

Chapter-I

Chapter – I

INTRODUCTION

- 1.1 Introduction**
- 1.2 Importance of Irrigation**
- 1.3 Sources of Irrigation**
- 1.4 Classification of Irrigation Projects**
- 1.5 Government Expenditure on Irrigation and Potential created**
- 1.6 Development of Irrigation and Government policies**
- 1.7 Private Sector Participation In Irrigation**
- 1.8 Statement of the Problem**
- 1.9 Objectives of the Study**
- 1.10 Hypothesis to be examined**
- 1.11 Research Methodology and Sample Design**
- 1.12 Chapter Scheme of the study**

Chapter - I

INTRODUCTION

1.1 Introduction

Traditionally India has been an agricultural economy since independence. The share of agriculture in the country's GDP has been declining as compared to the growth of the industrial and service sectors. Percentage share of the GDP from agriculture at factor cost at current prices has come down from 28.4 % in 1993-94 to 20.3 % in 2002-03. However agriculture is still a major source of income for about 54.2 per cent of total population. (Ministry of Agriculture 2004)

Water is a prime natural resource. It is required for satisfying one of the basic needs of humans. Thus water has become a precious national asset. Irrigation system plays a vital role in Indian agriculture and is an important factor in fuelling India's growth in agricultural production. India has a monsoon-dependent farming system, with large areas receiving inadequate rainfall. Moreover, much of this rainfall is restricted temporarily to few months while the rest of the year predominantly dries. In such circumstances, it is only with irrigation that cultivation in an annual basis is possible. Moreover, irrigation has acquired additional importance since the Green Revolution and the fourth coming second Green Revolution in India. The Gross Irrigated Area (GIA) in India was 75.14 mha. in 2000-01, out of which 40.2 percent and 43.4 percent of the total area under all crops and food grains respectively was irrigated in 2000-01. (MOA 2004).

An irrigation project confers a number of benefits, both direct and indirect to the nation. It increases farm production, creates employment and enhances income of the farmers. The greatest benefit of irrigation

however, is the sense of security engendered in the minds of the farmers and stability of agricultural business, which an irrigation system confers on the area irrigated. The most important benefit of irrigation is the removal of instability of agricultural production from the area. Irrigation stabilizes agricultural production and thereby protects farmers from the hazards of drought and flood.

Irrigation appears to be one of the most viable sources of investment as it helps in increasing agricultural output and, at the same time, in generating rural employment by allowing agricultural activities throughout the year. Irrigation enables farmers to take up multiple cropping and thereby enhances the cultivated area in the region. Therefore farmers take high yielding varieties of seeds and invest more capital in inputs like fertilizers, plant protection measures and other modern agricultural practices. Thus, yield is enhanced by both intensive cultivation and modern method of inputs application.

1.2 Importance of Irrigation

The following reasons explain the importance of irrigation in Indian context.

1. Insufficient uncertain and irregular rains:-

The period of rainfall is restricted to only four months in year, June to September, when monsoon arrives. The remaining eight months are dry. This pushes large areas of the country into drought conditions. Proper development of irrigation facilities can help the country in solving the problems created by insufficient, uncertain and irregular rains.

2. Higher productivity on irrigated land:-

Productivity on irrigated land is considerably more than the productivity on unirrigated land. For instance, B.D. Dhawan showed that the productivity on irrigated plots in 1992-93 tended to be 2.3 times that on unirrigated plots. C.H. Hanumanth Rao has argued that in India in the

late 1980s, the per hectare yields of foodgrains of irrigated land was two to six times higher than the yields on unirrigated land.

3. Multiple cropping possible:-

Since India has tropical and sub-tropical climates, it has potentialities to grow crops on a year round basis. However, multiple cropping is generally not possible. Provision of irrigation facilities can make possible the growing of two or three crops in a year in most areas of the country. This will considerably enhance agricultural production and productivity.

4. Role in new agricultural strategy and use:-

The successful implementation of the High-Yielding varieties programme (seeds) and chemical fertilizers require substantial water at regular intervals of time. Therefore, benefits of new strategy can be extended only if more irrigation facilities are made available to larger areas of land.

5. Bringing more land under cultivation:-

The total reporting area for land utilization statistics was 306.06 million hectares in 2002-03. Of this, 19.25 million hectares was barren and uncultivable land, 11.68 million hectares fallow land other than current fallows while 21.53 million hectares was current fallow lands cultivable waste land comprise another 13.49 million hectares. Cultivation on all such lands is impossible in some cases while in others it requires substantial capital investment to make land fit for cultivation even then the possibility cannot be ignored that provision of irrigation facilities can make some portion of this land cultivable.

6. Reduces instability in output levels :-

Irrigation helps in stabilizing the output and yield levels. It also plays a 'Protective' role during drought years. Since both income and employment are positively and closely related to output. Prevention of

full in output during drought is an important instrument for achieving stability of income and employment in the countryside.

7. Indirect benefits of Irrigation :-

Irrigation confers indirect benefits through increased agricultural production. Employment potential of irrigated lands increases, increased production helps in developing allied activities. Means of water transport are improved, income of government from agriculture increases, etc.

1.3 Sources of Irrigation

There are three important sources of irrigation, namely, wells, tanks and canals, which we propose to discuss below,

1. Well Irrigation :-

Wells are an important and dependable source of irrigation. These can be successfully dug in those areas where there is adequate water in the sub-soil. Wells are mostly private but the govt. also helps in their construction by providing taccavi loan. In India, there are more than 3 million wells, of which about half the numbers are in U.P. alone. This source has been utilized successfully in Punjab, Southern Bihar, Western, Bengal, Rajasthan, Gujarat, Maharashtra etc.

Well irrigated area has increased from 6 million hectares to 31 million hectares during the last 47 years—well irrigation in 1996-97 accounted for 56 per cent of the total irrigated area as compared to only 29 per cent in 1950-51.

2. Tube-wells:-

Tubewells are considered to be an important aspect of Green Revolution which provide assured irrigation. As compared to surface wells, tubewells are not only cheaper but, they also relieve our weak, where canal irrigation is likely to give rise to the evil of water logging these are best source of irrigation. In view of this, Government has become conscious of the use of tubewells in the country. Therefore, it has

started a phased programme for the construction of tubewells in U.P., Punjab, Bihar, and Gujrat, since the inception of the first five year plan in 1951. In 1960-61 only 0.1 million hectares were irrigated by tubewells, but in 1992-93, over 14 million hectares were served by tubewell irrigation. Tubewells account for 30 per cent of total irrigated area.

3. Tanks:-

Tanks form another important source of irrigation. They are found almost in all states except in Punjab, Bihar, Orissa and M.P. There are of immense use due to the geographical reasons. Moreover, in area, where wells can be dug up, it cannot be helpful for irrigation.

In 1950-51 3.6 Million hectares were irrigated by Tanks but in 1996-97 it decrease at 3.3 million hectares percentage in total irrigated area also decreases from 17 to 5.9%.

4. Canal Irrigation :-

Canal irrigation is the most important source of irrigation in the present times. It accounts for about forty per cent of the met irrigated area. In the Indo-Gangetic plains it is of fundamental importance. The net work of canals in this area is really unique. It is to be noted that canal irrigation is the development of past hundred years. It was due to the efforts made by the British Govt. that canals were constructed in the country especially in Northern India. Canals are of two types namely

1. Inundation Canals:-

These canals are those which are fed by rivers without any barrage or dam at the head. In the summer when the river goes dry, Canals also go dry, These canals are of little use in the days of drought when water is badly needed by farmers.

2. Perennial Canals:-

In these canals, water is reserved at the site of the dams which are built at higher levels. It is supplied throughout the year irrespective of the fact whether or not the rivers are in spate. These canals are most suitable as they are permanent in nature and ensure a regular supply of water. They can be dependable even in the days of droughts.

Since 1950-51, considerable importance was attached to the provision of canal irrigation. Canal - irrigated area had increased from 8.3 million hectares to 17.1 million hectares during 1950-51 and 1996-97. Even then, its relative importance has come down from 40 percent to 32 percent.

1.4 Classification of Irrigation Projects

At the initiation of Planning in India in 1950-51, irrigation schemes were divided into three categories.

1. Major Irrigation works :-

Major schemes are defined as those costing more than Rs.5 Crore and having cultivable command area (CCA) of more than 10,000 hectares.

2. Medium Irrigation works :-

Medium schemes are defined as those costing individually between Rs. 10 lakh and Rs. 5 Crore each and having culturable Command area (CCA) between 2,000 hectares and 10,000 hectares.

3. Minor Irrigation work :-

Minor schemes as those costing less than Rs. 10 lakh each and having (CCA) of less than 2,000 hectares.

1.5 Government Expenditure on Irrigation and Potential created.

Table No.1.1

Government Expenditure on Irrigation and Potential created.

Plan	Expenditure (Rs, Crore)	Potential created (Million ha.)
First Plan	376	2.50
Second Plan	380	2.13
Third Plan	576	2.24
Fourth Plan	1,242	2.60
Fifth Plan	2,516	4.02
Sixth Plan	7,369	1.09
Seventh Plan	11,107	2.22
Eighth Plan	22,4115	5.09
Ninth Plan	63,047	6.17
Tenth Plan	1,03,315	6.31

(Source Economic Survey 2002-03)

Table No 1.1 indicates that in the first five year plan a total outlay of Rs. 376 Crores was incurred on major and medium irrigation projects and created irrigation potential of 2.50 million ha. In the Tenth Five year Plan, total expenditure was Rs. 1, 03,315 Crores whereas the potential created was 6.31 million ha.

1.6 Development of Irrigation and Government policies

1. Accelerated Irrigation Benefit Programme :-

The Accelerated Irrigation Benefit Programme (AIBP) has been revamped in order to complete more irrigation projects in the quickest possible time 35 projects are likely to be completed in 2006-07 and additional irrigation potential of 900,000 hectares will be created. As against an outlay of Rs.7,121 Core in 2006-07, the outlay for 2007-08

will be increased to Rs. 11,000 Crore. Of this, the grant component to state Governments will be Rs. 3,580 crore an increase from Rs 2,350 crore.

2. Rainfed Area Development Programme

The National Rainfed Area, Development Authority was established a few months ago to co-ordinate all schemes relating to watershed development and other aspects of land use. I propose to allocate Rs.100 Crore for the new Rainfed Area Development Programme.

3. Water Resources Management : Restoring Water Bodies

In March 2005, a pilot project to repair, renovate and restore water bodies was launched in 13 states. The world Bank has signed a loan agreement with TamilNadu for Rs. 2,1,82 Crore to restore 5,763 water bodies having a command area of 400,0000 hactares. An agreement for Andhra Pradesh is expected to be concluded in March 2007 and will cover 3000 water bodies with a command area of 250,000 hectares.

4. 'Bharat Nirman' Programme :-

Irrigation is one of the six components for development of rural infrastructure under 'Bharat Nirman' aims at creation of irrigation potential of 10 million hectare in the four years from 2005-06 to 2008-09.

4. Micro Irrigation Programme :-

To enable judicious use of the water and available resources a new scheme on Micro Irrigation was launched during the Tenth Plan with a target to bring 6.2 lakh ha. under micro irrigation.

5. Command Area Development and Water Management Programme (CADWMP)

The Centrally-Sponsored Command Area Development (CAD) Programme was launched in 1974-75, with the main objectives of improving the utilization of created irrigation potential and optimising agriculture production and productivity from irrigated lands on a sustainable basis.

1.7 Private Sector Participation In Irrigation :-

The increasing demand for investment in irrigation cannot be met by the public sector from its own sources. It was, therefore, found desirable to open the irrigation sector for private sector participation so as to supplement the efforts of the state to extend irrigation facilities necessary for boosting agricultural production Table 1.2 has outlined the various forms of privatization in irrigation.

Table No.1.2
Major Players & their Roles in Privatisation

Main Group	Sub –group	Participation configuration
Private Corporate sector	Irrigation Companies	A) Build-own-operate and transfer system. B) Build-own-transfer system C) lease-own-operate system.
	Consultancy outfits	A) Engineering Consultancy B) Managerial Consultancy.
	Contracting firms	A) Main contracting B) Sub- contracting
Water users Associations		A) Turn over system B) Water bond system
NGO's	Formal Organisations	Legal/Technical Services
	Informal/ Local Organisations	Organisation Services
General Public		Contribution via Water Bond

1.8 Statement of the Problem :-

Keeping in view the significance of irrigation in agricultural development the Dhom Irrigation Project (D.I.P.) has been selected for the intensive study which is located in Wai taluka of Satara district. D.I.P. is constructed by Govt. of Maharashtra at a distance of about 8 kms. west of Wai town on River Krishna. The construction work of the dam was started in 1969 and completed in 1976. The capacity of dam to store water is 13.50 T.M.C. and the live storage is 11.593 T.M.C. This project has irrigation potential to the extent of 32,925 hectares spread over four talukas namely Wai 4909 ha.(in 29 Villages), Satara 7017 ha. (in 24 villages) Koregaon 15899 ha.(in 37 villages) and Jaoli 2200 ha. (in 11

villages). Moreover 101 villages have been covered under this project. The length of dam is 2478 meter and its height is 50 meters. The total land occupied by Project is 2400 hectares. The works of both left bank canal and right bank canal have been completed by 1986. The lengths of left Bank Canal and Right Bank canal are 113 kms. and 66 kms respectively. From 1978 the water for irrigation is being supplied to the cultivators as per their demands in the portion of completed canals.

There is also a small Power Station working under this irrigation project with 2 M.W. capacities. It has started generating power from June, 1992. However it cannot produce power continuously because of shortage of availability of water in dam. The process of supplying water to the crops by artificial means is known as irrigation. The availability of irrigation facilities is highly inadequate in India. The areas like Rajasthan and Northern Karnataka, (Sangli, Vidarbha, Marathwada regions of Maharashtra) do not get adequate rains. Hence proper development of irrigation facilities can help the country in solving the problems created by insufficient, uncertain and irregular rains with the help of irrigation, droughts and famines can be effectively controlled. It helps in increasing agriculture production and productivity by using new technique. It makes possible to adopt new strategy like HYV seeds, chemical fertilizers, etc. It helps in stabilizing the output and yield levels. It raises the income of government, employment potential, water transport security and stability in agriculture. It assists the growth of output processing and input servicing industries.

1.9 Objectives of the Study :-

1. To study the impact of Dhom Irrigation Project on agricultural economy of Wai taluka of Satara district.
2. To study the role of Dhom Irrigation Project in Economic activities in Wai taluka of Satara district.
3. To study the impact of Dhom Irrigation Project on crop diversification, land cultivation, land utilization etc.
4. To study the impact of Dhom Irrigation Project on social condition of farmers in Wai taluka of Satara district
5. To study the various problems of Dhom Irrigation Project.

1.10 Hypothesis to be examined :-

"Irrigation increases agricultural production, yield, employment, income and improves the standard of living of farmers in command area"

1.11 Research Methodology and Sample Design :-

This study is based on both secondary as well as primary data. Secondary data on some relevant variables has been collected from office record of irrigation office for the period of 1976-77 to 2006-07.

Fieldwork has been undertaken in the command area of Dhom irrigation project located in Wai taluka of Satara district. The command area of project in Wai taluka has spread over 29 villages out of which 10 villages has been be selected. Moreover, from each village 20 farmers across different categories has been selected. Thus total 200 farmers has been selected for this study. Primary data on the relevant variables relating to agricultural production, land use, cropping pattern, investment in irrigation etc. has been collected through fieldwork for the year 2007-08. For this purpose the scheduled method is used. Moreover, appropriate quantitative techniques are used to assess the impact of irrigation on agricultural production.

1.12 Chapter : Scheme of the study :-

1. Introduction
2. Review of Literature
3. Changes in Agricultural Economy of Dhom Command Area.
4. Economic Benefits of Dhom Irrigation Project
5. Social Benefits of Dhom Command Area.
6. Conclusions and Suggestions.