WATERSHED MANAGEMENT IN THE UPPERREACH OF GIRNA BASIN

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ABSTRACT

Water is the fundamental need for the Socio-economic development of any region. In recent years, Maharashtra State (India) is facing the problem of regional disparity because of spatial and temporal variability in rainfall and lack of proper utilization of running water slope of Western part of the Sahyadri is very steep, receives excess amount of rainfall and adds wasteful into Arabian Sea. Par River (2000 to 3000 mm Avg. Annual Rainfall) originates from Kame hills of Sahyadri ranges. The river flows further west towards Gujarat State (India) and adds wasteful water into Arabian Sea. Par river basin experience water scarcity in summer in contrast overflow discharge in rainy season. The undulating topography limits the local irrigation. In contrast, eastern part of the Sahyadri (Girna river valley) is the rain shadow zone receiving very low rainfall (1500-2000 mm Avg. Annual Rainfall). Therefore this region always experiences scarcity of water. Circulation of water is possible at two levels for sustainable development of any region. In intra-basin circulation of running water, circulation is possible within a basin itself (Punad Project). Whereas in inter-basin circulation of running water; circulation is possible from one basin to another. An attempt has been made in the paper to study watershed management & suggest proper utilization of water in the study area possible by inter-basin circulation of water from Par to Girna basin.

Keywords: Water Discharge & Scarcity, Sustainable Development, Intra, Inter-basin circulation

INTRODUCTION:

Droughts and water shortage are continuously increasing on the global and the local perspectives. India is also suffered from the same problems. Increasing population and proportion of water is unbalanced. Maharashtra state of India facing this problems are very serious conditions in year 2012-13. Negligent attitude and lack of planning in India and Maharashtra will cause the same problem with very severe intensity in future. The report of UNISEF alarmed the frightful conditions of drinking water in India in near future. The World Bank also predicted water as the cause of third world war. Water shortage is more in Maharashtra when compared with other states in India. 88% land is non-irrigated. About half of the region influence of drought. Nashik district particularly drought prone area always faced such type of water scarcity problems. In other hand Konkan region of Maharashtra receives very high rainfall but due to lake of conservation strategy and topography of Maharashtra this water goes through runoff to the ocean. 42% water from the overall available water in Maharashtra is from western flowing rivers (Konkan). In all 380 the state is under the rivers (length 20,000 Km) are flowing overall geographical region distributed among the basins of Godavari, Krishna, Tapi and Narmada rivers in Maharashtra. Besides, there are 22 narrow basins of west flowing rivers. Among all major basins only western flowing rivers having excess availability of water. Attempt has been made to study topographical condition of Nashik district and suggest the proper utilization of water in the study area possible by inter-basin circulation of water from Par to Girna basin.

SIGNIFICANCE OF STUDY:

India's natural water availability is 4000 billion cubic meter (MCM. Wasteful water can be utilized after river interconnection and interlinking project. Countries rainfall distribution is variable. Every year 88 districts are flood prone, whereas 90 District are drought prone. After this project 35 million ha land can be irrigated. This project is predicted to cost 60,000 million rupee expenditure. In the state of Maharashtra there are 2,475 irrigation projects with13830 MCM water storage. konkan region has 61% highest. water reservoirs, Nagpur region 42%, Amravati 38%,Nasik region 29% Pune region 39% and lowest 12% in Marathwada. In recent years Maharashtra state is facing the problem of regional disparity because of spatial & temporal variability in rainfall & lack of proper utilization & Management of running water. The drought condition of this year (2013) has affected 1,663 villages of Maharashtra including 4,490 hamlets. All this drought affected villages are been supplied with 2,136 tankers fulfilling their drinking and domestic water requirement. After considering the availability of water in Godavari and Tapti Basins shortage comes out. There are four rivers in North Maharashtra viz. Godavari, Girna, Tapti, and Paanzara. Inter basin use of water in these rivers is completely done. There is no water for new plans. Permissible water resources in state is 2632 TMC out of that Tapti 58.38 TMC, Krishna 239 TMC, and Godavari 177.61 TMC water resource is already used through different schemes. River basin wise utilized water resource comparatively very high to west flowing river, which is only 17.51% Hence, it is a must to decide future planning and urgent implementation of project like Damanganga (Nar-Par)Former Transport Minister of Maharashtra Samajshree Prashantdada Hiray continuous demand compelled the Government to form coordination committee and prepared the primary planning to turn the western flowing rivers to the basins of Godavari and Tapti (Girna). This situation reveals that Damanganga Project must necessarily to be implemented at priority cost. To study the merits and demerits of linkage between river Nar (waste flowing) and Girna basin is the main objective of paper.

Table 1: Basin -wise availability of water (M.C.M.)

Basins	Available water	Expected demand in 2030		
		Irrigation	Other uses	Total
Godavari	38882(100%)	46422(120%)	3546(9%)	49968(129%)
Tapti	9324 (100%)	8447 (91%)	1841(20%)	10328(11%)

Study Area:

Study area selected for the present investigation is Girna Drainage Basin (5829.43 Km.). Girna river is sub tributary of River Tapi and Mosam river is major tributary of the Giran. It 35°C). lies between 20 15 43" to 20 53'07"North latitude and73" 40'12" to74 56'22" East longitude. Administratively it is located in Nashik District (15530 Km) of Maharashtra State of India it may be broadly divided into four tehsil namely Malegaon, Nandgaon, Satana, Kalwan and Deola Population of study area is 37.54% of the Nashik district. This area receives 599.02mm average annual rainfall and very high temperature during the pre-monsoon period that is April and May (max 44.06 °C & min.

Objectives-The main objective is to study intra-basin circulation of water from Par to Girna basin and suggest the proper utilization of water.

1. To highlight the problems and prospects of water scarcity in Girna basin.
2. To highlight wasteful discharge of Par River.
3. To assess the impact of inter and intra basin circulation of diverted water.
4. To suggest proper utilization of this excess water in Girna Valley basin

DATA BASE AND METHODOLOGY:

This study is based on secondary data. The required statistical information is obtained from census handbook, the record of the local bodies, statistical department Government of Maharashtra. Abstracts such as socio-economic review of Nashik district and Published records of Maharashtra Water Supply Board and Water Resource Board, Tapti irrigation Development Corporation, Jalgaon and Minor Irrigation Deptt. Malegaon, Nasik irrigation project corporation were referred. The delineation of the Nashik district is attempted by marking out the watershed of river Par and Girna for which 46 H/11, 46H/15 Indian topographical maps published by Survey of India (S.O.I) were used. Digitization of toposheet No.46H/11 and 46H/15 (1:50,000) was done. With the help of software following processes likes as-Scanning, Georeferencing, Mosaic, Reprojection of the toposheet and creation of various layers was done. Preparation of aspect map, slope map, DEM and various layers like rivers, location of villages, proposed dam were shown on the maps with help Arc GIS 10 software and www.asterdem.com web site was referred for the same

Manjarpada:- A Proposed Model Project : Par river basin experiences water scarcity in summer, in contrast overflow discharge in rainy season. The undulating physiography restricts the local irrigation practices. To utilize wasteful running water for irrigation and drinking water, the demand to construct a dam near Manjarpada, Tal. Surgana (Nashik) has been made since a long time. The catchment area of the project is hilly plateau with 14.75 km (5.76 miles) area cover. The water holding capacity with 50% probability is about 845 million cubic meters (MCM). The length at this earthen dam is 2070 mt & maximum height 56 mt. Its total storage capacity is 570 mcft, of which 26 mcft is dead stock (544 mcft = useable water). On sub channels meeting the main river a full capacity storage divert canal of 300 mt length joint canal will release water in the main dam, after which the full storage level will rise to 718 mts. Inter Basin Circulation In this project west flowing rivers (Nar-Par) will be diverted to the east in the Godavari basin. The planning commission has given authority to private sector for this project survey: seven dams are proposed to be constructed under this project, which will be connected to each other by tunnels and pipelines. 89.12 million cubic meter. water (M.C.M) is Proposed to be lifted and stored in Godavari Basin.

Intra Basin Circulation:

From the proposed 7 dams to be constructed on Par Uplin Project No. 4, water will be made available by tunnels and pipelines in Gima Basin and can be crawled in already existing Right and Len Canals of the Game River. This additional water will rejuvenate the irrigated area initially which was under crisis of water scarcity.More over additional agricultural land can be brought under irrigation by Right and Left canals of Gia River. Par River originating from Kame hills of Sahyadri is to be arrested at the foothills at 700 meter height from mean sea level (MSL). A1690.50 m height from MSI near Handbarda village diverted into Gima basin by tunnel. After fulfilling the local Irrigation water can be diverted through a tunnel of 150 km. in Girna basin. Kharif orops will demands of Surgana and Dindori Tehsils the remaining be benefited by flood water & Rabbi crops by stored water in Girna basin.

Projects in Girna basin:

Minor irrigation projects inch at Kalwan & Baglan of 60 mph water use are proposed to be constructed On ima river at down Stream of Thengoda weir at Chinchwad, Soygaon, Vasuol, Lohaner 180 mol storage Kolhapur type weirs are proposed to be constructed (from Rameshwaram to Zadi Erandgaon) will irrigate 2486 ha area in initial stage in Kharif season. This canal will work as a distributor As under punad project this canal is flood canal there is no provision for distribution, By Cima La Canal for Dundhe for Kharif season about t 25 mt & for Ajang tank at 10 mt height water will be linod & both the tanks are proposed to be filled by 50% capacity. To make available Irrigation water in tanks are proposed to be constructed Formation of tunnel Under punad project, Chankapur extensive R. Canal Par basin for tribal population of Dindori & Surgana talukas 5 storage Water stored in Manjarpada dam will be released into Chankapur dam by a tunnel of 11.50 mtr lengths, the capacity of the tunnel flow is considered by flood over dow & diverted water in Kharif season flowing from it. In Kharif season 291 mcft water will be diverted which is considered to flow for 40 days. However the tunnel capacity is proposed to

be for 20 days. The Initial base level of the tunnel is proposed to be 702 mt whereas end base level 690.50 mt. Manjarpada Dam with Proposed Tunnel

Water utilization:

Planning of full utilization of water available at the project site is done. Of the available 845 MCM water wealth 78 MCM water will be made available in Par basin

Downstream at 5 Km distance 5 weirs will be constructed & water will be distributed by private lift Irrigation systems of the remaining 291 MCM water, in rainy season by a tunnel of 11.50 km length, will be released at the upper side of Chankapur dam in Girna river. 114 MCM water of Right Canal of Chankapur included under Punad project will irrigate initial 2445 ha kharif agricultural land. The remaining 57 MCM water by Left Girna canal will be lifted 10 to 50 mt & minor irrigated weirs at Dundhe & Ajang will be filled by 50% of their potential. These weirs are always dried due to lack of rainfall. One Minor Irrigation project each for Kalwan & Baglan tehsil are been proposed. 120 Million Cubic Feet (MCF) water in Kharif Season will be released in Girana River and will be used by Baglan & Kalwan tehsil by natural law of 544 made available to local Dindori & Surgana taluka, remaining 454 moffat tunnel will be made available in Chankapur dam (Girna basin). By this project combined in Kharif & Rabbi season total 9,233 ha area will be irrigated in Nashik district. MCF alive stock water stored in Manjarpada dam, 78 mcft water will be made available to local Dindori & Surgana taluka, remaining 454 moffat tunnel will be made available in Chankapur dam (Girna basin). By this project combined in Kharif & Rabbi season total 9,233 ha area will be irrigated in Nashik district.

CONCLUSION:

The Government should urgently pay its attention on this burning issue. There is a demand for the independent administrative body for this task. Independent association on western flowing basin is needed. Western flowing water is the only ray of hope. In this context Manjarpada, Naar-Paar project are the only alternatives. The Government should create other alternatives before drought affected people if it is reluctant to implement these projects. For this scientific re-planning of Girana Dam should be done. As this project is a divert water project, the Maharashtra Government has given urgent Sanction to it, only Central environmental Deptt. permission is pending to Manjarpada land 2 projects which are boon for Manmad, Nandgaon, Yeola and Malegaon, Satana, Kalvan Talukas respectively. The project 1 work is in progress since last 5 year, 64.24 ha land near Devsane (Dindori) & Gogul (Surgana) a tribal majority population village has been reserved for these projects. If these projects will be completed the drought condition will be boosted for the said regions.The project is on the margin of Dindori-Surgana talukas, the work of the project has been stopped by the local project affected farmers. The farmers are not paid for the land acquired; Cracks have been form to the houses due to drilling and blasting work of the project. Wells and tube wells have been dried. The farmers are demanding for the compensation of these losses. There is urgent need to fulfill the demands and work out for their rehabilitation

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