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WATER MANAGEMENT ON SOCIO-ECONOMIC DEVELOPMENT IN SOUTH SOLAPUR TAHSIL.



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ABSTRACT

Whatever is in the heaven and earth is being created for the service of man. Resources are not but become when the utility of them is beneficial for mankind. Among the natural elements of the earth, the water, the fire, the air, and the space play a very significant role in the realm of life sphere or bio-sphere. The entire earth is filled by natural resources in certain ways that set, a wide range upon its potential use by living beings including man. Resources literally means, the description of the all the accessible wealth of the universe. Resources are those aspects of the environment which facilitate the satisfaction of the human needs and the attainment of the social and economic objectives, hence, wherever man lives, he has to adopt himself to the surroundings in order to get fundamental necessities of food, cloth and shelter, because man is a creation of his environment. Natural resources are the features of the environment which are considered to be capable of serving man's need. Resources are given the utility by the capability and wants of man. Human society can only be prosperous in areas and grow powerful, where environment supply for them, abundance food and other necessary things of the life.

KEYWORDS : Water Management, Natural resources.

INTRODUCTION

Water is most valuable resource of the nature; every living being has been derived from the water. Hence, the water is most essential element for the existence of life, since, without water human being cannot survive for a longer period of time. It is used in various ways and it is vital to all kind of life. Water is not only a biological necessity but it is of great importance for social and economic activities.

Water is supreme elements of nature, even more valuable than gold. Water resource is much freely and easily available and has manifold role in day to day life. Water is used for drinking and domestic purposes, such as for irrigation, power generation, cooling and washing of the machines as a means of transportation and recreation and in industrial sector. Water although, is free and easily available as a natural resource has now, become an economic commodity.

Significance of water resources:-

Water is in fact, the life source in biosphere on the planet earth. The earth has abundant water resources in all three forms of solid, liquid and gases. The absence of water in other planets is the chief cause for no life. Water is being used for overall development in different parts of the world.

Selection of the topic and study area:-

In view of the preceding discussion, the area which were not inhabited by man, started getting due attention by man. Most of the scholars of the world are studying the world from every discipline in order to maximum utilization of the resources. They may be physical scientists, social scientists, Economists, mathematicians, astrologers, metrologist and anthropologist or even geographers. Man is the central point of the all studies 'The Water management on socio-economic development in south Solapur Tahsil' is an attempt to understand the role of water resources in social and economic development of South Solapur tahsil. Now the study has been carried out of the Solapur district in relation to the impact of water resource on the socio-economic development so far from the point of view of the social science. The selection of the topic entitled 'The Impact of Water Resources on Socio-Economic Development is not very arbitrary, since, the district of Solapur' has not been attempted to analysis the impact of water resource on the social and economical development. The district of Solapur is an important part of Maharashtra passing through transformation stage. The impact made by Ujani dam of Bhima river in recent time is of vital importance as it is reflected in agriculture and industrial sector.

Hypotheses:-

Hypotheses are the statements to be tested in order to find out the authenticity in the area under study. Hypotheses asserts or derives something. Hypotheses is adopted tentatively to explain certain facts or the relationship between facts and to guide in the investigation of others. Hypotheses are the proposition which has not been tested yet.

1. The region under study belongs to drought prone area of Maharashtra; hence the agriculture production and land use pattern is adversely affected.
2. The population distribution, population and growth of literacy, occupation are also adversely affected by the availability of water resources in the Solapur district.
3. The growth of agriculture production is not keeping pace with the growth of population.
4. The industrial sector is poor due to the scarcity of water resource of physical, social, economic and political scenarios are also responsible for low development.

Objectives:-

Once, the hypotheses are formulated, the direction of the research is prepared. Objectives in fact, are the goals to be achieved by the researcher in order to understand the nature of the problem associated with the area of investigation. It is, at the very outset, necessary to formulate certain objectives, because, without objectives, no research can be fulfilled and completed.

1. To find out the proportion of the land under different uses.
2. To find out the agriculture land under different crops.
3. To find out proportion of irrigated land and non-irrigated land in Solapur district.
4. To analyze the overall characteristics of population, distribution, density and growth pattern in Solapur district.

Sources of the data and information:-

The data and information are the basic requirement for a research work. The analysis of research problem is based on the data and information, collected by the researcher himself. The data and information are the basis for analysis of any problem in a study area. The types of data and information differ in authenticity, which in turn influence the result and findings emerging from the analysis. If, the data is not correct and authentic, the results may not be derived accurately.

Methodology:-

Different methods and techniques are the basic tools for the analysis of a research. The data and information collected from the different sources are processed in the percentage and the proportions, were put in the table form. This data and information was represented through various statistical techniques and cartographic method in graphs, choropleth map isopleths map.

Review of the literature:-

Agrawal (1997), the founder of the center of science and environment, spearheaded the 'Jal Swaraj' campaign, conceptualized and dieted Dying wisdom, that explore the tremendous potential of India's traditional water harvesting systems and making water everybody's business, that document's technologies that are being practiced even today by communities in various parts of the country.

Bansil (1998), in his book "water management in India" has highlighted the ancient water harvesting system in India. Gurfar and Shukla, (1998) in the book "Water Resources, Environment and the People," stated that the problem of water crisis cannot be solved without people participation and efforts should be made to get every citizen involved at the different water conservation schemes, Misra (1994) has written two books on traditional teak management in India and various traditional water harvesting systems in Rajasthan titled in Hind'Aaj Bhi khare hai talab' and Rajasthan Ki Rajat Boonde".

Factors influencing the water resources availability in Solapur district:-

Water is in fact, the life source in biosphere on the planet earth. The earth has abundant water resources in all three forms of solid, liquid and gases. The absence of water in other planets is the chief cause for no life. Water is being used for overall development in different parts of the world. It is evident that since the beginning of the human race on the earth, man settled in areas of the source of abundant water supply. Most of the river valleys like Nile, Indus, Ganga, Ho-Hand-Ho and Brahmaputra as a result of great significance of river waters, people started worshipping them in India.

Water management on socio-economic development in south Solapur Tahsil:-

The field survey has been conducted by interviewing of 250 farmers of south Solapur tahsil. The field survey was conducted for south Solapur tahsil having 91 villages and above 250 farmers were interview making 100 percent field survey. All the farmers were categorized into larger, marginal, medium and small farmers. Which account to 87-63-58 and 42 making in all 250 farmers of south Solapur tahsil.

Irrigation:-

1. Other than rainfall water, whatever artificial water is supplied to land is known as irrigation.
2. After rainy season the need of water to sustain the crops, whatever water is supplied to sustain the crop that is known as irrigation.
3. Rainfall water is arrested in various forms into dams, rivers, tanks, lakes, etc. resulting in increase in water table. Through tube wells, wells, pump sets, electric motors are being used for the crop supply of this process is known as irrigation.
4. When land is dried then artificial method is used to make wet land for different crops is known as irrigation.

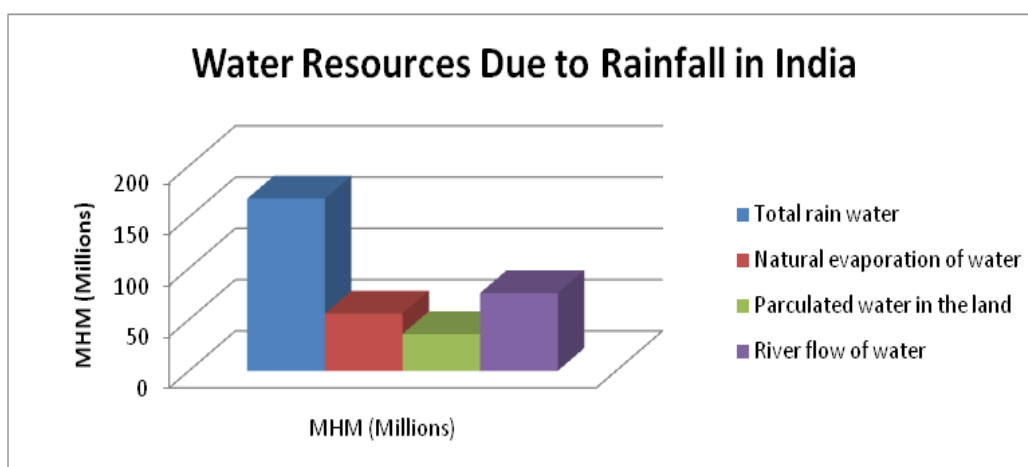
Need for irrigation:-

Agriculture is the back bone of economy in India. More than 2/3rd population still engaged for their livelihood with agriculture. Water is most valuable resources of the nation, without water no agriculture can be practiced. The supply of artificial water for agriculture means irrigation, making land wet by water is known as irrigation. In India about 74 percent land depends upon the rainy season for agriculture. Generally in every five years, two years of heavy rainfall, two years of famine, than in an average one year is normal. In other words, some time, due to very heavy rainfall wet, drought then occasionally complete drain is seen. Due to unpredictable and most erratic nature of the rainfall, artificial rainfall is required for agriculture in India. In the country, different crops are grown in different state for different crops water is required at different times in different scale. Some crops need more water while some crops need medium water and some crops needs very negligible water.

Water Resources Due to Rainfall in India

Sr. No	Details	MHM (Millions)
1	Total rain water	168
2	Natural evaporation of water	56
3	Parculated water in the land	36
4	River flow of water	76

Ref. - Ruddar Datta and Sundharam. – Indian Economy, 2007.p.g. No. 92



Maharashtra:-

The state of Maharashtra was brought in the existence in the 1st May, 1960. It consists of Western Maharashtra, Kokan, Marathawada, and Vidharba. Maharashtra has an area of 307761 Sq.

Km. and it extends 15°8' north latitudes to 22°1' north and 72°6' to 809 East latitudes. There are 35 districts in the state of Maharashtra.

South Solapur Tahsil:-

Solapur district has 11 tahsils normally Malshirash, Karmala, Mada, Pandharpur, Sangola, Barshi, Mohal, Mangalwedha, Akkalkote, North solapur and South solapur. Among these tahsils, South Solapur tahsil is situated in the east of Solapur district for the purpose of case study, South solapur tahsil has been selected, hence, the details of are given as under.

Areas- The south solapur tahsil has an average area of 119469 hectors. There are about 91 villages in south Solapur tahsil.

Climate and rainfall

The south Solapur tahsil come under rain shadow area of Maharashtra state. As a result of it, average rainfall is recorded 605.75mm per year. The south Solapur tahsil has average rainfall of 707mm per year. Therefore, south Solapur recognized as a drought prone tahsil.

Population of south Solapur:-

Density of population means ratio between size of population and the area in sq.Km. This is also known as man land irrigations. The distribution of population in the south Solapur region is uneven. The study related to the relation between the distribution of population clearly review that social, economic, political, and physical factors directly influence the density of population in south Solapur tahsil.

Population Density of Solapur District (2010-11)

Tahsils	Total area in Km ²	Total population	Percentage of Population of the District	Density in Km ² in 2011
South Solapur	1195.30	2,10,774	5.48	176
Solapur District	14895.40	43,15,527	100.00	258

Source- Socio-Economic Abstract of Solapur District.2010-11

Impact of irrigation facilities on Socio-Economic Development in South Solapur:-

There are 91 villages in south Solapur tahsil. Bhima and Shina rivers are flowing south and north from east to west direction. In the north of the tahsil Hanamgaon and Hodagi have each one tank like view in the east direction of tahsil. Shriraval has also one tank though, these are the large tank yet these have water in the rainy season. During summer these tanks become dry due to large number of electric motors of 10 to 20 H.P. more than, 250 electric pumps are established by farmers. The tank water is collected by the farmers in to the conserved field and is used by farmers according to their convenience. Therefore tanks become dried within two months. Therefore, there are two important means of irrigation normally well and river irrigation. Hence, the artificial means of irrigation and its impact of on the socio-economic conditions has been studied and compared south Solapur tahsil.

There are number of changes has been noticed due to artificial irrigation facilities. It is evident that there is a tremendous change on the socio-economic condition of the people in the south Solapur tahsil. For example increase in agriculture production, increase in employment, increase in per capita income, change in land used pattern, change in net sown area etc. have been observed due to the

artificial irrigation facilities. These have been studied on the basis of following points.

Sources of water irrigation:-

In modern age the changes in agricultural policies and technological and scientific implementation are being used for the increase in agricultural production with the help of artificial supply of irrigation in south Solapur tahsil, hence the development of well irrigation, tank, canal, river water have been used resulting in changes in land used pattern.

In the south Solapur tahsil the irrigated land in been done by the wells, bore, and river water are the prime sources though farmers have bore facilities generally have well facilities in their field and from time to time with the help of electric motor the storage water is wells used for their crops.

Water planning for crops in south Solapur tahsil:-

In dry region, the water scarcity is a serious and acute problem. As a result of it the underground water is being used by the farmers. This has resulted in lower water table is in many area. Each and every crops required different amount of water for irrigation. Keeping these points into consideration, the modern irrigation facilities enhance the agriculture productivity per unit of area. Now a days the most economic means are modern irrigation is drip irrigation and sprinkler irrigation.

Water planning of crops

Sr. No.	Types of farmers	Water planning						Total farmers	Total percentage
		River			Wells				
		Flow	Drip	Percentage	Flow	Drip	Percentage		
1	Marginal	32	00		31	24		87	
		(12.8)	(00)	12.8	(12.4)	(9.6)	22.80		34.8
2	Small	21	01		18	23		63	
		(8.8)	(0.4)	8.8	(7.2)	(9.2)	16.4		25.2
3	Medium	17	02		14	25		58	
		(6.8)	(0.8)	7.6	(5.6)	(10.00)	15.6		23.2
4	Large	16	01		07	18		42	
		(6.4)	(0.4)	6.8	(2.8)	(7.2)	10.00		16.8
Total		86	04		70	90		250	
		(34.4)	(1.6)	36.0	(28.00)	(36.00)	64.8		100%

Source: direct field survey

Change in the annual family income:-

If comparison done is agriculture and the irrigated land gives much more per hector production. Irrigation have given the higher per hector production resulting in the increase in the per capita income. This increase has been represented in the following table.

Change in annual family income (in rupees)

S.N.	Type of farmer	Before irrigation						After irrigation						Percentage Change
		Agriculture income	Service income	Joint business	Rent	Other	Total income	Agriculture income	Service income	Joint business	Rent	Other	Total income	
1	Marginal	1730	-	620	-	-	2350	5643	-	2500	-	-	8143	346.51
2	Small	1948	-	690	-	-	2638	9875	1000	4100	-	2200	17175	651.06
3	Medium	4239	1000	1345	-	570	7154	17422	1500	7225	2500	3000	31647	442.36
4	Large	13149	2800	4870	-	1500	22019	53262	3500	21340	4000	6500	88602	402.38
Average		5266.50	1750	1881.25	-	1035	8540.25	21550.50	2000	8791.25	3250	3900	36391.75	426.12

Source: Direct survey

The above table is concern with the change in annual family income. There are four categories of farmer entitled Marginal, Small, Medium and Large farmers. The change in annual family income is represented broadly into before and after irrigation of land. Before irrigation generally the annual family income was 5266.5 rupees from the agriculture. The highest income in rupees was large farmers while for marginal farmers it was a lowest income. Before irrigation facilities on the other hand the annual income before irrigation facilities was recorded 1750 rupees for service members. For large farmers it was 2500 rupees while for medium farmers it was 1000 rupees per year for joint business. The average income before irrigation was 1881.25 rupees and highest income was for large farmer while lowest income was for marginal farmer. The total income was recorded average for rupees 8540.25. While highest for total income was for large farmers while lowest income was for marginal farmers.

After the irrigation facilities were made available the total annual family income was highest for larger farmers and the lowest income for marginal farmers. The average family income was recorded 21550.5 for the annual family income. As expected the highest income was for large farmers while the lowest income was for the marginal farmer after irrigation.

The average service sector income was 2000 rupees annual workers highest for large farmers which account 3500 rupees and lowest for 1000 rupees for a small farmer. Similarly, for joint business worker being highest for large farmer and lowest for marginal farmers. The house rent for paid of 4000 rupees by the large farmers and 2500 rupees for medium farmers. Total income was recorded highest for large farmers while lowest income for marginal farmers. The average annual income was of the order of 36399.75 rupees.

The bar graph clearly indicate substantial income has increased after the irrigation facilities were made available in the agricultural land as expected non-irrigated land represent very little change in annual income for all the type of farmers normally marginal, small, medium and large farmers. The remarkable change was noticed by large farmers.

Opinions about the economic change for the farmer:-

No doubt after the implementation of irrigation facilities there has been a handsome improvement in agriculture production about this table, it represents the information.

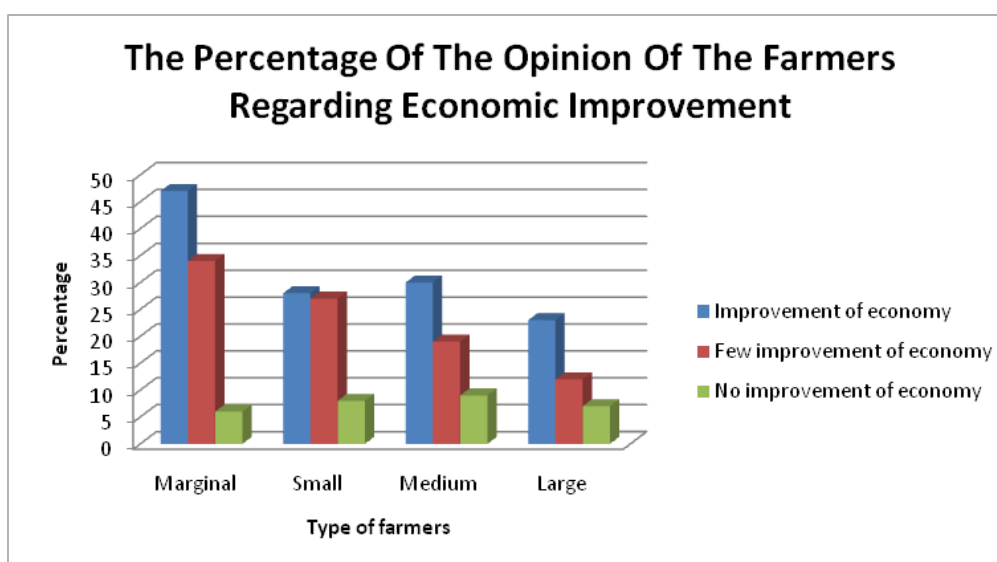
Opinions about the economic changes of the farmers

Sr. No.	Type of farmer	Improvement of economy	Few improvement of economy	No improvement of economy	No. of farmers
1	Marginal	47 (18.8)	34 (13.06)	06 (2.04)	87 (34.08)
2	Small	28 (11.2)	27 (10.08)	08 (3.02)	63 (25.02)
3	Medium	30 (12.0)	19 (7.06)	09 (3.06)	58 (23.02)
4	Large	23 (9.2)	12 (4.08)	07 (2.08)	42 (16.08)
Total		128 (51.2)	92 (36.80)	30 (12.00)	250 (100)

Sources: Direct survey.

Note: The bracketed numbers denote the percentage value.

The economic improvement in the family income of the farmers and their opinion is represented in the above table for marginal, small, medium and large farmers. The total situation for the economic improvement was for 128 farmers which come to 51.2 percent as a highest was recorded for marginal farmers while the lowest improvement in the economic changes was for large farmers which is less than 10 percent. In case of less improvement in economic changes was total for 92 farmers which is as 36.8 percent while highest being for marginal farmers which is 34 and calculated 13.06 percent. Apart from these farmers whose economic improvement has not been noticed are only 30 which is 12 percent. The medium farmers has shown the highest number has no improvement in economic condition while lowest number from the marginal farmers. Finally the total number of farmers was 250 which account to 100 percent. The highest number was from the marginal farmers which is more than 34 percent. It is followed by small farmers and account 25 percent. The medium farmers and large farmers were in order of importance and account 58 and 42 respectively. Which is 23 and 16 percent of total farmers.



The bar graph represents the percentage of the opinion regarding the economic improvement. There has been tremendous improvement in economic condition for all type of farmers like marginal, small, medium and larger farmers with slight fluctuation. The slight improvement of economic

condition was also noticed for all four type of farmers. All about five percent of farmers have seen no improvement of economic condition for all four type of farmers.

Suggestion:-

The situation for the economic improvement was for 128 farmers which come to 51.2 percent as a highest was recorded for marginal farmers while the lowest improvement in the economic changes was for large farmers which is less than 10 percent. In case of less improvement in economic changes was total for 92 farmers which is as 36.8 percent while highest being for marginal farmers which is 34 and calculated 13.06 percent. Apart from these farmers whose economic improvement has not been noticed are only 30 which is 12 percent. The medium farmers has shown the highest number has no improvement in economic condition while lowest number from the marginal farmers. Finally the total number of farmers was 250 which account to 100 percent. The highest number was from the marginal farmers which is more than 34 percent. It is followed by small farmers and account 25 percent. The medium farmers and large farmers were in order of importance and account 58 and 42 respectively. Which is 23 and 16 percent of total farmers.

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CONCLUSION:-

In south Solapur tahsil among the selected villages due to the conclusion on irrigation facilities per hectore production has substantially increased and structure of crop change has occurred. Because of the irrigation facilities were made available to the farmers have started taking cash crops instead of traditional crops. This has resulted in high use of chemical fertilizers. The use of hybrid seeds and tremendous improvement in employment sector. In view of above, the standard of living of the farmers have gone up due to increase in agriculture production after the irrigation facilities use made available in south Solapur tahsil. It is true that water is the life of all living creature specially for agricultural production.

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