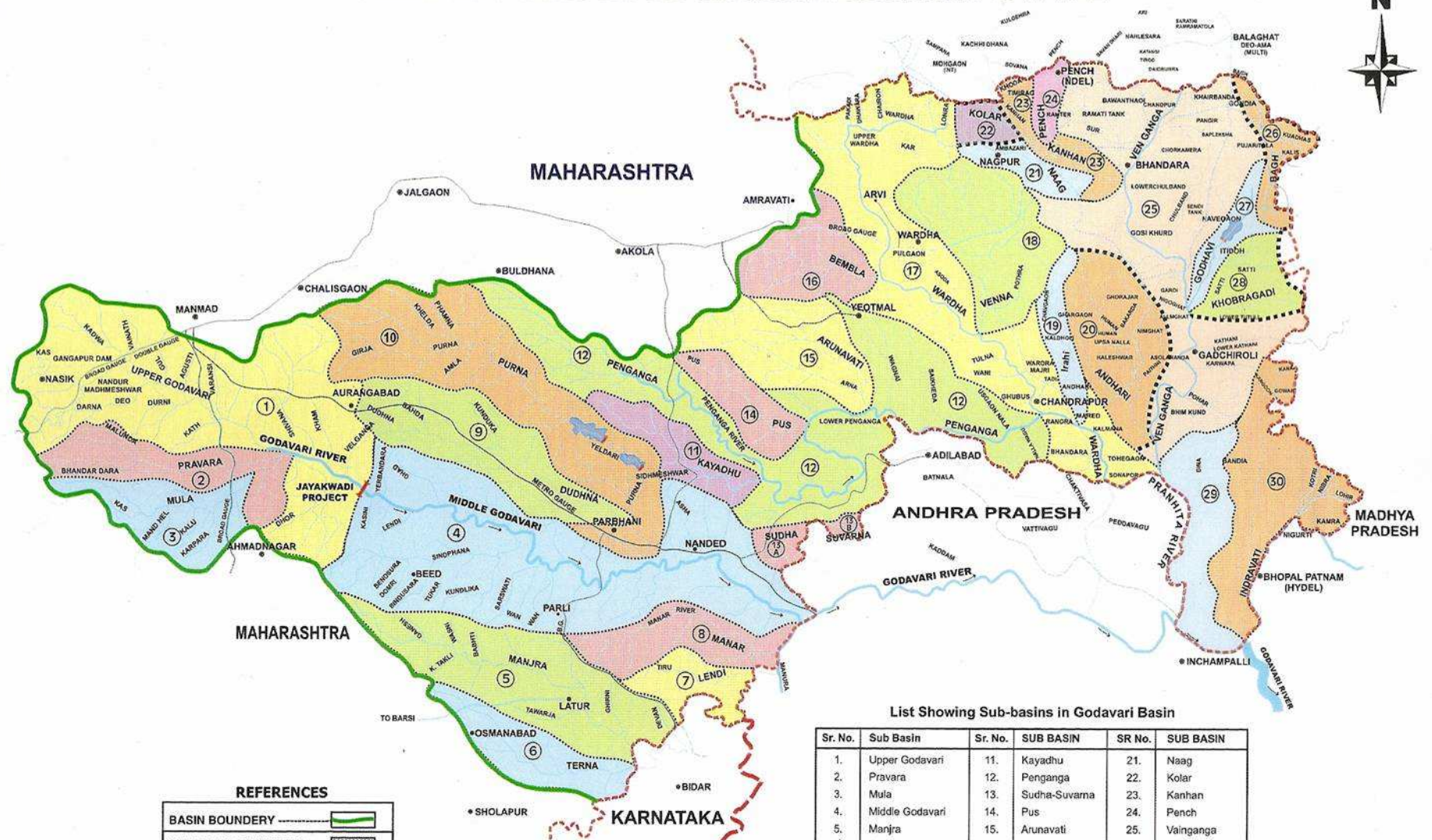
State Water Board

1	Chief Secretary	Chairman
2	Ten	Members

State Water Council

3	Chief Minister	President
4	17 Ministers	Members

GODAVARI BASIN IN MAHARASHTRA STATE



REFERENCES

BASIN BOUNDARY	
SUB BASIN BOUNDARY	
RIVER	

List Showing Sub-basins in Godavari Basin

Sr. No.	Sub Basin	Sr. No.	SUB BASIN	Sr No.	SUB BASIN
1.	Upper Godavari	11.	Kayadhu	21.	Naag
2.	Pravara	12.	Penganga	22.	Kolar
3.	Mula	13.	Sudha-Suvama	23.	Kanhan
4.	Middle Godavari	14.	Pus	24.	Pench
5.	Manjra	15.	Arunavati	25.	Vainganga
6.	Terna	16.	Bembala	26.	Bagh
7.	Lendi	17.	Wardha	27.	Gadhavi
8.	Manar	18.	Venna	28.	Khobragadi
9.	Dudhana	19.	Irahi	29.	Pranhita
10.	Purna	20.	Andhari	30.	Indravati

GODAVARI BASIN

- | | | |
|----------------------|---|---------------|
| 1) Geographical Area | - | 152811 Sq.Km. |
| 2) Sub basin | - | 30 Nos. |
| 3) Watersheds | - | 795 Nos. |

Sub basins

1.Upper Godavari, 2. Pravara 3. Mula, 4. Middle Godavari (17616 Sq. km.), 5. Manjara, 6. Terna, 7. Lendi, 8. Manar, 9. Dudhana (5170 Sq. km.), 10. Purna, 11. Kayadhu, 12. Penganga 13. Sudha Suvarna, 14. Pus 15. Amaravati, 16. Bembla, 17. Vardha, 18. Venna 19.Irahi 20 Andhari, 21. Nag, 22.Kolar. 23. Kanhan. 24. Pench (538 Sq. km.) 25.Vainganga,26. Bagh, 27Gadhavi, 28. Khobragadi, 29. Pranhita, 30. Indravati

What is Master Plan ?

- 1) It is an integrated plan of development of all activities related to water such as irrigation, domestic use, industries, energy etc.
- 2) It is an integrated plan for management of all activities related to water.
- 3) Integration of developmental and management aspects such as, Irrigation and drainage, Water supply and sanitation etc.
- 4) Integration of both surface and ground waters.
 - 1) Integration of storage projects (Large, small etc.) and watershed development areas
 - 2) It is a master plan of master plans of different water related activities.
 - 3) Thus it is an area development plan.

Aim

- a) to generate Wealth,
- b) to generate Employment,
- c) Optimise the resource to
maximise wealth
and employment.

Without bypassing the aspects of :

1	Judicious distribution of resource	(equity)
2	Decentralization	(reduce disparity)
3	Environmental /ecological balance	(protect nature)
4	Basin, sub-basin as a unit of development.	

The plan has to incorporate:


1. Total potential or scope for development of the activity in question	(strength)
2. Scope of Management of the activity in question	(Responsibility)
3. Status of development / management	(progress)
4. Gaps, shortcomings experienced in above.	(learning lessons)
5. Need for futuristic approach.	(necessity)
6. Draw perspective plan for the remaining with corrective measures to the past activities	(vision for future)
7. Social trends, mindsets, attitudes, traditions, practices in vogue etc.	(Reality)
8. Studies done, recommendations.	(direction)
9. Time as a unit,	(over a period)
10. Money required	(investment)
11. Organizational strength	(Men and machinery)
12. Legal support	(regulation)
13. Follow holistic approach	(from whole to part).

Understanding the basin / sub-basin – (availability + status)

- 1) Collection of data
- 2) Listing, tabulation, validation,
- 3) Analysis,
- 4) Inferences, conclusions,
- 5) Making, confirming the ideas,
- 6) Drafting the report,
- 7) Developing the maps.

Within the framework of:

- a) River Tribunal Awards, Allocations decided,
- b) Laws of the land,
- c) Institutional strength for management on sustainable
 - ~~with~~ ^{basis} due consideration to strengths and weaknesses (strong points + weak points).
 - Plan not with deterministic approach,
 - Flexibility and open ended approach,
 - For the welfare of society, state.

- 
- ❖ It is a comprehensive vision document for integrated development and management of water resources for multi-purposes for the well-being of the people at large.
 - ❖ The plan focuses on maximizing the benefits (wealth & employment) by optimizing the use of water resources without bypassing the aspects of environment and ecology.
 - ❖ It treats sub basin as a unit of development. It also goes beyond i.e. watershed and so on.
 - ❖ The plan takes in to consideration :
 1. Total potential of each of the activities for development.
 2. Total responsibility of management of each of the activities.
 3. Status of development and management
 4. Gaps noticed in above
 5. Need for perspective plan.
 6. Social trends, traditions, attitudes etc.
 7. Investment required over a period (2030)
 8. Organizational strength and legal support.

- ❖ Each activity is further subjected to SWOT analysis.
- ❖ It endeavors to make some suggestions and recommendations for improvement.
- ❖ It involves collection of voluminous data from more than two & half dozen agencies.
- ❖ The plan at the interim and final stages will be brought before the stakeholders (by conducting meetings, workshops in the sub basin itself) to seek their interventions, participations etc.
- ❖ The plan is being evolved by outsourcing outside expertise, experience.
- ❖ The master plan of each of the 30 sub basins of Godavari basin runs as below :

1. Know your sub basin (introduction)

- * Geography.
- * Population
- * Watersheds
- * Villages etc.

1. River system

- * Main tributaries
- * Origin
- * length
- * Gradient
- * Catchment etc.

1. Geology and Geo-hydrology

- * Geological formations, flows,
- * Aquifers
- * Porosity
- * Specific yield etc.

1. Soils

- * Land capability
- * Physical properties
- * Chemical properties
- * Irrigability classification etc.

1. Land Use Pattern

- * Cultivable area
- * Cropping pattern
- * Yields
- * Irrigated crops
- * Rainfed crops
- * Agro based industries
- * Agri extension facilities
- * Productivity per unit of water etc.

1. Hydrology

- * Hydro meteorology
- * Meteorological measurements
- * Rainfall pattern etc.

Hydrological Analysis and Water Availability

Terna sub basin

Hydrological Analysis			Estimation from Observed Data			
Mode used for estimating yield	Rainfall		Month	Inflows	Rainfall	R-R equation
	Rain Gauges	Weightage		Mm3	mm	
GDS at Aurad and Tank Data – 1 Major – Lower Terna 3 Medium – Terna, Rui and Kajala & 42 M.I. 1	Alni	0.03	June I	19.62	87.93	$R = 0.094 * P - 2.147$
	Aurad (sh)	0.15	June II	14.66	75.19	$R = 0.0006 * P^2 + 0.140 * P - 2.10$
	Bembli	0.07	July I	29.16	90.11	$R = 0.268 * P - 14.97$
	Karajkheda	0.07	July II	28.03	83.78	$R = 0.463 * P - 30.03$
	Makni	0.17	Aug I	22.01	105.70	$R = 0.063 * P + 0.242$
	Matola	0.13	Aug II	81.15	106.67	$R = 0.344 * P - 11.15$
	Nitur	0.07	Sep I	81.04	82.53	$R = 0.453 * P - 11.60$
	Padoli	0.06	Sep II	190.25	136.63	$R = 0.693 * P - 34.68$
	Pangaon	0.04	Oct I	92.10	64.74	$R = 0.415 * P + 2.166$
	Sarola	0.07	Oct II	45.87	23.46	$R = 0.011 * P^2 - 0.879 * P + 16.67$
	Tadola	0.07	Annual	472.07	706.47	$R = 0.372 * P - 113.90$
	Yeoti	0.07				

Model Generated Year wise Monthly Yield Series along with Yields at various Dependabilities

Sr No (1)	Year (2)	Weighted Average Rainfall (mm) (3)						Yeild (Mm3) (4)						Descen ding (5)
		June	July	Augus	Septem	October	Total	June	July	Augus	Septem	Octob	Total	
1	1977	145.58	145.9	134	51.61	46.72	523.8	43.69	55.52	79.24	0	121.2	299.64	1124.46
2	1978	161.12	200	154.1	101.54	65.84	682.6	43.1	79.36	75.39	63.19	55.29	316.33	1102.98
3	1979	95.77	126	137.7	251.8	21.58	632.8	28.01	42.07	27.55	339.5	47.33	484.49	943.63
4	1980	203.92	60.57	223.7	108.91	1.04	598.1	52.23	0	140.8	63.91	61.09	317.99	727.21
5	1981	141.72	103.5	132.4	279.93	107.12	764.6	39.46	0	23.56	370.7	100.6	534.26	672.28
6	1982	68.6	110.5	67.27	163.25	32.98	442.6	14.12	2.46	11.8	166.7	10.92	206.02	545.36
7	1983	73.63	156.1	220.2	313.63	129.89	893.4	15.62	44.91	44.71	398.5	223.5	727.21	540.93
8	1984	58.02	178.6	69.87	155.16	115.32	577	7.09	59.51	10.64	115.6	117	309.90	534.26
9	1985	116.39	156.4	44.69	120.04	111.69	549.2	27.64	106.6	7.81	71.73	206.7	420.42	494.20
10	1986	100.23	70.69	124.8	122.83	2.45	421	22.21	0	24.06	82.98	62.44	191.68	488.07
11	1987	160.64	134.7	207.6	67.15	118.54	688.6	51.64	40.1	52.08	13.38	95.93	253.13	484.49
12	1988	162.44	225.3	294.9	429.82	16.67	1129	46.7	130.7	210.4	633.6	81.65	1102.98	483.80
13	1989	180.99	317.7	175.3	293.35	19.77	987.1	51.61	259.5	116.7	442.3	73.46	943.63	439.99
14	1990	189.35	119.9	282.5	130.07	184.91	906.8	47.54	23.02	78.7	112.4	222.2	483.80	438.41
15	1991	187.11	256.5	55.69	51.64	8.46	559.4	53.28	134.3	9.21	0	70.85	267.59	428.28
16	1992	103.45	91.16	178	130.55	61.05	564.2	30.21	0	38.69	140.9	128.4	338.26	422.07
17	1993	92.07	184.1	180.1	109.75	182.84	748.8	22.56	76.35	90.68	49.93	182.6	422.07	420.42
18	1994	142.17	192.4	146.8	70.08	122.72	674.2	35.97	64.57	82.36	36.42	124.6	343.89	377.98
19	1995	109	209	119.4	140.38	132.19	710	40.27	127.1	54.46	134.2	132	488.07	343.89
20	1996	68.77	198.9	249.1	296.84	98.37	912	11.58	83.06	183.1	320.1	74.49	672.28	341.04
21	1997	117.95	149.5	138.5	100.41	93.3	599.6	27.9	29.83	82.62	77.88	89.57	307.81	338.26
22	1998	184.25	218.1	246.6	325.36	200.06	1174	58.26	167.3	161.4	429.2	308.3	1124.46	317.99
23	1999	123.49	136.4	105.3	151.12	163.61	679.9	33.05	14.93	17.68	122.9	249.8	438.41	316.33
24	2000	165.4	196.6	273.6	58.27	38.2	732.1	42.32	110	183.4	0	92.66	428.28	309.90
25	2001	143.12	60.86	194.4	165.16	88.41	651.9	33.82	0	36.18	198.3	171.7	439.99	307.81
26	2002	171.92	106.7	158.8	125.33	42	604.7	53.46	39.56	73.3	86.69	88.02	341.04	299.64
27	2003	47.47	170.2	179.8	120.43	19.51	537.4	12.57	60.65	109.8	138.1	56.91	377.98	267.59
28	2004	118.09	167.6	116.4	184.66	80.91	667.6	26.63	83.46	19.75	198.2	166.2	494.20	253.13
29	2005	61.07	310	147.8	188.43	1.81	709.1	16.5	234	45.48	190.9	58.53	545.36	206.02
30	2006	176.75	147	286.4	237.43	24.56	872.1	59.96	39.11	52.54	299.3	89.99	540.93	191.68

Max	203.92	317.7	294.9	429.82	200.06	1174	59.96	259.5	210.4	633.6	308.3	1124.5
Min	47.47	60.57	44.69	51.61	1.04	421	7.09	0	7.81	0	10.92	191.69
Mean	129.02	163.4	168.2	168.16	77.75	706.5	34.97	70.26	71.46	176.6	118.8	472.07
STD	45.19	63.89	69.34	94.53	59.67	182.8	15.29	66.26	56.74	158.4	69.11	235.33
Cv	0.35	0.39	0.41	0.56	0.77	0.26	0.437	0.943	0.794	0.897	0.582	0.4985
Dependability												
95%	58.02	60.86	55.69	51.64	1.81	442.6	3.29	0	6.82	0	8.24	206.02
90%	68.6	91.16	69.87	67.15	8.46	537.4	7.45	0	8.02	0	10.46	267.59
75%	95.77	119.9	124.8	108.91	21.58	577	15.35	0	13.9	13.38	47.32	316.33
60%	117.95	147	146.8	125.33	46.72	651.9	25.02	12.76	25.61	55.47	87.59	377.98
50%	141.72	156.4	158.8	140.38	80.91	679.9	31.72	44.91	50.97	131.2	113	428.28

Sub basin	Mont h	Estimated flows from Generated Series											
		Rainfall (mm)							Yield / Inflow (Mm3)				
		Avg.	50%	60%	75%	90%	95%	Avg.	50%	60%	75%	90%	95%
Terna	June I	65.54	64.41	56.98	33.20	17.67	4.14	13.33	12.39	10.18	3.09	0.00	0.00
	June II	63.48	58.54	48.44	42.62	31.79	22.42	21.64	19.33	14.84	12.26	7.45	3.29
	July I	74.81	67.14	55.51	39.39	20.64	18.90	23.79	9.58	0.00	0.00	0.00	0.00
	July II	88.56	88.93	73.56	51.05	39.93	31.64	46.47	35.33	12.76	0.00	0.00	0.00
	Aug I	90.56	79.88	70.19	48.44	36.29	30.29	18.86	16.72	14.79	10.44	8.02	6.82
	Aug II	77.62	63.81	42.34	35.58	20.46	9.41	52.61	34.25	10.82	3.46	0.00	0.00
	Sep I	82.19	72.98	59.44	34.92	14.92	7.56	85.02	68.04	48.60	13.38	0.00	0.00
	Sep II	85.97	78.80	53.17	39.93	32.22	19.12	91.56	63.19	6.87	0.00	0.00	0.00
	Oct I	57.04	46.72	33.82	12.10	2.73	1.04	81.92	68.34	51.36	22.79	10.46	8.24
	Oct II	20.71	6.49	3.07	0.50	0.00	0.00	36.88	44.62	36.23	24.53	0.00	0.00
	Annual	706. 47	679. 87	651. 93	577. 01	537. 35	442. 59	472. 07	428. 28	377. 98	316. 33	267. 59	206. 02

Tribunal Awards and Planning

Terna sub basin

Annual Yield	Available Mm3	Tribunal Provision Mm3	Completed Irrigation Projects	Project Planning & requirement			
				Nos.	Live Storage	Actual Avg. Storage	Present Utilization
Average	472	1. Area basis	Major	1	91.21	68.11	37.12
50%	428	– 263 Mm3	Medium	3	31.73	23.34	20.65
75%	316	2. Plan.– 289 Mm3	MI 1	53	95.63	69.81	39.66
			MI 2	16	12.08	8.82	4.64
		3. Avg Yields – 284 Mm3	MI 3	371	48.29	35.25	15.81
		For plan. 289 Mm3.	Sub Total	444	278.94	205.33	117.88
			Total Irrigation	444	278.94	205.33	112.39

$$\frac{\text{Avg. availability}}{\text{design live storage}} = \frac{205}{280} = 0.73$$

To utilize the allocated water (289 Mm3) live storages required will be 396 Mm3

Planning made (live storages) including completed, on going, future = 460 Mm3. This might be inclusive of return flow (urban + industry) and loss in live storage due to sedimentation etc.

1. Surface Water

- * Rainfall runoff relations – watershed wise
- * Water availability (yield for different dependability)
- * Standard deviation and coefficient of variability.
- * Import & Export of Water etc.

1. Ground water

- * Availability
- * Stage of extraction, exploitation
- * Quality of groundwater
- * Well census
- * Recharge potential etc.

1. Tribunal Award

- * Allocations
- * Limitations etc.

1. Trans basin Diversion of Water

- * Possibilities of inter basin and intra basin transfer of water.
- * Export & import etc.

1. Watershed development and management

- * Watershed wise status of development
- * No. of schemes / devices planned, utilized
- * Benefits etc.

1. Ground water Development and management

- * 1. Status of groundwater abstraction 2. Ground water maps 3. Ground water quality maps 4. Ground water abstraction devices 5. Ground water bill etc.

1. L-sections and Cross sections

- * Assessment of recharge potential.
- * Geological profile etc.

1. Traditional Water Devices

- * Aad, Step well, barav,
- * Historical approach
- * Scope for improvement etc.

1. Water Resources Development

- * Flow irrigation
- * Lift irrigation, Pumping at what cost.
- * Projects completed, ongoing, future
- * Area under irrigation etc.

16. Non Irrigation use

- * Domestic,
- * Industrial,
- * Water for environment, consumptive use (requirement of flora and fauna), riparian rights, regulation of surface and ground waters, zero effluent, No discharge of untreated sewage in river bodies.
- * Pisciculture,
- * Tourism
- * Navigation
- * Domestic water requirement for rural & urban areas
- * Status of existing water supply schemes village wise/ watershed wise
- * Water requirement for industrial use
- * Plan of navigation for connecting habitations situated along fringe of reservoir etc.

1. Recycling and Reuse of Water

- * Industrial water
- * Domestic water
- * Sewage irrigation
- * Status of treatment and recycling etc.

1. Water for Energy

- * Hydro power
- * Thermal power
- * Wind power
- * Solar power
- * Bio energy
- * Potential and status etc.

1. Water Balance

- * The availability and consumption
- * Regeneration flow
- * Return flow etc.

Ground water Availability (Total Annual Recharge) :

Water Available for Use (65% of) :

Present use of Groundwater :

Groundwater available for Use :

Ultimate irrigation potential

Cropping pattern (present and future)

Irrigation methods (flow, drip, sprinkler, diffusers, poly houses etc)

Farming methods

Cropping intensity present and future

Productivity of Water for irrigation. Domestic use (Health and betterment of society), Industrial use.

Yield per unit area

Equity in water for irrigation, for people, for industries, for environment.

A check for water balance is to be given, keeping the non irrigation requirement undisturbed. The demand for irrigation could be altered by that percentage.

1. Available water = surface water + ground water + water available from watershed development works + treated sewerage (80 %) + treated effluent (80%) + return flow from flow irrigation

2. Required water = water for irrigation (with 60% & 90% efficiency) + Industrial water + Urban water + Rural water + evaporation losses etc.

20. Management of Water Resources

- * Irrigation
- * Status of PIM, WUAs
- * Water logged and saline areas, treatment to damaged area
- * Measuring devices,
- * Restoration of canal & disnet etc.

1. Non Irrigation

- * Status of distribution, volumetric measurement
- * Losses in distribution systems etc.

1. Use of Modern Tools and Water saving Techniques

- * Remote sensing to know land use, silting, crops
- * Operation policy for reservoirs to optimize benefits
- * Drip, sprinkler, diffuser, green houses irrigation systems etc.

1. Conjunctive Irrigation

- * Increase in irrigated area
- * Rise in groundwater
- * Quality of groundwater etc.

1. Water Quality

- * Water quality status of the flowing and stationary water bodies.
- * Location of industries and urban centers etc.

1. Prevention of Losses

- * Losses through water delivery system
- * Application of PIM
- * 8 monthly irrigation
- * Losses in domestic and industrial water supply.
- * A Plan to reduce losses
- * **Sedimentation etc.**

1. Evaporation Control

- * Evaporation measurements
- * Remedial measures to minimize evaporation
- * Management techniques to control evaporation etc.

1. Development and Management of Galpar Land / Tank bed irrigation

- * Potential
- * Status
- * Plan for development

1. Diversion of agricultural land to non agricultural activities

- * Loss of fertile cultivable land
- * Loss of irrigation infrastructure
- * Loss of revenue
- * Alternative plan for developmental activities

1. Drought Mitigation and Management

- * Probability of occurrence
- * Status of watershed development
- * Plan for mitigation and management
- * Permanent solution to mitigate

30. Disaster management.

- * Flood
- * Flood prone areas
- * Loss of life etc.
- * Role of dam in regulation
- * Earth quake
- * Earth quake zone, events, plan to manage
- * River pollution (man made disaster)
- * Affected stretches
- * Plan for their restoration

1. Land acquisition and R & R

- * Status of land acquisition
- * Status of resettlement and rehabilitation
- * Plan for LA & R & R for future projects.
- * A plan to utilise surplus and unused acquired land etc.

1. Socio Economic Impact

- * Impact of irrigation.
- * Impact of industries
- * Migration to urban centers
- * Change in quality of groundwater
- * Disparities in development etc.

1. Project Identification

- * Identify new projects
- * Irrigation projects,
- * Hydro power
- * Water supply
- * PIM
- * Recycling, flood lines, soil labs, cold storages, godowns, agro-based industries, metering, regulation, watershed development, one meter village contour maps, hydrology network, tourism, pisciculture, tank bed irrigation, sewage irrigation, Marketing, navigation, capacity building, modern irrigation methods.etc.

1. Financial Investments

- * Asses financial requirement for each of the identified projects.

1. Socio-economic priorities

* Prioritize identified projects on the basis of

1. DPA
2. Regional backlog
3. Environmental protection
4. Minimum investment
5. Minimum period
6. Maximum benefit

* Efficient use of water etc.

36. Stakeholders consultations

* Put up the plan before the stakeholders to seek their views and interventions.

Incorporate their useful suggestions in the master plan.

- * Take stock of the legal instruments those exist
- * Assess the need for new provision

38. Institutional Arrangements

- * Suggest organizational structure for implementation of the various activities covered in the master plan by the concerned organs , (compatible with the existing setup.)
 - * Review of various activities related to different departments
1. basin level 2. sub basin level 3. water shed level

39 Legal Support

The following Acts are directly or indirectly related to Water Resources and its use –

- ✓ Land Acquisition Act 1894
- ✓ The Bombay Land Improvement Schemes Act, 1942
- ✓ Inter State Water Dispute Act, 1956
- ✓ The Bombay Village Panchayats Act, 1958
- ✓ Maharashtra Fisheries Act, 1960
- ✓ The Maharashtra Zilla Parishads and Panchayat Samities Act, 1961.
- ✓ The Maharashtra Land Revenue Code, 1966
- ✓ The Water Pollution Prevention and Control Act, 1974
- ✓ The Maharashtra Irrigation Act, 1976
- ✓ The Maharashtra Forest (Conservation) Act, 1980
- ✓ Maharashtra Ground Water (Regulation for Drinking Water Purpose) Act, 1993
- ✓ The Maharashtra District Planning Committees Act, 1998
- ✓ Godavari Marathwada Irrigation Development Corporation Act, 1998
- ✓ The Maharashtra Project Affected Persons Rehabilitation Act, 2001
- ✓ National Water Policy, 2002
- ✓ State Water Policy, 2003
- ✓ Maharashtra Water Resources Regulatory Authority Act, 2005
- ✓ Maharashtra Management Irrigation Systems by Farmers (MMISF) Act 2005

40. Action Plan

- * Assign the responsibilities of carrying out the task as covered in the master plan to various departments

1. Epilogue

- * Future projections upto 2030
- * Suggestions and recommendations
- * Potential for employment generation and Wealth creation
- * SWOT analysis

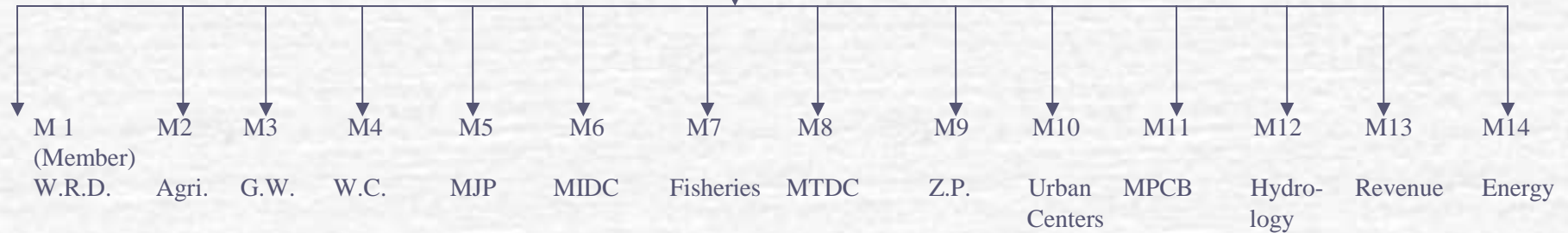
A comprehensive summary to overview the master plan of the entire Godavari basin integrating all the 30 sub basins with their multiple activities.

MASTER PLAN - REVIEW COMMITTEE

M.D. GMRBA

(Chairman)

S.E. GMRBA (Secretary)



Invitees :



Thanks