



## WATERSHED DEVELOPMENT AND MANAGEMENT IN DRAUGHT PRONE AREA: A CASE STUDY OF JATH TAHASIL, DIST-SANGLI, MAHARASHTRA

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### ABSTRACT:

*Water is the most important resource on the earth surface. It is useful for agriculture industry and drinking water. India has made its policy with the help of building dams and percolation tanks and these are the most important in sustainable development in draught prone area. These dams and percolation tanks depend upon watershed development activity. Watershed development activities have shown significant positive impacts on water table, perenniality of water in wells, water availability for cattle and other domestic uses, etc. According to the study, the future strategy should be the movement towards a balanced approach of matching the supply-driven menu with a set of demand-driven activities. Peoples' participation, involvement of Panchayati Raj Institutions, local user groups and NGOs alongside institutional support from different levels, viz. the Union Government, the state, the district and block levels should be ensured to make the program more participatory, interactive and cost-effective. Convergence of various rural development programs around the watershed could be ensured to promote holistic development of watersheds. For its continued success, the program should be economically efficient, financially viable, technically feasible and socially acceptable while ensuring equity. For sustainable development, regular and routine monitoring of environmental parameters is important as environmental enhancement increases the credibility and acceptability of the program.*

**Keywords:-** Watershed, Scarcity, Perenniality, Artificial recharge and Groundwater.

### INTRODUCTION:

Agricultural activities are most important in economic activities of India. Most of the people in India depend upon the agriculture. Population of India increases at the rate of 1.6 billion by middle of this century having ground 250 billion tons per year need to be doubled. The excess production will have to be obtained from lesser area with efficient watershed development augmenting the irrigation efficiency of the countryside by side wastage/misuse of the water particularly fresh water dam or tanks and their increasing level of the water-table should be considerably minimized for economic development.

The government has given the first priority to the agricultural sector almost in all last five years plan. Indian agriculture has been the gamble of monsoon. The high proportion of the cultivated area in the country is still rain fed which happens to be the main cause of the rural backwardness in economy. The dry agricultural land has been brought under irrigation wherever possible. Irrigation is considered to be one of the important and basic inputs in the process of socio-economic transformation of India.



In India specifically in Maharashtra majority of manmade water bodies were constructed during 1972, s famine by the government of the Maharashtra under Employment Guarantee Scheme (EGS).

The minor irrigation tanks Birnal, Tippehalli, Daphalapur, Pratapur, Sank, Shegaon, Umarani, Shindur, Tikondi, Konabagi, Umadi, Sonalgi, Sidhanath, Daribhadachi, Avandi, Muchandi, Kasalingwadi of Jath Tahasil of Sangli District of Maharashtra are constructed under EGC and particularly used for irrigation, domestic and aquaculture purpose.

Recent Krishna River's Left Canal which is known as 'Maishal Project' is performing very good water distribution for agriculture purpose. It is increasing the underground water level, water-storage in ponds and increasing agriculture production.

With this few of the efforts have been made in this investigation to study the development of land utilization, water, vegetation human, animal and other resources. Changes over the period i.e. pre and post commencement of impact of watershed development in Jath Tahsil, Dist –Sangli(Maharashtra)

### **OBJECTIVES:-**

General objective of the study is to assess the impact of watershed development on rural development in Jath Tahsil. The main objectives of this study are as follows:

1. To know the draught prone areas.
2. To understand rainfall conditions.
3. To examine the impact of watershed development on groundwater recharge, irrigation and change in cropping pattern.
4. To assess the overall impact of watershed development on the agriculture production and sectors of social and economic development.
5. To analyze the changes cropping pattern in the command area of Impact of Watershed Development In Jath Tahsil, Dist-Sangli A Spacio-temporal perspective

### **COLLECTION OF DATA AND METHODOLOGY:**

The required secondary data collected through various sources government magazines, books, district statistical abstracts, census report, tahsil records, irrigation department, department of forest, revenue, etc.

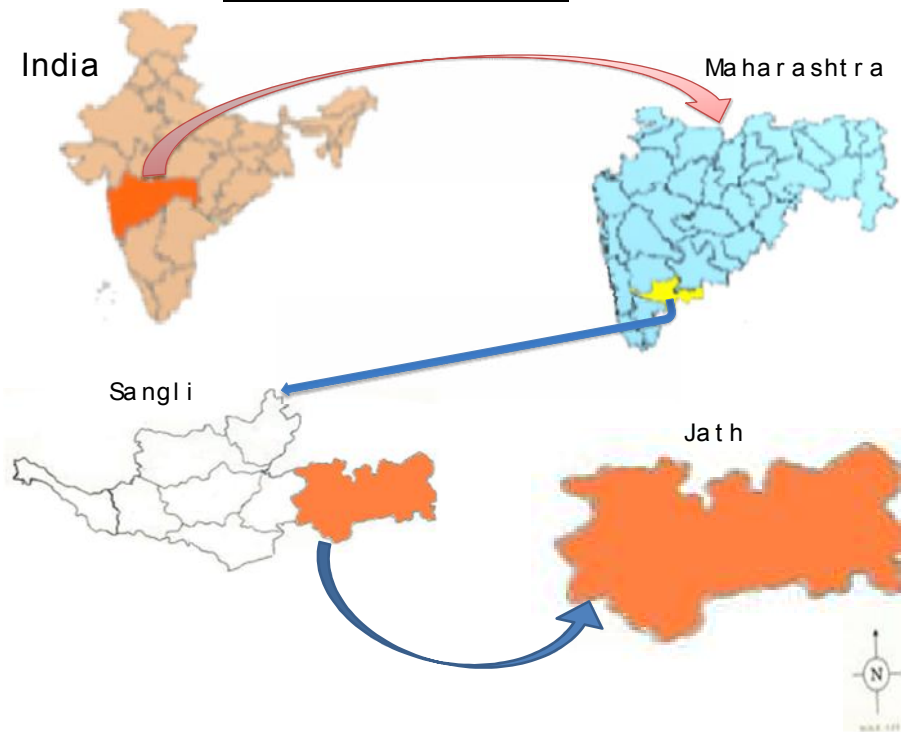
### **GEOGRAPHICAL BACKGROUND:**

Geographical background of any area must be evaluated on the basis of study of physical characteristics viz. physical setting, climate drainage etc. Geographical investigation of the physical environment or resources is an important tool for planning and there optimum utilization.

#### **A. Location of Study area :-**

The study region lies between 17°3'0" to 17°15'30" north latitude and 75° 13'0" East to 75°40'0" East longitude and Altitude is 750 m above mean sea level. The Jath tahsil comprises an area about 225828 Hectore and supports population 144596 according to Census 2011.

### Location of the Jath Tahsil

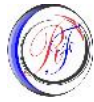


#### **B. CLIMATE:**

The average annual rainfall in the district as a whole is 600mm. In general rainfall decreases from west to east from 2000 to 500mm. From central parts eastwards, the region has severe drought conditions. The climate of the district is characterized by general dryness throughout the year except during the south-west monsoon season. Maximum and minimum temperature is 42° c and 27° c respectively. In general, the climate becomes hotter as one proceeds from west to east. The cold season is from December to about the middle of February. The hot season which follows lasts till the end of May, which is the hottest month. June to September is the south-west monsoon season and October and November contribute to the post monsoon season. In the post-monsoon, cold and summer season, the air is dry, particularly in the afternoon, while during the south-west monsoon season the air is semi-humid. In south-west monsoon seasons, winds are from the direction between south-west to north-east. In the post monsoon season they are predominantly from the north-east or east.

#### **IMPACTS:**

The watershed programs involving the entire community and natural resources influence: (i) productivity and production of crops, changes in land use and cropping pattern, adoption of modern technologies, increase in Grape production, etc. (ii) attitude of other community towards the project activities and their participation at different stages of the project, (iii) socio-economic conditions of the people such as income, employment, assets, health, education and energy use, (iv) impact on environment, (v) use of land, water, human and livestock resources, (vi) development of institutions for implementation of watershed development activities, and (vii) ensuring sustainable production of food, fodder, fuel wood and cultural status of the rural community.



**Area under Different Crops (in hectares and percentage)  
In 1991-92 and 2011-12 and Difference in percentage**

Sr.No	CROPS	YEAR 1991-92		YEAR 2011-12		PER CENT CHANGE IN AREA
		AREA IN HECTARE	AREA IN PER CENT	AREA IN HECTARE	AREA IN PER CENT	
1	Jawar	609.6	32.86	559.6	30.2	2.66
2	Bajara& Jawar	950.3	51.19	901.10	48.6	2.79
3	Wheat	32	1.7	82.00	4.5	3
4	Oil seeds	12	0.7	12.00	0.7	0
5	Pulse	133	7.1	33.00	1.7	-5.4
6	Vegetables	12	0.7	62.00	3.4	2.7
7	Fruits	103	5.5	203.00	10.9	5.4

(Source: - Compiled by The researchers 2011-12)

**Environmental Impacts:**

The watershed development activities generate significant positive externalities which have a bearing on improving the agricultural production, productivity, socio-economic status of the people who directly or indirectly depend on the watershed for their livelihood. The environmental indicators include water level in the wells, changes in irrigated area, duration of water availability, water table of wells, surface water storage capacity, differences in the number of wells, number of recharged, difference in irrigation intensity and watershed eco index.

Watershed development activities produced significant positive impact on water table, perenniality of water in the wells and pumping hours that resulted in an increased irrigated area. The watershed development program helped in improving the groundwater recharge, water availability due to the rise in water table in wells. The productivity of crops increased from 6.65 per cent to 16.59 per cent in the watershed village.

**Table: 1 Effect on Ground Water (1991-92)**

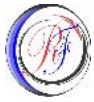
Level of water	Summer Season G.W.Table In Feet	Winter season G.W.Table In Feet	Rainy season G.W.Table In Feet
Tube wells	90	40	25
Dug wells	40	35	20

**Table: 2 Effect on Ground Water (2011-12)**

<u>Level of water</u>	<u>Summer Season</u> G.W.Table In Feet	<u>Winter season</u> G.W.Table In Feet	<u>Rainy season</u> G.W.Table In Feet
<i>Tube_wells</i>	60	25	10
<i>Dug_wells</i>	35	20	10

**Socio-economic Impacts:**

Watershed development programmes influence bio-physical and environmental aspects and thereby bring changes in the socio-economic conditions of the people (Deshpande and Special Issue No. 1, Feb., 2017



Rajasekaran, 1997). The socio-economic indicators like changes in household income, per capita income, consumption expenditure, employment, migration, peoples participation, household assets and wage rates at the village level were considered for the impact assessment.

### **Overall Economic Impact:**

Experiences show that watershed development activities have overall positive impacts on the village economy. The impact of these watershed development activities can be assessed by using key indicators such as net present value (NPV), benefit cost ratio (BCR), and internal rate of return (IRR). However, only a few studies (Palanisami and Suresh Kumar, 2005; Palanisami, et al., 2002; Ramaswamy and Palanisami 2002; Palanisami et al. 2006; Palanisami and Suresh Kumar, 2006) have assessed the overall impact of watershed development activities through BCR and NPV. The benefit cost ratio was found to range from 1.27 to 2.3. The size of BCR also depended on the magnitude of benefits accrued due to the watershed development activities which in turn critically depended on the rainfall.

### **CONCLUSION:**

In this study area Birnal, Tippehalli, Daphalapur, Pratapur, Sank, Shegaon, Umarani, Shindur, Tikondi, Konabagi, Umadi, Sonalgi, Sidhanath, Daribhadachi, Avandi, Muchandi, Kasalingwadi these percolation tanks play an important role in managing water resources. Water is a needful and scarce resource for rural development, but these percolation tanks are located in a drought region as affected on the social, economic, educational and etc. After the completion of percolation tanks they are developed as a factor for development for rural development. Finally it is maintained environmental problems in sustainable development of water resource management.

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