Major and Medium Irrigation Projects in Maharashtra – Special Reference to Irrigation Potential Created (IPC) and Irrigation Potential Utilized (IPU)

A. A. Landge[a], Avinash Kadam[b]
[a] Assistant Professor in Geography ASC College, Kolhar, India
[b] Assistance Professor, School of Earth Sciences, SRTMU, Nanded, India

Abstract

Maharashtra is one of the southwestern states in India. It is the third largest state in the country, having the geographical area of 30.8 M ha (307713Km²). Within that, 40 percent area is drought prone and 7 percent is flood prone. Agriculture is the foremost occupation, which provide food to the growing population in the state. Out of the total working population, 52.7 percent are depending on the rural agriculture. For agricultural development irrigation is the basic input in drought prone area.The total cultivable area in the state is 234 lakh ha. Agriculture has utilized about 81 percent water from the total available water resource for irrigation. In the last various five years plans, the government of Maharashtra has completed 32 major, 184 medium and 2727 minor and lift irrigation projects for increasing the irrigation facility. The ultimate irrigation potential hascreated (IPC) 48.24 lakh ha.But that much efficiency of irrigation projects is generally not very satisfactory. Because, the total irrigation potential utilization (IPU) is only 29.55 lakh hain 2010-11.The wide gap between the IPC and IPU holds the attention towards irrigation management and its efficiency.

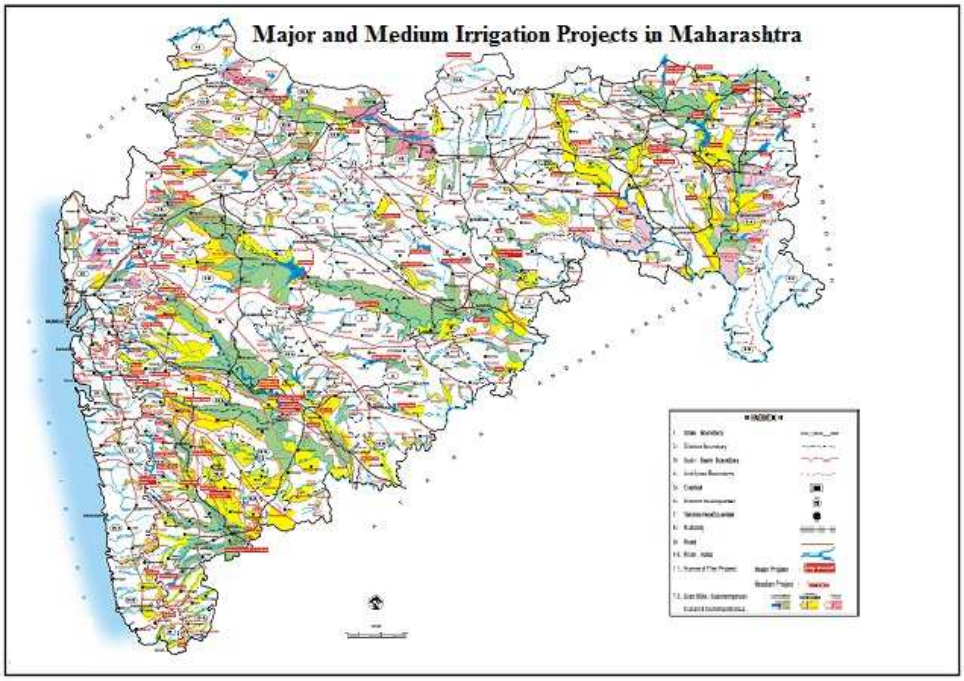
KEYWORDS: Irrigation potential created, Irrigation potentialutilized, Drought-prone, Cultivable area, irrigation efficiency, and Gross domestic product.

Introduction:

Maharashtra is one of the southwestern states in India.It is the third largest state in the country, having the geographical area of 30.8 M ha (307713Km²).Within that, 40 percent area is drought prone and 7 percent is flood- prone (FCC, 1973). The agricultural production has an important role in economic development of the state. This sector has occupied 11.3 percent share in the state gross domestic product (GSDP).In other hand about 75 per cent cultivated land depends on the vulnerable monsoon(ESM,2013-14).The water demand increases exponentially due to increase in population, urbanization, industrialization and agricultural development (Amarsingle, 2007).Agriculture is one of the main consumers of water in the state, it utilizes about 81 per cent water from the total available water resources for irrigation. The agricultural production should be attained through an exhaustive irrigation facility available in the region. For irrigation, ground water is the major source available in the state. Apart from that, canal irrigation is the second most important source for irrigation. As per the state irrigation statistics out of the total area under irrigation, only29 per cent area has been irrigated by the canal irrigation system and other 71 per cent area is irrigated by the groundwater. Comparatively, the canal irrigation is a huge economical investment whose results are not satisfactory. According to statistics reports the canal irrigation efficiency is only 30-50 per cent. To understand the problem of low efficiency and minimize the gap between irrigation potential created (IPC) and irrigation potential utilized (IPU),sustainable and modern canal irrigation system should be used in Maharashtra.

Study Area:

Maharashtra state is located in the western and central part of India. The state is surrounded by other states including Gujarat, Madhya Pradesh, Chhattisgarh, Andhra Pradesh, Goa and Arabian Sea. Geographically, it is extend within 15°40" to 22°00" north latitude and 72°30" to 80°30" east longitude. According to physiographical characteristics, it is a north central part of Indian peninsular, which is called as 'Deccan trap'. Geologically, it is covered by ancient rocks, which have undergone an extensive metamorphism. Physically, the state is divided the three divisions i.e. Coastal strip, Sahyadari and Plateau region. Maharashtra has the tropical climate. The maximum and minimum temperature varies between 27°C - 40°C and 14°C- 27°C respectively. As per drainage pattern, the state is divided in to five river basins viz. Tapi, Narmada, Godavari, Krishna and the west flowing rivers mainly of Konkan. Out of these, 92 percent of the cultivable land and about 60 percent of the population comprise only four river basinsi.e Godavari, Krishna, Narmada and Tapi. About 49 per cent of area of these four river basins consists of 43 percent of the population, which has been already considered as highly water scarcity area. According to the site and situation many irrigation projects are spread in the state. The below map indicates the distribution of major and medium irrigation projects in the state. It is observed that, the western Maharashtra has more concentration of irrigation projects.



Source: Irrigation Department, Maharashtra State

Objective

1. Study of irrigation potential created and utilized by the major and medium irrigation projects.
2. Estimate the gap between irrigation potential created and utilized.
3. List the causes of the gap between IPC and IPU and provide suggestions to minimize the gap.

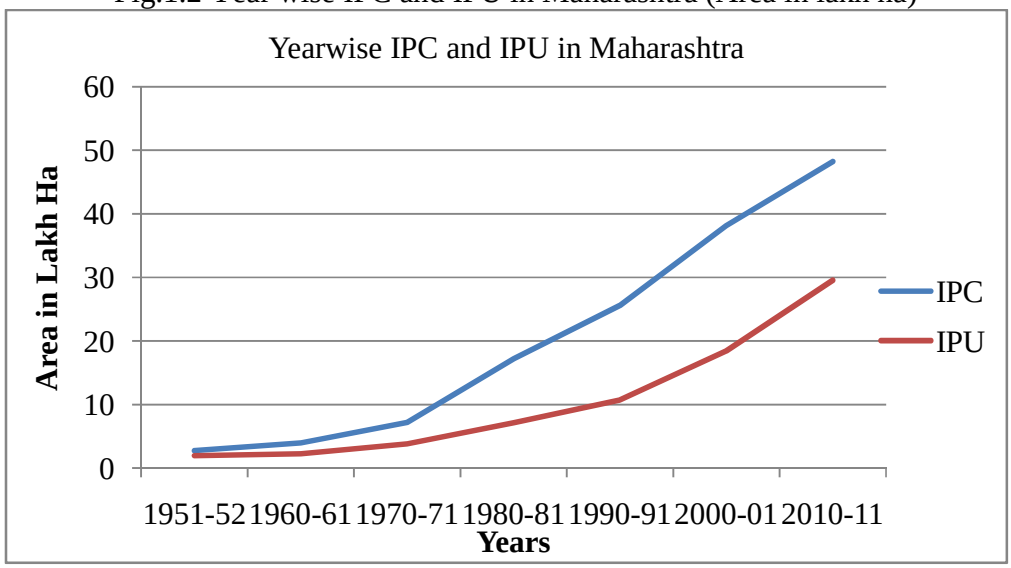
Data Collection and methodology

The present research paper is based on the secondary source of data. The secondary data related to irrigation, map of major and medium irrigation projects in Maharashtra is obtained from the various reports published by the water resource department, government of Maharashtra. The data related to area, cultivated land, population and geographical profile of the state is obtained from the yearly economic survey reports, census handbook of 2011, agricultural census, NIDM reports. Statistical tools like percentage, average is used for calculating an irrigation potential created and utilized. Some formulas are used for calculating the gross irrigated area, net irrigated area, cultivated area and net shown area. The data is summarized, processed and represented with the graphical form.

Discussion

The annual rainfall is varies from 400 to 6000 mm and the average rainfall is around 1300 mm. The availability of surface water is 163.82 BCM annually. About 88 percent rainfall occurs during June to September and the remaining between October to December .The distribution of rainfall is erratic, inadequate and uncertain. It has important bearing on the water resource planning of the state. The total cultivable area in the state is 234 lakh ha. About 81 percent water from the total available water resource is used by agriculture for irrigation propose. With the help of various sources the state government is successful in creating 48.24 lakh ha irrigation potential up to year 2010-11.In other hand, the total irrigation potential utilization is only 29.55 lakh ha (Gitte, 2013). Figure No.1.2 shows that progress of irrigation potential created by the major and medium and other sources in the state while irrigation potential utilization was so far from IPC. The government of Maharashtra is concerned about the full utilization and efficient use of available water resource but the gap between IPC and IPU has been widening.

Fig.1.2 Year wise IPC and IPU in Maharashtra (Area in lakh ha)



Source: Economic Survey of Maharashtra, 2013-14

During the five years plans, Government of Maharashtra has completed 32 major, 184 medium and 2727 minor and lift irrigation projects (Chivate, 2010).The state is one of the

leading dam builder state in the country. About 35 per cent (4 lakh ha) of the net irrigated area is irrigated by the canal which is over 3000 km long in the state. But that much efficiency of irrigation projects is generally not very satisfactory (Purandare, 2013). The current development of irrigation potential is only 17.9 per cent which is far below the national average of about 45 per cent (Economic Survey of Maharashtra, 2012). The efficiency of canal irrigation in Maharashtra state is not satisfactory. In spite of various increase in irrigation potential created, the irrigation potential utilization is low. Growing urbanization, industrialization and population growth are the main reasons for water dispute in Maharashtra. We have faced the water dispute between an agriculture and industrialization and urban verses rural (Purandare, 2014).

There are some causes observed by the researcher, forthe variation between an expected irrigated area and the actual irrigated area. These includes, Seepage water loss in convey system and evaporation losses((Battikhi, 1994)), water theft, low water charge, poor maintenance of lined and unlined canal, unequal distribution of water at head, middle and tell region of canal(Ramesh, 2009), corruption(Wade, 1982) by field officers, siltation, weed growing and some social factors also affect the efficiency of canal irrigation.

To minimize the gap between IPC and IPU, modern techniques should be used for water irrigation. Farmers should change the tendency regarding the use of water and they should be make familiar with the modern irrigation techniques. Many developed and developing countries have been using pipeline canal irrigation system. Therefore, to avoid the seepage, evaporation loss and low maintenance the modern techniques like pipeline canal irrigation system should be adopted.

Conclusion:

Maharashtra is not the water deficit state, but due to certain factors some parts of the state have the scarcity of water. Consciously, to avoid the above said crisis in future, we have to manage the available water resources and increase the efficiency of water delivery systems. The provision of irrigation is possible only through the sustainable water development in an existing irrigation canal system. Therefore, improving regulatory system, use of available modern technology like gravitational pipeline canal will increase the water efficiency in the domestic use, industrial use and agricultural irrigation. Hence, the gap between IPC and IPU will be minimizing up to some extent. After all,to create consciousness and orientation in all water user sectors is a major task for avoiding crisis and optimum use of available water.

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