International Journal of Advance and Applied Research
www.ijaar.co.in
ISSN – 2347-7075 Impact Factor – 8.141
Peer Reviewed Bi-Monthly
Vol. 7 No. 4 January – February - 2026

A Geographical Study of Socio –Economic Impact of Canal Irrigation In Solapur District

Mr. Pawar S. S.[1] & Prof. Dr. Dhayagode N. I.[2]

[1]Ph.D Research Student, Department of Geography,
Walchand College of Arts and Science, (Autonomous) Solapur
[2]Professor and Head, Department of Geography,
Walchand College of Arts and Science, (Autonomous) Solapur
Corresponding Author –Mr. Pawar S. S.

DOI - 10.5281/zenodo.18477329

Abstract:

Agriculture is the backbone of the economy, and the study area has examined the impact of irrigation on socio-economic changes in structure and size of farm per hectare, household size per hectare, income consumption behaviour of farming households, literacy and illiteracy, etc. In the context of existing research, the term effect is view as a look of spatial variations within aforesaid mechanisms, which carried by irrigation. An effort has been prepared to assess the impact of irrigation on socio economic position of people in the study region. Which are associated to structure of farm economy, per farm and per hectare family size, income sources, consumption behaviour, literacy etc. In generally, Ground water and surface water are used for irrigation and it is water available from natural sources to supply the required amount to the crops but when the same water is artificially transported to supply it is called irrigation. Irrigation is a chief input for agricultural production. If an area is facilitated with irrigation water agricultural sector is confidently affected. Unknown there is no suitable water supply then the use of fertilizer, seeds, pesticides etc. will not be useful for the yield. India is mainly an agriculture oriented country and the role of agriculture is massive as it is the most imperative initiative in Indian economy.

Keywords: Canal Irrigation, Impact, Effecting Factor Of Socio Economic.

Introduction:

Solapur district is in rain shadow area in western Maharashtra. In this region receives overall rainfall in small period, so essential of irrigation projects is imperative for agriculture growth and productivity. Consequently, the irrigation facilities are much more significant in Solapur District. The land is fixed in its area extent and the growing pressure of population on land resources is a major problem of the Third World Countries where there is an acute problem of food scarcity. To feed these teeming millions, we have to increase farm production by a more intensive utilization of land and application of modern farm technology. The bulk of increased food production at least in the immediate future will come from further expansion of irrigated area and from the technology, already available in the areas with water availability (Swaminathan, 1977).The Irrigation is an artificial supply of water to land for rising crops and to growth the per hector yield. It is important an artificial application of water to overcome the insufficiencies in rainfall for growing crop (Contor, 1967).

Farmers of study region are facing many problems related to shortage of irrigation water in their farm land. Some of the major issues are related to the human and environment while others are related to the human aspect. Former's

problems related to irrigation vary from season to season and region to region in the study area. Throughout the successive strategy phases, a special devotion was given to the extension of irrigation in the dry areas of our country. Irrigation development and better farm practices have tackled the simple problems of low productivity, inferior cropping pattern, subsistence agriculture and rural poverty in the rain fed areas.

The commercial base of the country depends on agriculture. In order to rise the agriculture yield, one should not depend upon rainfall alone. An appropriate water supply would meet the necessity. Water is an imperative part for growing the agricultural production. Natural or artificial application of water to soil for the resolve of moisture and the timely application of water for the growth and production of plants depends largely on the implementation of many irrigation projects .Water is a primary resource on earth for all living organisms including mankind and for improvement and survival of plant community. The environmental processes of the biosphere are also controlled by water.

Study Area:

The current investigation Solapur district is selected as a study region. It is one of southern district of the Maharashtra, is located on $17^0 10'$ to $18^0 32'$North latitude and $74^0 42'$ to $76^0 15'$East longitude which surrounded by to the East- Osmanabad (Dharashiv) and Gulbarga (Gulburgi) (Karnataka State) districts, to the South- Sangli and Bijapur (Vijayapura) (Karnataka State) district, to the West- Satara and Pune districts, to the North- Ahmednagar and Osmanabad districts. Total area is covered the 14895 sq. km with 500 mtrs. (1,805 ft) average elevation from the sea level, becomes from 1150 number of inhabited villages and 10 urban centres. Among the total area, urban area covers 338.8 sq. kms. (2.28%) land whereas, remaining 14556.2 sq. kms. (97.72%) land comes under rural area in district. According to 2011 census, there is lived about 43, 17,756 persons, nearly 290 persons per km^2 density and 938 persons sex ratio. The area selected for study is one of the drought-prone areas of Maharashtra state, where, people faces shortage of water for domestic and agricultural activities in every summer season. The Bhima and Sina river are the important river of district, have provided water for domestic as well as agriculture activities.

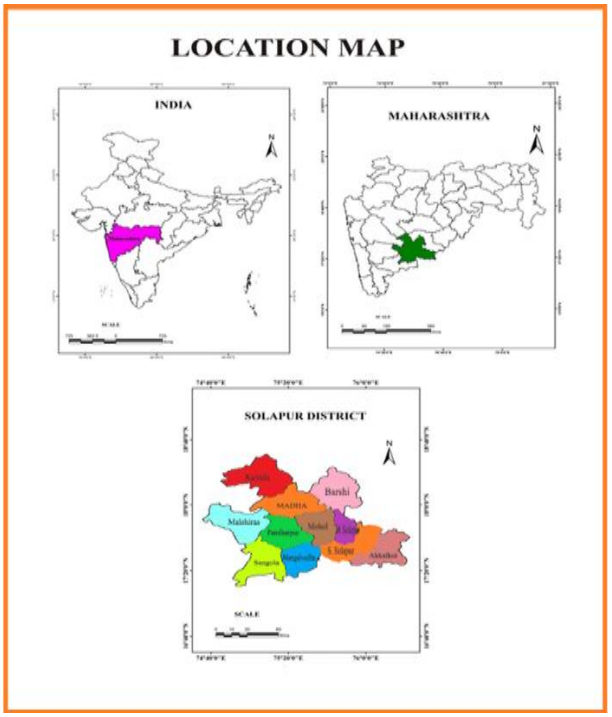

Fig.No.1

Objectives:

1. To study the impact of canal irrigation on socio-economic changes.
2. To analysis agricultural economy in irrigation sector.

Data Base and Methodology:

The proposed research work will be based entirely on primary and secondary data. Secondary data were collected from the Irrigation Department of Maharashtra, District Statistical

Abstracts, Socio-Economic Abstracts, Census reports, and published research papers, while primary insights were obtained through field visits, informal farmer interactions, and consultations with irrigation officials. Many statistical methods, quantitative techniques and Cartographic such as tables, graphs, and thematic maps were used to represent spatio-temporal variations, ensuring that both quantitative accuracy and geographical interpretation have been used to study various aspects of impact of irrigation on socio-economic changes.

The Impact of Canal Irrigation On Socio-Economic Changes:

Study area the impact of irrigation on socio-economic changes, in the setting and structure of farm economy, per farm and per hectare family size, income consumption behaviour of farm families, literacy and illiteracy etc. which are true indicative of socio-economic changes in country side. In the context of existing research, the term effect is view as a look of spatial variations within aforesaid mechanisms, which carried by irrigation. An effort has been prepared to assess the impact of irrigation on socio economic position of people in the study region. Which are associated to structure of farm economy, per farm and per hectare family size, income sources, consumption behaviour, literacy etc.

While analyzing these aspects it is also important to note that in discussing the structure of the farm economy in the study area. The total farm house holdings are grouped into three farm size classes in such a way that the area of holdings arranged in ascending order within each class remains more or less the same. Small Size farm- Below 2 hectares, Medium Size - 2.00 to 4.00 hectares, Large Size - Above 4.00 hectares.

Agricultural Economy in Irrigation Sector:

The conversation in this segment is focused on the different structural aspects of the farm economy and evaluation between irrigated models with reference to such arrangement.

Table 1

Solapur District: Distribution of Sample Farm Size (Irrigated Area in Hector) (2023-24)

Irrigated Area				
Sr. No.	**No. Size of Land Holding (Farm)**	**No. of Holding**	**Net Cultivated Area**	**Mean Size of Holding**
1	Small Size (Below 2 hectares)	250 (49.60)	230 (19.10)	1.12
2	Medium Size (2.00 to 4.00 hectares)	115 (23.14)	322 (21.78)	3.10
3	Large Size (Above 4.00 hectares)	135 (27.26)	633 (59.12)	5.78
Total		**500 (100)**	**1185 (100)**	**3.33**

Source: Compiled by Resource Person.

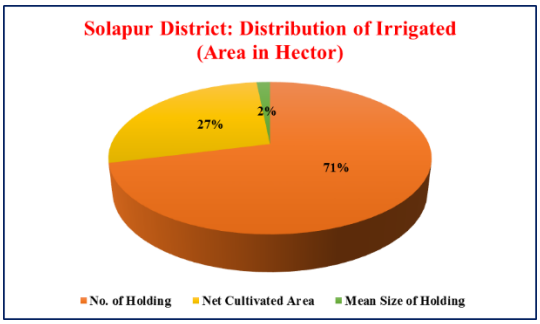

Fig.No.2

The table 1 and fig. 2 shows total number of sample holdings in all size class, its percentage to total samples, aggregate area operated in each size class and its percentage to the total area and mean size of holdings are presented.

Reveals that in case of irrigated large size farms 27.26 percent of the farm households belong to farms size class of small 49.60 percent

and medium23.14 percent, together control large size 59.12 percent medium size 21.78 percent and small size 19.10 percent of total net area sown. Here mean size of holding is shows large size 5.78 percent, medium size 3.10 and small size 1.12 percent located.

Impact of Irrigation on Household Income:

The impact of irrigation on household income is probably the best barometer, which can measure the influence of new technology and other development programs launched form agriculture development. Asset in irrigation is a key element for sustaining agricultural production. The household income from agriculture has certain characteristics, which limit the scope for a free hands choice in planning the house hold welfare activities. Crop activities are the main source of farm income and flow of income from crop is seasonal. In constancy in crop income in terms of disparity in yield of crops and prices levels unless. Here is a regular flow of income. Farmers are unable to plan of such welfare activities, which essential a regular flow of expenditure.

The farm production design of a farmer is usually governed by his family and farm necessities including that of farm animals. What to crop on the farm is normally decided upon according to what is consumed by the family and what is to be fed to the animals. In other word, the farm production pattern is definite by farmer and household necessities. The study area rural house hold income can be preserved as flow of takes net of making cost from farm and non-farm events. The household income consists of net income from farming, net income from business, wages and salary, interest earning etc.

Therefore household income is the totally of revenues to productive factors owned by the farmer and transfer income received by the farm household throughout the accounting period. The farm income has three main sources i) Crop income ii) Live-stock income and iii) Rental income from agriculture assets i.e. land, animals and machines. Other income non-farm includes regular salaries, daily wages of family member, business income and income from handicrafts.

Sources of Household Income:

While looking at the source of household income, you need to consider different factors in its annual income difference in average irrigated and un- irrigated area size class of difference household income.

Table No.2: Solapur District: Annual average income all sources (income in rupees)

Sr. No.	Farm Size	Annual Household Income in Irrigated Area (Average)	Difference in Un-irrigated Area (Average)	Size Class of Difference Household Income
	Small Size	1,45,264	65,165	80,099
	Medium Size	2,14,658	88,746	1,25,912
	Large Size	3,70,478	1,55,135	2,15,343
Average Total		**2,43,467**	**103015**	**1,40,451**

Source: Compiled by field survey

The table 2 shows there is huge income variance between irrigated and un- irrigated farms in the study region. The quantity and availability of water resources are responsible for these income differences in together areas. The average income per household on the irrigated farm has

been projected to be rupees 2, 43,467while in the un-irrigated area, it was rupees 103015 for whole sample. The household income as well as the income gap was found to increase with the increase farm size located in this region.

The household income structure income in both sector. The same figure in the table 3 that crop farming, livestock, machinery hire, trade, business, wages etc. are the main sources of income of the rural households in the study region.

Household Income Structure:

Table No. 3: Solapur District: Household Income Structure Irrigated Area

Sr. No.	Source of Income	Irrigation Area (in percent)			Total
		Small Size Farm	Medium Size Farm	Large size Farm	
1	Crop Farming	52.34	70.04	71.18	**64.52**
2	Live-stock Farming	22.27	9.24	21.16	**17.55**
3	Hiring of Machines	2.12	2.46	3.44	**2.67**
4	Other Own Farm Sources	7.82	5.69	1.16	**4.89**
5	Wages	8.15	4.38	1.33	**4.62**
6	Salary	3.15	2.64	1.11	**2.3**
7	Other Sources	4.31	5.12	1.03	**3.49**
District Total		**100**	**100**	**100**	**100**

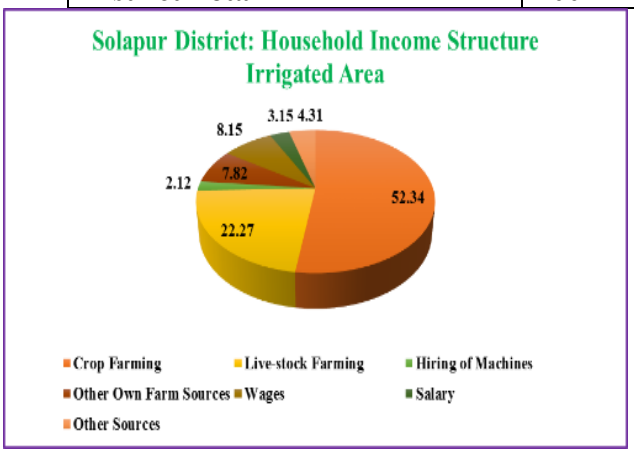

Fig. No.3

Source: Compiled by field survey

It is observed that Table 3 and fig.3 shows crop farming alone accounted for 64.52 percent of the overall household income in the irrigated area. Crop farming in the small size of irrigated area shared 52.34 percent of household income. The live-stock plays dynamic role in the rural economy of the district. The live-stock initiatives of the households were the second significant source of income in both areas. Because taking only crops in the agriculture is not commercial. The improvement of live-stock is both in concern to their milk yield and draught capacity, very significant for the district. Some farmers addition their scanty resources through the sale milk and milk products. Live-stock is essential for a rural economy, as they provide the essential motive power for many agricultural operations.

Live-stock initiative accounted 17.55 percent of household income in the irrigated area. The modernisation of agriculture in India basically means the use of tractors and power operated pumps etc. The use of modern agricultural machinery is closely related to irrigation, size of holdings etc. The number of bullocks are reduced thus the large proportion area is cultivate with hired agricultural machinery. Hiring out of machinery as a source of income has been prevalent frequently in the irrigated farm holding and the same accounted for 2.67 percent of household income.

Further own farm source noticed 4.89 percent of household income in the irrigated area. The wages have been the fourth and third imperative source of income correspondingly in irrigated. About 4.62 percent income in irrigated area come from through wages. Wages noticed for a more share for the small size farm of and the

absolute and virtual share of wages in the total income reduced with the increase of farm size.

The Salary noticed for 3.15 percent of household income of the small size farms in the irrigated area, where it was marked about 2.64 percent and 1.11 percent of household income respectively in medium and large size farms in irrigated area. The other no-farm sources such as trade, business etc. are receiving importance in the rural economy of the study region. Through the advent of irrigation facilities various economic sectors i.e. trade, commerce, transport etc. are started quickly. Population stress on agricultural sector is declined. The non-farm sources have received third position in household income in irrigated area, while it acquired fourth important source of income in un-irrigated tract of the district. About 3.49 percent of household income registered respectively in irrigated area.

Conclusion:

Solapur district is in rain shadow area in western Maharashtra. In this region receives overall rainfall in small period, so essential of irrigation projects is imperative for agriculture growth and productivity. Consequently, the irrigation facilities are much more significant in Solapur District.

Farmers of study region are facing many problems related to shortage of irrigation water in their farm land. Some of the major issues are related to the human and environment while others are related to the human aspect. Former's problems related to irrigation vary from season to season and region to region in the study area. Throughout the successive strategy phases, a special devotion was given to the extension of irrigation in the dry areas of our country. Irrigation development and better farm practices have tackled the simple problems of low productivity, inferior cropping pattern, subsistence agriculture and rural poverty in the rain fed areas.

Study area the impact of irrigation on socio-economic changes, in the setting and structure of farm economy, per farm and per hectare family size, income consumption behaviour of farm families, literacy and illiteracy etc. which are true indicative of socio-economic changes in country side. In the context of existing research, the term effect is view as a look of spatial variations within aforesaid mechanisms, which carried by irrigation.

References:

1. Central Water Commission (CWC) Reports (2015–2023). Ministry of Jal Shakti, Government of India.
2. Contor, 1967: "Irrigation is essentially the artificial application of water to overcome deficiencies in rainfall for growing crops." published **Edinburgh,** United Kingdom.
3. District Census Handbook, Solapur (2011). Census of India, Directorate of Census Operations, Maharashtra.
4. Economic Survey of Maharashtra (2014–15 to 2023–24). Planning Department, Government of Maharashtra.
5. Government of Maharashtra (2013–14 & 2023–24). Irrigation Department Reports, Solapur Circle. Pune: Water Resources Department.
6. Irrigation Department of Maharashtra (2023-24): District Statistical Abstracts, Socio-Economic Abstracts.
7. Solapur District Gazetteer (Revised Edition). Government of Maharashtra.
8. Swaminathan (1977): *Indian Journal of Agricultural Economics,* Volume 33, Number-7, 37th All India Agricultural Economics Conference).