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Desservels Development	
Research Papers	
e of Water in Maharashtra	under Irrigation
	e of Water in Maharashtra

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Abstract

Total Bulk Water Entitlement: for a task/ waterway framework/ storeroom for any watering system season or year is the aggregate of all Bulk Water Entitlements decided for the different classifications.

Total Water Entitlement: Aggregate Water Entitlement on account of Irrigation is aggregate of Entitlements issued to Water User Associations at distributaries/limb/fundamental trench level and if there should arise an occurrence of non watering system is entirety of Entitlements issued to different water client Entities like drinking water/ Industrial water. Watering system Aggregate Water Entitlement can likewise incorporate non watering system Entitlements on the off chance that it is using pressurized water conceivable to make the supplies from a typical point.

Allotment: in appreciation of a part of a watering system Water Users Association implies the segment of the regular or yearly Entitlement decided for the Association by the River Basin Agency/ Prescribed Authority allocable to the part and is touched base at by reproducing the Prescribed Unit Water Use Entitlement by the part's holding.

By the end of June 2003, there were 53 major, 212 medium and 2445 minor projects (state sector) on which irrigation potential was created. Also 2276 minor (local sector) projects were completed in the state. Besides this 4803 k.T weirs, diversion weirs etc, were also completed. The irrigation potential created in the state by the end of June 2003 through all these major medium and minor projects (state & local sector) taken to

state sector and local sector is about 8.59 Mha. The figures of irrigation potential likely to be created, shows that planning and efforts are being made to achieve the target of ultimate irrigation potential estimated by commission.

Water storage and water use for the last 7 years ending with 2003 - 2004 for the major medium and minor (state sector) projects are presented in the following table No. 3.1 below

Table No. 3.1 Projected live water storage & water use (1997 – 98 to 2003 – 04)

(Water storage in Mm3)

gather is 5.08 Mha Comprising of 3.86 Mha from state sector and 1.22 Mha from local sector. The irrigation potential likely to be created through completed and on going and planned projects from

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Year	Projected Designed Storages	Storage Ason 15 th Oct	As on available Use for		Water use for non irrigation	Total wateruse	% Of total water use to available storage
1997- 98	25528	16615	65%	10639	3268	13906	84%
1998- 99	26712	23285	87%	12347	3033	15380	66%
1999- 00	26716	25271	95%	16037	3595	19632	78%
2000- 01	26748	18947	71%	13575	3858	17433	92%
2001- 02	28062	17817	63%	12346	3980	16326	92%
2002- 03	28715	18936	66%	12965	4236	17201	91%
2003-04	28840	16941	59%	10569	4790	15359	91%

Source – The Irrigation status Report in Maharashtra year 2004

It is seen from the above table that the projected storages of the major medium and minor (state sector) projects has been increased from 25528 Mm3 in the year 1997 - 98 to 28840 Mm3 in the year 2003-04. However as compared to design storages the actual storages as on 15th Oct. are with the range of 59% to 95%. In the year 2003-04 the actual storage as on 15th Oct is the lowest in comparison to last five years The percentage of the total water use in the rang of 66% to 92%.

The water storage in the reservoir is used for irrigation as well as non-irrigation purpose. Further the water for non-irrigation is being used for industries and domestic purpose. Due to industrialization and urbanization the nonirrigation use is continuously increasing considerably. The water used for non-irrigation from 1997-98 to 2003-04 was in the range of 18% to 31% of the total water used. In the year 2003.-04 out of the total water used 31% (4790 Mm3) water has been utilized for non-irrigation purpose and out of the total non-irrigation water use (4790 Mm3) 64% is used for domestic purpose and industrial and other use together is 36% water supply to drinking and industry has priority over irrigation as per the states water policy. Increase in demand for these purpose results in less water availability for irrigation.

3.2 Irrigation Potential Created in Maharashtra:-

Large number of major medium and minor (state sector) irrigation projects has been taken up by the Irrigation Department of the state, to maximize area under irrigation. By the end of June 2003 there are 53 major 212 medium and 2445 minor projects in the state, partly or fully completed. Hardly 0.274 Mha Irrigation potential was created in the state prior to independence. By the end of year 1960, 0.386 Mha. Irrigation Maharashtra year 2004 Indian Streams Reserach Journal Vol.1, Issue. XII/Jan; 2012

Table No. 3.2 Irrigation Potential Created Through Major, Medium And Minor Projects In The State Of Maharashtra

(Area in Mha.)

	TOTAL POTENTIAL CREATED (Area in Mha.)								
Year	Major & Medium Projects	Minor Projects	Total						
June 1960	0.314	0.072	0.386						
June 1997	2.466	0.762	3.228						
June 1998	2.632	0.784	3.416						
June 1999	2.665	0.835	3.500						
June 2000	2.813	0.893	3.706						
June 2001	2.856	0.913	3.769						
June 2002	2.882	0.930	3.812						
June 2003	2.907	0.956	3.863						

Source – Irrigation Status Report in Maharashtra Year 2004

The irrigation potential created in the state by the end of June 2003 through major, medium and minor state sector irrigation projects taken together was 3.863 Mha. The share of major; medium projects and minor projects in the total irrigation potential created is 75.3% and 24.7% respectively. By the end of 2003 the ultimate irrigation potential of total 2710 major or medium & minor (state sector) irrigation projects in the state is estimated to 4.417 Mha out if which the irrigation potential created by the end of 2003 is 3.863 Mha (87%). During 2002-03, the net area sown in the state is 17.579 Mha. The irrigation potential created by the end of June 2002 through major, medium & minor state was 3.812 Mha. which amount to 22% of the net area sown in the state. Irrigated area is an index of achievement for utilization of potential created. Area irrigated on the canal and wells in the command area together during 1997-98 to 2003-04 is presented in the table below.

Table No 3.3 Year wise Irrigation Potential Created And Area Irrigated In The State From Year 1997-1998 To 2003-2004

(Area in Mha.)

Sr.No	Year	Irrigation potential created by end of				% Of area irrigated to potential		
51		June	Canal	W ells	Total	created		
1	2	3	4	5	6	7		
1	1997- 98	3.228	1.202	0.475	1.677	51.95		
2	1998-	3.416	1.225	0.471	1.696	49.65		
3	1999-00	3.500	1.286	0.584	1.870	53.43		
4	2000-	3.706	1.298	0.466	1.764	47.60		
5	2001- 02	3.769	1.250	0.458	1.708	45.32		
6	2002- 03	3.812	1.318	0.524	1.842	48.32		
7	2003-	3.863	1.235	0.441	1.676	43.39		

Sources – Irrigation Status Report in

potential was created During the Five year plan the It is seen from the above table that the irrigated state has created an additional irrigation potential area on canals and wells in the command area of 3.477 Mha by the end of June 2003. taken together during 2003-04 is 1.676 Mha. (43.39%) as against the potential of 3.863 Mha. created by the 2003. It is further revealed from the

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figures that the decrease in irrigated area is due to is presented in the following table. less storage in the reservoir and more reservation of water for drinking. In the year 1999-2000 the water storage of 15th October was 25271 mm3 whereas in the year 2003-04 the water storage of 15th October was 33% less (16941 mm3) than the year 1999-2000.

Further it is pointed out here that though the water used for irrigation on canal in the year 2003-04 (10569 Mm3) is comparatively less than the year 1997-98 (10639 Mm3) the irrigated area in the year 2003-04 is more by 33 thousand ha. Than that of the year 1997-98 (1.202 Mha.) It shows an improvement in the water use efficiency. The irrigation utilization is average 50% compared to potential created.

The overall reasons for less utilization are as follows: -

(i) Low water yield in the reservoir.

(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 and scattered irrigation, resulting in low efficiency.

(v) Low utilization during kharif (Rainy) season.

(vi) Reduction in the storage capacity due to silting.

(vii) Poor/approximate assessment of the irrigation area in the command. (viii) Non accounting of irrigated area out side the command.

Table 3.4

Season-wise irrigated area under the canal water. (Area in M. ha.)

6 N	N		Season-Wise irrigated area								
Sr.No	Year	Kh arif	Rab bi	Hot Weather	Tow Seasonal	Perenn ial	Tot al				
1	2	3	4	5	6	7	8				
1	1997-98	0.369	0.398	0.166	0.058	0.211	1.202				
1	1997-98	(30.7)	(33.1)	(13.8)	(4.8)	(17.6)	(100.0)				
2	1998-99	0.336	0.425	0.182	0.052	0.2 30	1.225				
2	1998-99	(27.4)	(34.7)	(14.9)	(4.2)	(18.8)	(100.0)				
3	1999-00	0.343	0.493	0.155	0.047	0.248	1.286				
5	1999-00	(26.6)	(38.3)	(12.1)	(3.7)	(193)	(100.0)				
4	2000-01	0.423	0.478	0.075	0.050	0.272	1.298				
4	2000-01	(32.6)	(36.8)	(5.8)	(3.9)	(20.9)	(100.0)				
5	2001-02	0.365	0.478	0.122	0.041	0244	1.250				
5	2001-02	(29.2)	(38.2)	(9.8)	(3.3)	(195)	(100.0)				
6	2002-03	0.372	0.548	0.106	0.052	0.240	1.318				
	2002 00	(28.2)	(41.7)	(8.0)	(3.9)	(182)	(100.0)				
7	2003-04	0.407	0.506	0.081	0.051	0.1 90	1.235				
<u> </u>	2005-04	(32.9)	(41.0)	(6.6)	(4.1)	(15.4.)	(100.0)				

Note: figures in brackets indicate percentages.*Excludes area on wells in command. Sources - Irrigation Status Report in Maharashtra year 2003-04.

During 2003-04 the total irrigated area was 1.235 Mha. Out of this, the percentage of irrigated area in Rabbi season is highest (41.0%) followed by Kharif (32.9%) and perennial (15.4%). The percentage of the irrigated area in the hot weather and two seasonal was 6.6 and 4.1 respectively. It is seen that, in the year 2003-04 the perennial and hot weather crops have been reduced by 50 thousand ha. and 25 thousand ha. respectively, whereas kharif crops have been increased by 35thousand ha. than that of the year 2002-03. It shows that farmers are growing more Rabbi or Kharif crops, instead of perennial and hot weather crops.

At National level, up to 1951 - 9.7 million (Influence area). (ix) Poor maintenance of the hectares of land were irrigated by major and infrastructure due to financial constraints. (x) Non medium project constructed before Independence. participation of beneficiaries. Up to 1966 an additional irrigation potential of 7.3 million hectares was created by various major and Irrigated Area And Cropping Pattern: medium projects. A number of projects were under taken and completed, such as Bhakara project in Season wise irrigated area is one of the Punjab and the DVC in Bihar and W.Bengal, the indicators for assessing the cropping pattern Hirakud in Orrissa, the Matatila in Uttar Pradesh, existing in the project area. Utilization in kharif the Tungbhadra in Karnatak and Andhar Pradesh, season basically depends on the amount and the Kosi in Bihar the Malamphuza in Kerala the distribution of rains. Demand in kharif is expected Nagarjun Sagar, the Purna, Bhadra Chambal the only when rains are less or irregular. So variation Rajasthan canal, Kangsabati, Prambikulam Aliyar in irrigated area in kharif season is not desirable for and Mahanandi Delta canals. A further irrigation consideration. The variation in irrigated area potential of 10 mha was added to this area between during rabbi, hot weather season, two seasonal and 1966 and 1980, after taking up following perennials is a function of cropping pattern being important irrigation projects-Tungabhadra (Andra practiced in the area and the storage position. Pradesh) Jansura (Assam) Son Barrgge (Bihar) In order to have an idea about the cropping pattern Tawilift Irrigation (Jammu & Kashmir) Hemavatti being practiced in the project area of major, (Karnataka) Harangi (Karnataka) Karanga medium and minor projects, season wise data of (Karnataka), Upper Krishna (Kerala), Bhima, the irrigated area for the year 1997-98 to 2003-04 Krishna, Kukadi stage- I Upper Godavari

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Storage	e and Usage of Wat	ter in Maharashtra	under Irrigatio	n	Indian Streams Reserach Vol.1,Issue.XII/Jan; 2012
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Tapi Narmada Kirdma Godavari Total Sou Mah Sou 1 2 3 4 5 6 7 7 8 9 9 10 11 11 2 3 4 15 16 17 18 19 20 21	a 1659 70114 154341 307762 307762 ITCE- Wate harashtra year State-wise F State-wise F A.P. Aruachal Pradesh Asam Bhar Goa Guirat Hariyana Himchal Pradesh Jimm u Kashmir Karala Kerala M. Pradesh Maharashtra Manipur Meghalaya Mizoram Nagaland Orissa Panjab Rajshatan Sikkim	958 1386 439 er resource 2003-04. TABLE 3. Percentage of (Area 0) s Net Cultura able Area 10843 149 2706 7526 7526 134 9390 3519 577 732 10626 2248 19488 19762 140 202 65 196 6315 4191 16268 95	594 1089 2624 263 28 Depart 6 Firigated Area 4228 33 572 3348 2631 99 307 2035 334 4572 2843 65 45 8 59 1979 3904 4239 16	$\begin{array}{r} \begin{array}{c} \frac{22.64}{41.50} \\ \hline 100.00 \end{array} \\ \hline \\ \begin{array}{c} \text{tment in} \end{array} \\ \hline \\ \begin{array}{c} \text{tment in} \end{array} \\ \hline \\ \begin{array}{c} \text{sand Ha.} \end{array} \\ \hline \\ \begin{array}{c} \text{Percentage } \frac{9}{4} \\ \hline \\ 38.99 \\ 22.15 \\ \hline \\ 21.14 \\ \hline \\ 44.49 \\ \hline \\ 22.48 \\ \hline \\ 74.77 \\ \hline \\ 17.16 \\ \hline \\ 41.94 \\ \hline \\ 26.75 \\ \hline \\ 14.86 \\ \hline \\ 23.46 \\ \hline \\ 23.46 \\ \hline \\ 22.28 \\ \hline \\ 22.28 \\ \hline \\ 12.31 \\ \hline \\ 30.01 \\ \hline \\ 31.34 \\ \hline \\ 93.15 \\ \hline \\ 26.06 \\ \hline \\ 16.84 \end{array} \\ \end{array}$	
Tapi Narmada Krishan Sou Mah Sou Mah Sou 1 2 3 4 4 5 6 7 7 8 9 10 11 12 3 4 5 6 6 7 7 8 9 9 10 11 12 2 13 14 15 16 17 17 18 20 20 21 22	a 1659 70114 1 301762 IFCE- Wate narashtra year State-wise F State-wise F b. State Union Territories A.P. Anuna chal Pradesh Bihar Goa Guirat Hariyana Himchal Pradesh Jinmu Kashmir Karnataka Kerala M. Pradesh Maharashtra Maharashtra Maharashtra Maharashtra Majab Rajshatan Sikkim Tami I nadu	958 138 138 439 er resource 2003-04. TABLE 3. Percentage of (Area 0) s Net Cultura able Area 10843 149 2706 7526 134 9390 3519 577 732 10626 2248 19488 17962 140 202 65 196 6315 4191 16268 95 5706	594 1089 2624 28 Depart 6 Firigated Area 000 in thou Net Irrigated Area 4228 33 572 3348 22 2484 2631 99 307 2205 334 4572 2543 65 8 59 1979 3004 4239 16	$\begin{array}{r} \begin{array}{c} \frac{22.64}{41.50} \\ \hline 100.00 \end{array} \\ \hline \\ \begin{array}{c} \text{tment in} \end{array} \\ \hline \\ \begin{array}{c} \text{tment in} \end{array} \\ \hline \\ \begin{array}{c} \text{sand Ha.} \end{array} \end{array} \\ \end{array} \end{array} \\ \end{array} \end{array} $ \\ \begin{array}{c} \text{sand Ha.} \end{array} \\ \end{array} \\ \end{array} \end{array} \\ \begin{array}{c} \text{sand Ha.} \end{array} \\ \hline \\ \begin{array}{c} \text{sand Ha.} \end{array} \\ \end{array} \\ \end{array} \end{array} \end{array} \\ \end{array} \\ \end{array}	
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Tapi Narmada Krishan Godavari Total Sou Mah S S S S U Mah S S S U Mah S S C U Mah S S C U Mah S S C U Mah S S U U Mah S S U U Mah S S U U Mah S S U U Mah S S O U Mah S S S O U Mah S S S O U Mah S S O U Mah S S O U Mah S S O U Mah S S O U Mah S S S O U Mah S S S O U S S O U M S S S S O U Mah S S S O U S S S O U S S S S S S S S S S	a 1659 70114 1 367762 IFCE- Wate narashtra year State-wise F State-wise F b. State Union Territories A.P. Arunachal Pradesh Bihar Goa Gujrat Hariyana Himchal Pradesh Jmmu Kashmir Karnataka Kerala M. Pradesh Maharashtra Maharashtra Maharashtra Majaba Nagalard Orissa Panjab Rajshatan Sikkim Tami nadu Ti pura	958 138 138 439 er resource 2003-04. TABLE 3. Percentage of (Area 0) s Net Cultura able Area 10843 149 2706 7526 134 9300 3519 577 732 10626 2248 19488 19962 140 202 65 196 6315 4191 16268 95 5706 268 17258	594 1089 2624 263 263 263 263 263 263 264 263 264 264 200 in thou Net Irrigated Area 4228 33 572 3348 2205 334 4572 2484 2631 99 307 2205 334 4572 243 65 45 8 59 1979 3904 4239 16 2569 50 10971	$\begin{array}{r} \begin{array}{c} \frac{22.64}{41.50} \\ \hline \\ 100.00 \end{array} \\ \hline \\ \begin{array}{c} \text{tment in} \end{array} \\ \hline \\ \begin{array}{c} \text{tment sin} \end{array} \\ \hline \\ \begin{array}{c} \text{asand Ha.} \end{array} \\ \hline \\ \begin{array}{c} \text{Percentage } \% \\ \hline \\ 38.99 \\ \hline \\ 22.15 \\ \hline \\ 21.14 \\ \hline \\ 44.49 \\ \hline \\ 26.75 \\ \hline \\ 14.46 \\ \hline \\ 23.46 \\ \hline \\ 21.14 \\ \hline \\ 44.63 \\ \hline \\ 22.28 \\ \hline \\ 22.28 \\ \hline \\ 22.28 \\ \hline \\ 23.46 \\ \hline \\ 24.57 \\ \hline \\ 26.06 \\ \hline \\ 31.34 \\ \hline \\ 31.34 \\ \hline \\ 31.34 \\ \hline \\ 31.5 \\ \hline \\ 26.06 \\ \hline \\ 8.66 \\ \hline \\ 63.57 \end{array}$	

TABLE No 3.7

Yearwise and seasonwise Total Potential created and its Utilisation in Maharashtra Since 1991-92 to 1996-97

(Area in 000 Ha.)

Year		P	otential creat	ed		Potential Utilised				
	Kharif	Rabbi	Hot season	Perennial	Total	Kharif	Rabbi	Hot season	Perennial	Total %
1991-92	924.59	1363.03	61.44	209.03	2558.09	359.06 39 %	476.18, 35%	77.02 125%	163.84 78%	1076.0 42%
1992-93	1026.28	1409.53	91.09	152.02	2678.99	300.69 29 %	479.61 34%	102.66 113%	147.02 97%	1029.9 38%
1993-94	1042.68	1421.93	80.02	165.59	2710.22	301.35 29%	468.42 33%	159.21 199%	166.08 101%	1095.7 40%
1994-95	1104.25	1509.12	88.58	172.57	2874.52	338.03 31%	502.63 33%	129.44 146%	185.34 107%	1155.7 40%
1995-96	1023.42	1525.06	80.01	176.46	2862.07	343.05 34%	459.36 30%	72.09 91%	176.46 100%	1063.9 37%
1996-97	1110.97	1569.38	77.25	194.50	3061.88	319.64 29%	484.13 31%	141.76 184%	181.24 93%	1138.9 37%

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