

Chapter – I

Introduction And Research Methodology

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INTRODUCTION AND RESEARCH METHODOLOGY

1.1 Introduction :

“Agriculture is the backbone of the livelihood security system in India, where 70% of the population is in the villages. So, agriculture is not just a question of economics and trade but of dignity and survival. We need to develop a long-term policy in agriculture. This will pay enormous dividends.”

Dr. M.S. Swaminathan

Agriculture in India plays a vital role. The prospects of planning in India depend much on agriculture sector. A good crop always provides impetus towards a planned economic development of the country by creating a better business climate for other sector of economy. A good crop also brings a good amount of finance to the Government for meeting its planned expenditure. Agriculture is main support of industrialization and transport service. Farmers prosperity is also prosperity of industrialization. On the contrary bad crops lead to total depression in industry and business of the country, which ultimately leads to the failure of economics planning.

Agriculture contributes more than 20% of the country's Gross Domestic Product and generates 60% employment. India being an agrarian economy, the performance of agriculture is very important not only from the point of view of economic growth but also for the well-being of the majority of the population. There is no economy in the world

impacted more by the agriculture than India. The significance of agriculture in the national economy can be explained by considering the role of agriculture under different heads.

1.1.1 Share of Agriculture in the National Income :

The share of agriculture in economic development changes with the growth of an economy. In the initial stages, it's shares are relatively high but its relative significance declines as non- agriculture sector grows. After independence the share of agriculture is continuously declines. The share of agriculture sector in the Gross Domestic Product is shown in the following table.

Table No: 1.1
Share of Agriculture Sector in Gross Domestic Product
at factor cost. (at 1993-94 price)

(Rs. Crores)

Sr. No.	Year	GDP at Factor cost	Agriculture	2 as % of 1
1	1950-51	1,40,470	83,150	55.4
2	1970-71	2,96,280	1,42,580	44.5
3	1990-91	6,92,870	2,42,010	30.9
4	2003-04	14,24,500	3,15,800	22.1

Source – 'Indian Economy' 2005, Datt and Sunduram page No.406.

Table shows that the share of agriculture in GDP was 55.4% in 1950-51 share declined and reached level of 22.1% in 2003-04.

From the above table, two important facts are seen :

- I) Agriculture contributes even now a major share of the national income in India.

II) The share of agriculture in national income however, has been decreasing continuously and the share of manufacturing and service sector is increasing.

This is well-come change because lower dependence on agriculture is sign of develop ness. However agriculture still occupies an important place in India Economy.

1.1.2 Indian Agriculture and Employment :

Initially, agriculture absorbed large quantity of labour force. In India still about 60% labour is absorbed in this sector.

Table No: 1.2
Employment of Workers in Agriculture

(in million)

Sr. No	Particulars	1951	2001
1	Total population	361	1027
2	Rural population	299 (83)	742 (72)
3	Cultivators	70 (50)	128 (32)
4	Agriculture labour	27 (20)	107 (27)
5	Other workers	43 (30)	167 (41)
6	Total working population	140 (100)	402 (100)

Source – ‘Indian Economy’ 2005, Datt and Sunduram page No.487.

The above table shows that, in absolute terms, agriculture provided employment to 97 million people in 1951, the number of people working in land cultivators and agriculture labour increased to 235 million in 2001. In terms of percentage, however people working on land came

down from 70% to 59% during the five decades between 1951 and 2001. It is however really disturbing that the proportion of agriculture labour has increased from 20 to 27 percent between 1951 and 2001. But cultivators have indicated a decline from 50 percent to 32 percent.

1.1.3 Agriculture and Industrial Development :

Indian agriculture has been the source of supply of raw materials to our leading industries. Cotton and Jute textile industries, Sugar, Vanspati and Plantations - all these depends on agriculture directly. There are many other industries which directly depend on agriculture. Many of our small scale and cottage industries like handloom weaving, oil crushing, rice husking etc. depends upon agriculture for their raw material – together account for 50 percent of income generate in the manufacturing sector in India.

In recent years, the importance of agriculture to industrial is going down as many more industries have come up which are not dependent on agriculture. Chemicals, machine tools, steel and iron industry, engineering industries, aircraft etc. have been started under the five year plan.

However, in recent year, the importance of food processing industries is being increasingly recognized both for generation of income and for generation of employment.

1.1.4 Role of Agriculture in International Trade :

The progress in agriculture sector provides surplus for increasing the export of agriculture product. Importance of Indian agriculture also arises from the role it plays in India's trade. In earlier stage of India, there was increase in the earnings from the agriculture sector. Agriculture product – Tea, Sugar, Tobacco, Spices etc. constitute the main items of export of India. Indian export for 10th plan estimated that agriculture contributes 14.7 percent of total export earnings. This is great significance of economic development. An increase in the exports earning is more desirable because of the greater strains on the foreign exchange situation needed for the financing of import of basic and essential capital goods.

1.1.5 Agriculture and Economic planning :

Importance of agriculture in the national economy is indicated by many facts, for example, agriculture is main support for India's transport system, since the railways and roadways secure bulk of their business from the movement of agriculture goods. Internal trade is mostly in agriculture products. Further goods crops implying large purchasing power with the farmer lead to grater demand for manufactures. In other word's prosperity of agriculture is also prosperity of industries. Generally, it is the failure on agriculture front that has led to failure of economic planning in particular period. Agricultural growth has direct impact on poverty conditions and employment generation.

1.2 Agriculture in Maharashtra :

Agriculture plays an important role in the economy of Maharashtra. As per the population census 2001, the total number of workers (main and marginal) in Maharashtra were 4.12 crore, of which cultivators and agriculture labours were 28.7 percent and 26.3 per cent respectively. Thus about 55 per cent of the worker in the state were directly depending on agriculture for their livelihood. The share of agriculture and animal husbandry in the Gross Domestic Product (GSDP) for the year 2004-05 has remained, low, at ground 10.1 per cent. This is because the soil topography and climate in Maharashtra are not much favorable to agriculture. Nearly one- third area of the state falls under rain shadow region. As a result the agriculture in the state is not as productive as that at the national level. Through the proportion of area under agriculture in the state as 57.2 per cent is much more than such proportion of gross irrigated area in the state is only 16.4 per cent as against 41.2 per cent at the national level. Consequently the per hectare crop yield in Maharashtra is much lower than that of the national level. Maharashtra is not self reliant in food grains. Therefore only 80 percent production of food grain is produced in Maharashtra of the need.

1.2.1 Total Cultivated Sector of Maharashtra :

Cultivated land in Maharashtra is increasing slowly. But irrigated sector is increasing satisfactorily. The following table shows the land cultivation and irrigated sector in Maharashtra.

Table No: 1.3

Land Cultivation And Irrigated Sector In Maharashtra

(lakh hectare)

Sr. No.	Particulars	1960-61	1980-81	2001-02
1	Total Cultivated sector	188.23	202.70	222.40
2	Total Irrigated sector	12.20	25.16	36.7
3	Per Cent age (2 for 1)	6.5	12.4	16.4

1) Ref : MAP – 2002-2003 Bombay Page No. 111

2) Maharashtra – 2005 Samtosh Dastane Page no. 60

Above table shows that the cultivated sector in Maharashtra is increasing continuously from 1960. But irrigated sector is increasing fastly in the same period, which was 6.5 per cent of total cultivated in 1960 – 61 it increased upto 16.4 per cent in 2001-02. But still large sector in Maharashtra is without irrigated.

1.2.2 Agriculture production and productivity :

The agriculture production is unsatisfactory in Maharashtra, therefore nearly 20 per cent food grain import is from other states or central government. The following table shows the production and productivity of Maharashtra.

Table No : 1.4

Main Crop Production And Productivity In Maharashtra

(Total Production – in lakh) ^{9 unit}

(Per hectare productivity in – k.g.)

Sr. No.	Particulars	1960-61	1970-71	2001-02
1	Rice (Total production)	13.69	16.22	26.5
	(Per hectare production)	1054	1229	1751
2	Wheat (Total production)	4.01	4.40	10.7
	(Per hectare production)	442	482	1388
3	Jowar (Total production)	42.23	15.67	39.9
	(Per hectare production)	672	273	761
4	Total Cereals (Total production)	67.55	47.36	93.0
	(Per hectare production)	637	459	989
5	Total pulses (Total production)	9.88	6.77	18.8
	(Per hectare production)	421	264	555
6	Cotton (Total production)	2.87	0.82	4.6
	(Per hectare production)	115	130	147
7	Oilseeds (Total production)	7.99	5.86	4.9
	(Per hectare production)	739	649	1146
8	Sugarcane (Total production)	104	144	451
	(Per hectare production)	66924	86531	78070

Ref : 1) M.A.P

2) Maharashtra – 2005 – Santash Dastane page no. 60

This table shows that the production of Rice, Wheat, total Cereals, total pulses, cotton and sugarcane is increased in the period of 1960-61 to 2001-02. But the production of Jowar and oilseeds declined in the same period. Productivity of all crops increased. Except sugarcane the production of all crops is less than the national level.

1.3 Agriculture in Kolhapur District :

Kolhapur is known as Karveer since long. It is one of the most important commercial, religious and educational center in India. The district of Kolhapur is situated on the southern part of south west plane of Maharashtra. The area of Kolhapur district is 7746 sq. k.m which is about 2.50 per cent the total area of Maharashtra. Among the 35 districts in the state, Kolhapur rank's 24th in terms of area. Mainly the economy of Kolhapur is agricultural. According to 2001 census the population of Kolhapur is 35.25 lakhs out of this 24.73 lakhs people live in rural area and their main occupation is farming. Out of the total population, the working population of the district is 16.34 lakhs (47%) out of this nearly 65 per cent population depend upon agriculture and allied sector.

The development of agriculture in Kolhapur can be explained with the help of following points.

1.3.1 Utilization of Land :

According to 2000-01 data, out of the total geographical area of the district 18 per cent is covered with forest, 10 percent not useful for farming, 15 per cent not cultivable and follow land whereas net cultivated

land was 56 per cent. This information is shown in detailed in the following table.

Table No: 1.5

Utilization Of Land In Kolhapur District From 1960-61 To 2004-05

(Area –Hundred hectare)

Year	Total Cultivable Land	Net Cultivable Land	Gross Irrigated sector	Percentage (-4 0 2)	Net Irrigated Land
1	2	3	4	5	6
1960-61	5467	4138	391	7.15	382
1970-71	4079	4034	506	12.4	486
1980-81	5575	4276	713	12.79	630
1990-91	6667	4258	952	16.8	828
2000-01	5640	4423	1354	25.67	1288
2004-05	5640	4423	1354	25.67	1288

Ref : District Socio- Economic Survey : 2004-05

District – Kolhapur page no. 2

The above table shows that the land under cultivated sector increased slowly in Kolhapur in the period of 1960-61 to 2004-05. But the irrigated sector increased rapidly in the some period. Out of total cultivated land under irrigated sector was 7.15 percentage in 1960- 61 which increased to 25.67 per cent in 2004-05. Yet remaining most of the sector is not irrigated in Kolhapur.

1.3.2 Main crops in Kolhapur District :

Sugarcane cereals pulses, oilseeds (cotton) are main crops of Kolhapur. The area under the main crops is shown in the following table. The net irrigated area was 382000 ha. in 1960-61. It increased to 12879 in 2000-01.

Table No : 1.6

Land Under Main Crops In Kolhapur District : 1960-61 to 2004-05

(Area : Hundred hectare)

Particulars	1960-61	1990-91	2000-01	2004-05
Cereals	2444	1960	1797	1797
Pulses	206	301	249	249
Oilseeds	533	888	1308	1308
Sugarcane	319	678	1050	1050
Cotton	N.A	1	1	1

Source : Socio Economic Survey, Kolhapur District 2004-05

This table shows that except cereals the cultivation sector increased in the period of 1960-61 to 2004-05. The area under sugarcane and oilseeds increased rapidly in the same period. The land under cotton is very limited which was 100 hectars in 2004-05.

1.3.3 Irrigation Facilities :

The land under irrigated sector is increasing continuously after 1960. The gross physical area of Kolhapur is 762000 hectares. Out of which 564000 hectare area is cultivable and out of this, 216111 ha. is

irrigable. In Kolhapur District irrigation development is satisfactory but unbalanced. Irrigation facilities are largely available to Karveer, Panhala, Radhanagari, Hatkanalale, Shirol and Kagal talukas due to completion of Radhanagari and Tulsi project. But Chandgad, Ajara, Gagan Bavada, Bhudargad and Gadhinglaj talukas are devoid of adequate irrigation facilities.

1.4 Role of Irrigations in Agriculture Development :

The most important input required for agricultural development in India is irrigation as it facilitates multiple cropping and increases crops productivity. This objective can be achieved only by providing assured irrigation facilities to the cultivators. According to Trevelyan "Irrigation is more valuable than land because when water is applied to land, it increase its productivity at least six fold and renders it productive which otherwise would produce nothing." But still Indian agriculture continues to be a gamble in monsoons even after the execution of tenth year plans. Very recently, we witnessed spell of drought in major part of country because of failure of monsoon for two consecutive year. It resulted in the occurrence of famine or near famine condition at various places. The vast areas still continue to be at the mercy of sufficient and timely rains to avoid drought and famine. It is assured that irrigation facilities can relive farmers from the utter dependence upon nature and instill a sense of confidence in them.

1.4.1 Need of Irrigation :

Indian agriculture depends, to a large extent, upon rainfall. About two, third (2/3) percent of gross cropped area depends exclusively on rainfall. India is secured by south- west and North-East monsoon. About 74.7 per cent rainfall occur during June- September, winter rains amount only at 2.6 per cent. The post monsoon rains amount rains about 10.4 percent. The variability of rainfall largely determines the productive efficiency in agriculture. Thus, for those year when rainfall is scanty, it becomes necessary to make water available to farmers through irrigation.

In views of the distribution of rainfall in the country, it is unequal an irregular. In certain areas, there is abnormal rainfall but in other area it is scanty. The normal rainfall is as high as 428 inches at Chirapunji in Assam while it is less than 7 inches in part of Rajsthan. Over a large part of central India and east of the peninsula the normal rainfall is below 20 inches which is considered to be quite insufficient for agriculture purpose. Apart from this, in South Chennai, it is about 5 inches only. Rainfall in Assam, West Bengal, Orissa, Mysore and Kerala is more than adequate. Thus, there is greater variation in the distribution of rainfall in the country. The uncertain nature of rainfalls in the country do intensify the need of for irrigation facilities.

In these regions provision of irrigation will facilitate growing of more than one crops in the year. Irrigation raise both the employment and income content of land and it is likely to transform even the average unit of cultivation into the viable unit.

From this, the importance of irrigation can evaluated from the following points.

1) Intensive cultivation :

The multiple cropping pattern can be only possible if there is sufficient irrigation water. The burden of population on agriculture is very high in India and double, triple or multiple crops are required to be taken from the available cultivation land. The intensive cultivation is not possible without the sufficient irrigation water.

2) To increase cultivable land :

Some of the land is uncultivated just due to shortage of water. Thus, waste land can be brought under cultivation if there is availability of irrigation water. In India, there is a big need to increase the cultivable land.

3) Increase in Production and Productivity :

Irrigation helps very greatly in raising the yield of land because this enables the application of other modern inputs like chemical, fertilizers, high yielding varieties of seeds etc. This aspect has special significance for India where the present methods of production is primitive and the yield is miserably low.

4) Commercial farming :

Development of irrigation potential its utilization can pave the way for commercialization of agriculture in place of subsistence farming, which can play a pivotal role in raising the level of income of the farming community.

5) Plantation :

Irrigation facilities have now a days become very much important for tea, coffee, and rubber plantation which are very much profitable.

6) Control of floods :

India is facing the problem of floods at so many times. It is due to lack of control on the river water. This river water can be a good source of electricity and irrigation. It is controlled at proper places and the provision is made for extraction of electricity and its flow in canals.

7) Economic Development and Planning :

By raising agriculture productivity, irrigation system can play an important role in the planned development of our country. Modernized agriculture sector is the basic pillar for the development of industry, trade and transportation system required for all round development of country. Further such increased production can also raise the Government revenue.

1.5 Agricultural and Environment :

Agriculture has made rapid progress in India. The fall out of agriculture progress is viewed from different angles such as income disparity, employment savings, impact on the other sectors etc. One such impact of it is on environment. The different types of ecological changes have degradation the land, falling deforestation pest problem and residual effects of pesticides on human and animal health and various other problems have been briefly outlined under.

1.5.1 Degradation of Land :

The degradation of land in one form or the other is matter of serious concern enduring sustainability of agriculture. Landslide caused by rains and flowing water in hilly areas expose the soil to water and erosions. In India out of 328.7 million hectares wind of out of total area 143.3 million hectare area is subjected to such water and wind erosions.

The water logging due to rising water table, particularly along the rivers rendering soil unfit for cultivation, covers 8.5 million hectare land in India. Similarly increased dependence on intensive agriculture and irrigation also resulted in salinity, alkalization and water logging in the some irrigated area of the country.

Apart from these problems following are the kinds of land degradation taking place :

- a) Deficiency of soil nutrients due to intensive cultivation.
- b) Imbalance in soil nutrients, particulars the deficiency of micro-nutrients.
- c) Decline in the organic matter in the soil.
- d) Deforestation and overgrazing of pastures causing exposure of soil to water and wind erosion.
- e) Decline in the underground water due to over exhaustion of high water using crops, increase in cropping intensity and increase in cultivated area especially in northern part of the sweet water zone.

1.5.2 Deforestation :

The growing demand for food grains due to rapid growing population led to fire and clearance of land for cultivation and there by degradation of forest.

1.5.3 Pest problem :

With the shift in crop pattern increased in area under irrigation and higher cropping intensity, the pest problem has become very sever. The seriousness of pests has further increased by way of discriminated and increased use of pesticides. The predatory birds and insect population has dwindled at sharp rate causing lack of natural control of pest. The direct effect of high use of dangerous pesticides is on human health and animal. A large variety of cases of residual effect of pesticides and intake by human and animals have created health hazards.

1.5.4 Bio Diversity :

India ranks 10th in the world and 4th in Asia in terms of plant diversity. As agriculture is becoming more and more commercialized, a number of plant and animal species are becoming extinct. The crops showing high profits are covering more area while the less profitable ones area which the less profitable ones are rapidly declining, creating a number of environmental problems. The depletion of vegetative cover such as gross land and forest trees species and similarly extinction of wild animals, birds and insects in matter of concern.

1.5.5 Water Pollution :

Water pollution has been increased by the use of chemical fertilizers and pesticides in agriculture.

1.6 RESEARCH METHODOLOGY :

For this present study primary and secondary data ^{have} has been collected. The primary data has been collected from the farmers who are the members of the dam society. A detailed schedule was prepared and the data was collected from 96 members. The interviews of chairmen of Board of Directors and employees of the co-operatives dam were conducted. The researcher has also observed annual reports of the dam society. Some case study's of the farmers beneficiary were also conducted.

The secondary data was collected from the books and generals. *Journals*
The P.hd and M.Phil dissertations were also referred. The following libraries were consulted.

- 1) Kolhapur Zilha Parishad
- 2) District Statistical Office, Kolhapur
- 3) Shivaji University, Kolhapur
- 4) Vivekand College, Kolhapur

1.6.1 Objective of The study :

1. To study the impact of Sangarool co-operative irrigation Dam on Agricultural product yield etc. in the command area of karveer taluka.

2. To observe the impact of irrigation on cropping pattern and crop diversification in agricultural
3. To examine the impact of irrigation on economic condition of farmers.
4. To study the environmental impact of irrigation project on further in command area.
5. To study the role of Government in working of dam.
6. To study the problem faced by the management of irrigation Dam and farmers.

1.6.2 Study Area :

The command area of Sangarool Co-operative Dam was selected as study area. In command area of Sangrool Co-operative Dam there are 8 village of 2 talukas.

1.6.3 Selection of Sample Farmers :

All 8 villages of command area of Sangrool co-operative dam society were selected for study. 12 farmers of every village were selected for the study who were the members of the dam society. So there were 96 members selected for the study.

1.6.4 Use of statistical techniques :

The collected data was tabulated as per the need of the research. The data was analyzed with the help of simple mathematical tools, such as percentage, simple growth rate, average mean, mode medium etc.

1.7 CHAPTER OF SCHEME :

1. Introduction and Research Methodology
2. Review of Literature and Profile of Command Area
3. Working and Management of Kumbhi River Sagrool Dam Co-operative Society, Ltd. Sagrool.
4. Agricultural Diversification In Kumbhi River Dam Command Area.
5. Role of the dam in the improving in the environmental condition of the area.
6. Conclusion and Suggestion

1.8 Conclusion :

Agriculture is backbone of India nearly 60% population of the country depend on agriculture. Agriculture growth has direct impact on economic development of nation. So prosperity of farmers is also prosperity of nation, however irrigation facilities are not sufficient in India. The effects made by the Co-operative Dam are admirable.

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