

April 2013

AVAILABILITY OF WATER IN TAPI BASIN FOR MAHARASHTRA STATE

SANJAY D. BONKILE

Civil Engineering Department, Prof Ram Meghe Institute of Technology and Research, Badnera (Amravati), Maharashtra, sanjay_db@rediffmail.com

P. S. PAJGADE

Civil Engineering Department, Prof Ram Meghe Institute of Technology and Research, Badnera (Amravati), Maharashtra, ppajgade@gmail.com

Follow this and additional works at: <https://www.interscience.in/ijmie>



Part of the [Manufacturing Commons](#), [Operations Research](#), [Systems Engineering and Industrial Engineering Commons](#), and the [Risk Analysis Commons](#)

Recommended Citation

BONKILE, SANJAY D. and PAJGADE, P. S. (2013) "AVAILABILITY OF WATER IN TAPI BASIN FOR MAHARASHTRA STATE," *International Journal of Mechanical and Industrial Engineering*: Vol. 2 : Iss. 4 , Article 13.

Available at: <https://www.interscience.in/ijmie/vol2/iss4/13>

This Article is brought to you for free and open access by Interscience Research Network. It has been accepted for inclusion in International Journal of Mechanical and Industrial Engineering by an authorized editor of Interscience Research Network. For more information, please contact sritampatnaik@gmail.com.

AVAILABILITY OF WATER IN TAPI BASIN FOR MAHARASHTRA STATE

SANJAY D. BONKILE & P. S. PAJGADE

Civil Engineering Department, Prof Ram Meghe Institute of Technology and Research,
Badnera (Amravati), Maharashtra – 444701
E-mail:sanjay_db@rediffmail.com, ppajgade@gmail.com

Abstract: - The Tapi basin is spread in Madhya Pradesh, Maharashtra and Gujrat. The water allotted to Maharashtra state is about 191.4 TMC has been exhausted. There is no scope for new project in the region based on water availability. The attempt is being made to use the available water by transferring the same within sub-basin so that the different storages within the catchment can be optimally used to store the water.

Keywords: Intra basin, Catchment, Water availability

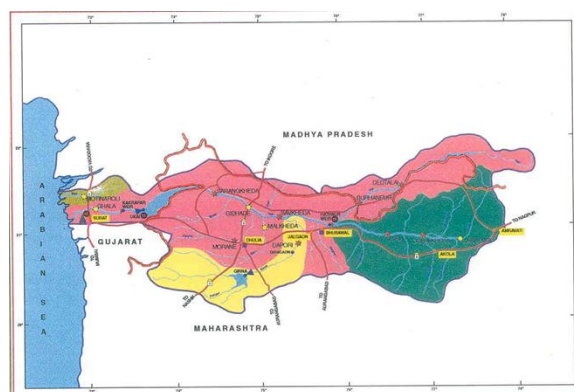
I INTRODUCTION

The river Tapi is an inter-state river flowing through Madhya Pradesh, Maharashtra and Gujrat. The total length of the river is 724 Milometer with drainage area of 64874 Sq.Kms. Out of this 9804 Sq.Kms. lie in Madhya Pradesh and 51100 Sq.Kms. lie in Maharashtra and 3970 Sq.Kms. lie in Gujrat. The river rises near Multai town in Betul district of Madhya Pradesh at an elevation of about 760 m, above mean sea level and at latitude 21-04-00 and longitude 78-21-00. The river flows for 188 Kms. in Betul district of Madhya Pradesh and runs along the common border of Madhya Pradesh and Maharashtra for a length of 58 Kms. At 246 Km's from the sources the Tapi river leaves, the border of Maharashtra and Madhya Pradesh, and enters Khadwa district of M.P. and flowing 86 Km's, re-enters the Maharashtra. The length of Tapi river from its sources to the sea is about 724 Kms. Out of which it flows through Madhya Pradesh for the length of about 332 Km's and 217 Km's in Maharashtra and for about 175 Km's, in Gujarat before joining the Arabian sea near Surat.

The Tapi Basin extends from Longitude 74-30 to 78-21 and Latitude from 22-01 to 21-04. The distribution of catchment area of the river in different states is as under.

States	Catchment area (Sq.Km)	% distribution
Madhya Pradesh	9804	15.10
Maharashtra	51100	78.80
Gujarat	3970	6.10
Total	64874	100.00

As per Maharashtra state concern, Tapi basin covers Amravati, Akola, Washim, Buldhana, Jalgaon, Dhule, and Nandurbar district. Tapi basin is divided in four sub basin as Purna Tapi, Girna, Middle Tapi and Panzara.



The fig shows the Tapi basin and sub basins. Tapi basin lies in area of Temperature in the range of Max.39-43 to Min 12-15, Humidity Max.82-87% to Min.12-31%, with low rainfall in west and heavy rainfall in east i.e. Buldhana, Akola and Amravati district. Percentage area of irrigation to the cropped area is in the range of 5-10 % only.

Present status of these sub basin based on availability of natural water is a) Purna Tapi-Deficit b) Girna-Deficit c) Middle Tapi-Deficit and d) Panzara –Normal. (Source :Water audit of Irrigation Projects, WRD, Govt. of Maharashtra). The district of vidarbha Amravati, Akola, Washim & Buldhana lies in Purna Tapi basin. Purna is Major tributary enter from the left in to Main Tapi River in the upper reaches of shortly after 531 Km and then flows through the broad and fertile Khandesh plains which are bounded on the north by Satpudas and on the South by the Ajanta range. Main crops grown in the area are Cotton, Soyabean, Orchard and groundnut

II. WATER AVAILABILITY

In Tapi basin up to Ukai, 400 TMC of water is planned out of which for upstream projects 191.4 TMC has been allocated for Maharashtra projects and 70TMC are allocated for Madhya Pradesh projects. Table shows no. of Project completed, ongoing and proposed in the Tapi Basin in Maharashtra. The utilization of the entire allocated share to both Maharashtra and Madhya Pradesh is not yet completed and as far as Maharashtra's project are

concerned the project utilization 81.468 TMC have been completed and water is being utilized to that extent only. Similarly, water use from ongoing projects is 97.499 TMC and all these projects are under various stages of construction and are not yet completed. Therefore, the total utilization from completed and ongoing projects undertaken by Maharashtra government is 178.967 TMC which is less than 191.4 TMC located to Maharashtra.

Type of project	Category of project			
	Major	Medium	Minor	Total
Completed	5	30	260	295
Ongoing	8	35	122	165
Approved	0	1	9	10
Future	0	2	15	17
Total	13	68	406	487

Abstract of Water utilization

Type of project	Category of project			
	Major	Medium	Minor	Total
Completed	29.004	22.028	14.135	65.167
Ongoing	67.144	40.865	12.380	120.38
Approved	0	0	0.196	0.196
Future	0	1.973	3.675	5.648
Total				191.4

From the above statement it is clear in Purna Tapi basin surface water is not available for use. It is now essential to use the available optimally. The study proposes the idea of intra basin transfer of water in the catchment of Ghugasi barrage in Purna Tapi sub basin.

Ghungasi barrage is a scheme constructed across the river Purna near Purad village (Latitude ... Departure...) in Murtijapur Taluka, Dist Akola in Vidarbha region of Maharashtra state. The average rainfall is 748 mm, and catchment area is 1501.96 sq.km. Net yield at site is 198.152 Mm³(6.996 TMC) for 75% dependability. Catchment of the project consist of Two Major, Three Medium and 31 minor irrigation project. Cammand area of these project consist of various natural drains ,where different cross drainage structure are constructed or proposed .Most of the cases rainfall occurs in the catchment of one project while less in other ,in such situation the water can be transferred to other catchment through natural drains by allowing water to pass through existing canal system .By transferring the water, problems of drinking water as well as irrigation can be solved to great extent. Since the area is having water scarcity in most of the villages water is to supply by water tankers which requires huge expenditure, can be minimized. The way of water transfer will also increase ground water levels in the region.

Statement showing the U/S utilization up to Ghungasi Barrage

Type of project	Category of project			
	Major	Medium	Minor	Total
Numbers	2	3	31	36
Utilization(TMC)	7.218	3.216	2.582	13.016

III. CONCLUDING REMARK

Since surface water is not available for new project, the natural drains and small nalla can feeded by existing canal system within catchment of the project. By using water in such way the various storages in the catchment can be filled optimally. The stored water which otherwise would have gone down stream of the project by spilling can be utilized. Secondly this intra basin transfer will recharge the ground water as well as can solve the problem of drinking water, where the tanker is required in water scarcity areas. The expenditure for supply of water by tankers can be reduced to large extent.

IV. ACKNOWLEDGMENT

The authors thank Dr D.T.Ingole, Principal, PRMIT and R Badnera and Dr N.W.Ingole, HOD Department of Civil Engineering for their fullest cooperation. The authors also thank Executive Engineer, Irrigation Project Investigation ,Dn Amravati for permission to collect literature from office.

V. REFERENCES:

- 1]. <http://www.mp.gov.in/wrd/HIS/Surface%20Water/HPBasin.html>
- 2]. Water resources department ,Govt. of Maharastra, Mantralay Mumbai.
- 3]. Pre-Feasibility report of Wainganga(Gosikhurd)-Nalganga(Purna Tapi) link project,NWDA March 2009
- 4]. Bandopadhyay, J. (2003) "and quit flows the river project "The Hindu Business Line (Chennai) 14 March.
- 5]. Luna Bharti, B.k.Anand, International water management Institute, Shrilanka consultant, Bangalore,
- 6]. Jayant Bandopadhyay, Breakthrough Vol II No 2 Sept 2005
- 7]. Linking Rivers in the Ganges-Brahmaputra River Basin: Exploring the Tran boundary Effects by Anik Bhaduri, International Water Management Institute, New Delhi and Edward Barbier ,University of Wyoming, Wyoming, USA
- 8]. Strategic Analysis of the National River Linking Project (NRLP) of India Series 2, Proceedings of the workshop on Analysis of Hydrological, Social and Ecological Issue of the NRLP
- 9]. MOWR (2002) Inter basin transfer planning for Basin Transfer
- 10]. Rebecca L.Teasley, Journal of Water Res Planning and management ASCE Dt Dec/2011,
- 11]. Jalgaon River Linking Project, Demand Based Project Through Citizen Participation.

