ABSTRACT

“A SOCIO-ECONOMIC STUDY OF IRRIGATION PROJECTS IN MAHARASHTRA STATE WITH SPECIAL REFERENCE TO MARATHWADA REGION”

Introduction

Initially the objective of irrigation was confined to supply water to crops whenever it requires. Many regions of the earth experiences uneven distribution and irregularity of rainfall. There are densely populated regions on the earth surface depend on agriculture. In such regions, provisions of irrigations are important aspects.

Increase in agriculture production and productivity depends, to a large extent, on the availability of water. Hence the importance of irrigation. However, the availability of irrigation facilities in highly inadequate in India. For example, in 1950-51, gross irrigation area as percentage of gross cropped area was only 17 percent. Despite massive investments on irrigation projects over the period of planning, Gross irrigated area as percentage of gross cropped area was only 44.6 percent in 2007-08 (87.26 million hecter is out of 195.83 million hectors).

Water is the most critical input for agriculture. Currently 63 million ha, or 45 per cent of net cropped area, is irrigated. Under the Accelerated Irrigation Benefit Programme (AIBP), 64,228 crore of central loan assistance (CLA)/grant had been released up to 31 December 2013. An irrigation potential of 8054.61 thousand ha is estimated to have been created by states from major/medium & minor irrigation projects under the AIBP till March 2012\(^1\).
Irrigation is the most important instrument for the agriculture development. The agriculture of different regions and countries in the world enjoying high productivities in different crops are found to be mainly depended on irrigation. Irrigation is an agrarian economy assumes the same importance as blood in human body. In the earlier times, when there was no pressure of population, water blowing in the rivers, supported by the rainfall was adequate to meet the needs of human life and for cultivation of the required crops. As the pressure of population increased and standard of living of human beings raised, necessity of increase water resources has been left. This led to the concept of storing water through the construction of dams and using it through a canal system in other reasons.

Large numbers of farmers are small and marginal and about 75 percent of the poor are in rural areas. Acceleration of agricultural production and productivity has become the primary objective to meet the increasing demands, both food and employment, of the population and also boost the national economy on a sustained basis. For realizing this full potential of agriculture, water is the most crucial input and efforts to harness it in the form of irrigation are being done extensively both by the central and state governments of India.\(^2\)

Irrigation is defined as the artificial application of water to soil, for the purpose of supplying water essential to plant growth. It is mean by which water is conveyed to arid areas from rivers reservoirs or wells to increase the fertility of the land. Scientific irrigation involves knowledge of the available water supply its conservation and application to the land, the characteristics and needs of the different types of the soil and requirements of various crops to be produced. It is the science of harnessing the source of water and distributing the same for agriculture.\(^3\)
Irrigation is more and more important from the point of view of the development of the whole world’s agricultural economy. The impact of irrigation is all pervading as it leads to change in cropping pattern, increased yield rates and labor utilization and ultimately it brings prosperity to the areas, hence irrigation is regarded as a catalyst for socio-economic change that sets in nation the productive forces in the agricultural sector. Therefore the massive investment was made on irrigation during the planning period.

The expenditure on irrigation rose from Rs 442 crore in the first plan to Rs.2,32,311 crore (at current prices) in the Eleventh plan in India. The state government has undertaken various major, medium and minor irrigation projects to create maximum irrigation potential. However there is wide gap between potential created and utilize in major, medium and minor projects.

**Meaning of irrigation**

Universal reference encyclopedia, defines the term irrigation as the process of providing more water for agricultural land than is naturally available.

It further expands the term as the process which enables crops to be grown in dry areas that would not naturally support agriculture such as in the Veger area of Israel. It can also increase the productivity of land that already has same natural water as in Lebanon where farming based on rainfall alone yields only three to five times the amount of seed planted, whereas irrigation gives a yield of 86:1.

The new encyclopedia Britannica defines the term irrigation as the artificial application of water to land or soil to produce plant growth.

The terms usually means, however the supplying of rather large amounts of water to grow crops in arid regions. Under extremely arid
conditions irrigation takes the place of rainfall. In regions where is rainfall is scant, irrigation may provide an alternative to dry farming’s whereas rainfall is abundant but uncertain irrigation gives protection against occasional draughts. Under all these circumstances, irrigation is a method of producing crops on a controlled scheduled of cultivation and harvest.

**Classification for irrigation works**

Finance has been the basis of classification of irrigation projects in India. In later part of nineteenth century, for the first time, attempts were made to classify irrigation works according to made of financing. They were divided into two main classes ‘productive’ and ‘minor’. Productive works were those whose construction was wholly or mainly financed from loans. Minor works were those in which the cost was charged to the general revenues. Till 1978 in India, the classification of irrigation schemes was made on the basis of expenditure incurred for their construction. At that time, the following were the definition of different irrigation project.

1. Major irrigation projects: Whose cost of construction exceeds of Rs. five crores.
3. Minor irrigation projects: Schemes with cost less than Rs. Five lakh.

But in April 1978, instead of taking cost of construction as the base, the cultivated area in being consider as the basis for the classification of irrigation projects. Since April 1978, the following are the definition of different irrigation projects.
a) Major irrigation projects: An irrigation project which covers more than 10,000 hectares as the cultivated command area.

b) Medium irrigation projects: An irrigation project which covers between 2,000 hectares to 10,000 hectares as the cultivated command area.

c) Minor irrigation projects: An irrigation project which covers less than 2,000 hectares as the cultivated command area is called the minor irrigation projects.

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Importance of irrigation

India is called as an agricultural country because more than 70% of the population is engaged directly & indirectly on agricultural activities. No doubt the agricultural sector stands as a backbone of the economic development of the country.

According to Simon Kuznets, there are three contribution of agriculture to economic growth viz. (1) Product contribution (2) Market contribution and (3) factor contributions.

According to him “it Agriculture itself grows, it makes a product contribution, if it trades with others. It renders market contribution; if it transforms resources to other sectors, these resources being productive factors it maker’s factor contribution.
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To have stable and rapid economic development of the country, the agricultural sector which is the basis of all sorts of development, must be developed, in agricultural development water in the form of soil-moisture plays a dominant role.

Importance of irrigation in Agrarian Economy

The irrigation is important for the development in agriculture. The importance of irrigation in agrarian economy is interpreted
comprehensively as irrigation may remove uncertainly of agriculture production, Increase in agricultural production, Helps for agricultural price stability, Increase in many returns on high value cash crops, Provides employment opportunities, Enable adoption of modern agricultural technology, Reduce rural poverty, Promotes rural development etc.

Like this many other benefits we can get from irrigation, directly or indirectly.

**Subject choice**

Agriculture transformation can only be achieved by using water as an input. Rainfall is a pre-dominant source of water in India, but it is unevenly distributed over a time. The planning process adopted after independence recognized the development of water resources in India. Irrigation assumes the key role in the strategies for agriculture transformation and development in Indian economy.

Maharashtra has a very low irrigation as compared to other states in India. Only 38 percent of the gross area irrigated to gross cropped area as compared with 51.41 percent for the country as a whole in 1999-2000\(^9\).

Agriculture operation in Marathwada depends upon vagaries of rainfall because of which drought and scarcity are very common. It has been assessed by the planning commission that the scarcity areas were increased to 1, 47, 262 Sq. Km. which is almost 48 per cent of the total geographical area. It included 112 talukas of which 62 wholly and 50 partially fell in the category of scarcity area\(^10\).
Objectives of the study:

Following objectives are determined for present research.
1. To study the irrigation development in India.
2. To study the irrigation development in Maharashtra state.
3. To study the irrigation development in Marathwada region.
4. To assess the socio-economic impact of irrigation projects on farmers in Marathwada region.

Hypotheses

1. There is a gap between irrigation potential created and utilization.
2. The Socio-economic condition of farmers under different irrigation projects are similar

Research Methodology

In adoption of sound research methodology is a vital part of any research study. For the present study both primary and secondary data technique has been used for the study.

Sample selection

To study the socio-economic impact of irrigation projects on farmers in Marathwada region, a field survey was conducted in three districts viz. Aurangabad, Jalna & Parbhani at randomly out of eight districts of Marathwada region. Data from primary source have been collected through field survey and interview scheduled. From the each districts 150 respondents have been interviewed from different fourteen major, medium, minor irrigation projects by the quota sampling method. Total respondents are 450.
CHAPTER SCHEME

Chapter I: Introduction, Objectives & Methodology.

In this chapter, it is discussed on irrigation projects as an introduction. The detail study has been undertaken such as meaning of irrigation, definition of irrigation, type of irrigation projects, important of irrigation projects in agrarian economy etc. Also, I have put some important objectives & Methodology in this chapter.

Chapter II: Review of Literature.

In this chapter various review of literature has been reviewed from various Books, online and off line reputed journals, government reports, Planning commission reports, irrigation commission report, Magazine, etc.

Chapter III: Irrigation Development in India.

In this chapter, it is discussed at length the development of the irrigation system in India by using the secondary information, which is helpful to provide basic analytic study of irrigation projects in India. Also the study focused on History of Irrigation Development, Irrigation Development under British, Irrigation During Medieval India, Water Resources Potential of the Country, Development of Irrigation under the Plans, Water Availability and Irrigation Demand in India, Ultimate Irrigation Potential of the Country, Water Requirement for Various Sectors, Ultimate Irrigation Potential, Potential Created and Potential Utilized, Development and Utilization of Irrigation potential-Trend Analysis, Plan wise expenditure incurred in Irrigation Sector, expenditure by the AIBP, CADA, Bhart Nirman, etc. over the plan periods in India.

Chapter IV: Irrigation Development in Maharashtra State.

Primary information about Maharashtra has been studied at a normal range. Also some important aspects has been covered in this chapter viz. History of irrigation in Maharashtra, Water Resource in
Maharashtra, availability of water resources, classification of dams/projects, status of irrigation projects, Reservoir Storage, irrigation development under different programmes such as Accelerated Irrigation Benefit Programme, Command Area Development Programmes, NABARD, Tribal Welfare Programme, Repair, Renovation and Restoration, CADWM Programmes etc.

**Chapter V: Irrigation Development in Marathwada Region.**

Marathwada region has eight districts such as Aurangabad, Jalna, Parbhani, Beed, Latur, Osmanabad, Nanaced. So, detailed study has undertaken in this chapter. Such as Irrigation development in Marathwada region, District-wise ultimate irrigation potential in Marathwada region, Irrigation potential created in Marathwada region, ‘Basin-wise Area and Availability of water in Marathwada region, District-wise Ultimate Irrigation Potential in Marathwada Region, Planning wise Irrigation Potential created and Utilized in Marathwada Region, Minor irrigation projects, Project-wise weekly water storage report, Fund received by the different sources. It is also consider Expenditure on irrigation in Marathwada region, District wise expenditure in Marathwada region, District-wise abstract of irrigation projects for constructive purpose, Ongoing irrigation projects in Marathwada region, Year-wise expenditure and created irrigation potential after installation GMIDC Aurangabad in Marathwada region, Season wise irrigation potential created in Marathwada region under the Water Resource Department, Aurangabad, Project/Season wise created irrigation potential in Marathwada region, etc.

**Chapter VI: Socio-Economic Impact of Irrigation projects.**

This chapter is pertaining to the socio-economic impact of irrigation projects. To assess the socio-economic impact of irrigation projects on farmers, a socio-economic survey was conducted of 450
farmers which were selected from different major, medium & minor irrigation projects of different districts in Marathwada region.

**Chapter VII: Conclusions & Suggestions.**

Most important findings of the present study are briefly summarized as below. All these findings are the results of analysis of both macro and micro level data pertaining to India, Maharashtra & Marathwada of the study region.

**Conclusions:**

1. For agriculture development irrigation has played a vital role in agrarian economy. During the pre-independent period, the emphasis was given to drinking water resources only as protective measures against inadequate natural rainfall, crop failure and famine. In the post independence period, emphasis changed to develop irrigation as one of the main productive inputs in agriculture. The total 2,21,321 thousand hectares ultimate irrigation potential at the country level has been estimated out of this, 1,39,893 thousand hectares ultimate irrigation potential estimated (41.80 percent) from major & medium projects & 81,428 thousand hectares (58.20 percent) from minor irrigation sources at the end of ninth five year plan.

2. Irrigation potential created at the time of Pre-independence period was 22.60 million hectares from major/ medium (9.70 million) & minor (12.90 million hectares) projects. During the plan period irrigation potential created increased from 25.04 million hectares in first five year plan to 102.77 million hectares in the tenth five year plan and 108.95 million hectares was estimated in the eleventh plan.

3. It is also observe that there is a gap between irrigation potential created and irrigation potential utilized in India. The total 1,07,238 thousand hectares irrigation potential was created from major medium
& minor irrigation projects. Out of this total 86,894 thousand hectares irrigation potential utilized from all irrigation projects in India.

4. Although plan expenditure on irrigation has increased from Rs. 441.8 crore in the First Plan to Rs. 1,00,106 crore in the X Plan, the share in total plan expenditure has decreased from 23% in the First Plan to 6% in the X Plan.

5. 287 major/medium irrigation projects have been included under AIBP out of which, 134 projects have been completed. Irrigation potential created from Major/medium projects up to March 2010 is about 62 lakh ha. So far, 12,670 Surface Water minor irrigation schemes have been included in the AIBP of which, 8,699 schemes have been reported as completed. The ultimate irrigation potential of minor irrigation schemes included in AIBP is 16.58 lakh ha of which irrigation potential of 8.578 lakh ha has been created so far.

6. There are proposals for 28 major, 32 medium and 25 ERM new projects to be taken up in twelfth plan. A requirement of Rs 3,7,672 Crores has been estimated for them during XII plan. It is to be noted that cost of as many as 79 projects are yet unapproved and their actual costs may escalate considerably at the time of actual implementation.

7. Before the formation of Maharashtra state, it is found that, position of irrigation development in the state was very slow. However, irrigation development programme got real boast since inception of the first five year plan. According to the first irrigation commission (Barve Commission) of Maharashtra (1962) overall Ultimate irrigation potential of the state was 6.10 million hectares, out of which 5.20 million hectares from surface & 0.90 hectares from ground water resources. Second water & irrigation commission Or Madharao Chitale commission (1999) of Maharashtra state has estimated the Ultimate irrigation potential of the state to be 9.7 million hectares, out
of which 4.1 million hectares to be from ground water resources and 5.6 million hectares from surface water resources.

8. The Maharashtra State has undertaken various major, medium and minor irrigation projects to tap maximum irrigation potential in the State. By the end of June, 2012, the total irrigation potential created was 49.26 lakh ha, of which, 27.19 lakh ha was from major irrigation projects, 8.67 lakh ha was from medium irrigation projects and remaining 13.40 lakh ha was from minor irrigation projects (State sector). The ultimate irrigation potential of the state is 8.11 million hectares. 6.16 million hectares from major, medium and minor irrigation projects and 1.95 million hectares from local level projects.

9. The main issue facing the state government to mobilize funds for completing the ongoing irrigation projects. As on 1-4-2009, 73 major, 136 medium, 821 minor and 21 lift irrigation schemes with a balance cost of Rs. 54,281 crores are in an incomplete state. The main reasons for this situation are: i) Spreading of budgetary resources simply over too many projects leading to many projects remaining incomplete in the past. ii) Money rose through irrigation bonds accounting to Rs. 12,100 crores were mainly invested in new projects and not on ongoing projects.

10. The actual utilization of created irrigation potential rise from 1.98 lakh ha to 29.55 lakh ha during the period 1951-52 to 2010-11. The percent utilization of available irrigation potential has declined from about 72 percent in 1951-52 to 61 percent in 2010-11. It reveals that the gap between potential created and utilized has been widening and the position of the state in this respect is very dismal.

11. Economic Survey of 2011-12 conducted in last 10 years records just 0.1 percent increase in the irrigation area but according to the white paper, during the last ten years (2001-02 to 2011-12) the Actual
irrigation area grew from 17.08 lack hectors to 29.55 lack hectors i.e. the actual increase was 12.47 lack hectors (12.47/17.08*100=73%) and also the average irrigated area increased up to 5.17 percent under the Water Resource Department

12. When Marathwada region was a part of Hyderabad province, the position of irrigation development in this region was that just about 0.25 per cent of net sown area was under irrigation. After the formation of Maharashtra state, the government of Maharashtra has given to priority to development of irrigation facility in economically backward region like Marathwada. Therefore, it became possible to increase irrigated area.

13. The ultimate irrigation has increased from 1253.941 thousand hectares to 1321.684 thousand hectares in the year 2011 to 2013. Also created irrigation has also increased from 941.912 thousand hectares to 979.838 thousand hectares in the same period in Marathwada region.

14. Physical backlog is yet to be cleared in Ratnagiri, Amaravati, Akola-Washim, and Buldhana districts in Maharashtra which has been fixed to be cleared out through backlog programme. Out of this backlog the Ratnagiri district found to be cleared it backlog by the end of June 2012 year. Amravati, Akola-Washim and Buldana are districts wherein backlog still pending so in order to clear out the Physical Backlog for the year 2010-11, 2011-12 and 2012-13 Rs. 650 crores, 500 crores and 750 crores respectively have been separately recommended.

15. Around sixty percent farmers are dependent on irrigation projects and 27.55 per cent farmers are partial dependent on irrigation projects. Remaining 12.88 percent farmers are not depended on irrigation projects. It means most of the farmers are benefited by irrigation projects through directly or indirectly.
16. It is observed that 95 percent farmers have irrigated land under the major irrigation projects and 82 percent and 79 percent irrigated land under the medium and minor irrigation projects respectively. It means major irrigation projects covers largest area to irrigate rather than medium & minor irrigation projects.

17. It is observed that the most of the farmers are satisfied due to major irrigation projects rather than medium & minor irrigation projects.

18. It is found that, there is tendency to take more commercial crops like sugarcane, orange, banana, & pomegranate in irrigation areas.

19. It is also found that, averagely more than sixty percent farmers are in better socio-economic condition.

Suggestions:

1. There are many irrigation projects which are in an incomplete state. So, government should complete these projects at priority basis rather than introducing new projects.

2. Government try to reduce the gap between irrigation potential created and irrigation potential utilize at state & national levels because there is wide gap between IPC & IPU.

3. The Plan expenditure on irrigation has increased but the share expenditure on irrigation projects is not increased, then it is suggested to the government that the share of expenditure on irrigation projects should increase in total plan expenditure.

4. To make optimal utilization of irrigation potential already created in the state field channels need to be provided to all irrigated area on a priority basis.

5. It is found that there is wide and enormous imbalance in investment allocation between minor, major/medium irrigation during last 50 years (1951-52 to 2002-03) in Maharashtra state in
all the five year plans, higher portion of public investment has gone in favor of major and medium irrigation projects in the state. Out of total outlay increased in irrigation sector during last 50 years, major & medium irrigation projects accounted for 85.60 percent. Therefore, more efforts have to be made to allocate adequate financial resources for the development of minor irrigation for the future in the Maharashtra state.

6. The government has invested huge amount of money in irrigation sector to harness the utilizable water resources but irrigation development in the state has been very tardy. It should be balance between harness of water and expenditure.

7. In low and arid region like Marathwada, the modern methods of irrigation i.e. drip, sprinklers, are most beneficial because these methods of irrigation are more efficient in adequate utilization of water. Generally, this modern irrigation method saves 30 per cent to 40 per cent water and 20 per cent to 30 per cent increase in crop yields with good quality of farm produce as compared to traditional irrigation methods. But these modern irrigation methods are not found to be so popular in irrigated farm sector. Therefore, it is suggested these modern methods of irrigation should be promoted in irrigated farm sector.

8. Government should emphasize on reducing the financial and physical backlog which was found in irrigation sector in the districts of Maharashtra state on the priority basis.

9. In agriculture sector, the infrastructure facilities like electricity to supply irrigation water to farms, road transport, communication for marketing agriculture produce, banking facility for farm activities, etc. are also useful for increasing agricultural production.
10. During the field survey it is observe that, the canals have the leakages at a wide range specially found in Jaykwadi left bank canal. It is the waste of water. Also many turn outs & field channels are broken badly specially found in medium irrigation projects. So, it should be bring out/ repaired in better position during the possible period.

11. Some farmers are complaining about the officer of the irrigation project. According to them, they don’t get water from irrigation projects for the proper season. Also, it is observed that they are unknown about the water rotation period. So, water should release at the right season period to take season wise crops.

12. There should be proper co-ordination among all the departments, institutions and corporations which are related to the irrigation development.

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