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Irrigation Development In India- A Historical View

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Abstract

The usefulness of water resources can be divided into two categories, viz consumptive and non-consumptive. Water is mostly used in consumptive purposes. It is more or less unaffected through its non-consumptive usage, e.g., generation of hydropower, navigation, fisheries, recreation etc. The consumptive uses of water in an economy can be grouped chiefly under the sectors of agriculture, industry and household. Within the agricultural sector, it is used mainly for the crop production activity. Water must be available in appropriate quantities and at the right time for the growth of plants, depending on the species of plant and climatic conditions. It is well known that agriculture is a gamble in most part of India due to the uncertainty of rains, which even in normal times are inadequate. Hence, irrigation is the most useful input to stabilize and augment and supply of agricultural production and increase the rural employment and supply of agricultural raw materials to the industries.

Keywords: Increased Agricultural Productivity, Rural Economic Growth, Infrastructure Development etc.,

Introduction

Several famines occurred in India during the last 150 years, especially in 1838, 1869, 1877, 1899 and 1943. Among them, the great Madras famine of 1877 and the Bengal famine of 1943 were the worst. Famine occurs due to various reasons, i.e., some are man-made while others caused by natural calamities. Man-Made famine happens due to war and civil disturbances. Famine due to natural calamity occurs mainly due to drought, floods, earthquakes etc. In a tropical and sub- tropical country like India, Famines occurred mainly due to drought conditions, though sometimes disasters like earthquakes and floods aggravated the situation. It has been recognized that the best insurance against famine in India is optimum utilization of water supplies in agricultural sector. The strategy suggested for controlling droughts in the country was to provide as much irrigation facilities as possible. The overall food production in the country can be continuously augmented by providing new irrigation facilities and extending and improving the old facilities.[1]

Development of Irrigation in India

Irrigation was developed in the Indus Valley Civilization by around 4500 BCE. The size and prosperity of the Indus civilization grew as a result of this innovation, which eventually led to more planned settlements making use of drainage and sewers. Sophisticated irrigation and water storage systems were developed by the Indus Valley Civilization, including artificial reservoirs at Girnar dated to 3000 BCE, and an early canal irrigation system from circa 2600 BCE.[2]

Irrigation is defined as the artificial application of water to soil for the purpose of supplying water essential to plant growth. It is a means 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, characteristics and needs of the different types of soil and the requirements of the various crops to be produced. It is the Science of harnessing the source of water and distributing the same for the agriculture. [3]

Irrigation has been considered an important weapon to control droughts, since ancient period. There are considerable evidences to show that in ancient India irrigation was practiced extensively. The fact that big cities like Harappa and Mohan-jo-daro had flourished in the dry areas indicated the existence of extensive irrigation facilities in the ancient period.

In the Vedas, rituals were prescribed for the inaugural ceremonies of channels. It is stated in Kaushika Sutra, 'a gold plate was laid at the mouth of the channel on which frog tied with blue and red threads was made to sit. The frog then covered with moss and water was let into the channel'.

Kautilya's Arthashastra, stated that the king should construct reservoirs for providing a perennial water supply and added that for those private individuals who constructed them of their own accord, the king should provide sites, roads, timbers etc.. without any charge until the private owners realized profits with twice the initial expenditure incurred. During times of famine, the king and his subjects took shelter near dams, aquatic life in rivers, canals and dams was protected and fishing was allowed under a license. If privately managed dams were neglected for five years their charge was taken over by the states. If they are constructed by public contribution by public contribution, revenue for five years was remitted.[4]

In 300 B.C., Megasthenes, the famous Greek ambassador to the court of Emperor Chandragupta, recorded the district officers to 'measure the eland and inspect the sluices by which water is distributed into branch canal (water canal), so that everyone may enjoy his fair share of the benefit'.

Ruins of most of these ancient works were found in the Grand Anicut, which was built by the Chola rulers in the first century on the river Cauvery. Gangaikonda tank in the Tamilnadu was built by the then King Rajendra Chola. The Anantarajasagar tank was built in 14th century in Cuddapah district with water spread of about 42sq kms.

During the Mughal period, Ferozshah Tughlaq (1351-1388) built the Western Yamuna canal in 1355 A.D. to carry the Yamuna water to his hunting ground at Safidom in Hissar district. Later, Akbar renovated the canal in 1568 for irrigating lands in the Hissar district of Haryana. Development of irrigation facilities in India had been more or less continuous process.[5]

Development of Irrigation in India under the British Rule

During the 19th century, three predominant sources of irrigation had been developed, viz., wells, canals and tanks. Wells were spread all over India owned by private people; tanks were concentrated mostly in South India, while canals were predominant in North India. Irrigation works formed an important element in colonial India, particularly in the 19th century. The objective was to ensure stable revenues from the agrarian sector. In the first half of the 19th century, massive irrigation dams and their repairing works were started on the recommendations of Sir Arthur Cotton in the Madras Presidency. Main purpose of the irrigation development was to increase revenue collection and it was strongly recommended by Public Works Department Commission of 1870. In the second half of the 19th century, irrigation with the help of tanks was neglected by the colonial government in favour of river based canal irrigation. But attempts were made by the Government of Madras to revive the ***Kudimaramat*** for collection of more revenues through tank irrigation. It is observed in the 19th century that the irrigation works undertaken by the government of the Madras Presidency were on the size of the capital invested, the responses of the ryots in the command area and on the efficiency of administrative machinery of the local government concerned. Sir Arthur cotton designed the Cauvery delta and the Godavari Anicut and its canal system. He suggested an Anicut across the river Krishna and a canal system and its construction began in 1852 by Captain Orr and were completed in 1853. Most of them resulted

in the increased production and enhanced productivity in their command areas leading to their prosperity and fast economic development. There was a large irrigation development during 1860-1900 in the British period. It was confined to the southern region particularly the state of Andhra Pradesh. It is found that irrigation policy of the colonial administration, which led to skewed development.[6]

Important irrigation works were undertaken in Northern India in the latter half of the 19th century. These were the Sirhind canal, the lower Sohang anad Para canals, the Chenab canal in Punjab and the lower Ganaga canal, the Agra canal, the Betwa canal in U.P and the Periyar system of canals in Tamil Nadu. Between 1836 and 1866, many new major canal systems were built. The upper Ganga and the the Bari Doab on the river Ravi in North India and the Krishna and the Godavari and the Pennar Anicuts in South India were taken up.

Subsequently, the development of many irrigation projects could be financed mainly through public loans. The irrigation works were confined mainly to the public canal systems and carried out in the areas where the prospects of financial returns were secure. Major irrigation works were undertaken in the Indus basin in the United Provinces around Agra and in the Periyar basin in the South. After the report of the Famine Commission of 1880, the Government of India advanced the taccavi loans towards the construction of wells. Laws such as the Land Improvement Act of 1881 and Agriculturists Loan Act of 1884 were passed to facilitate agricultural development of which minor irrigation was a part. But the development of irrigation lagged far behind that of the railways.[7]

The First Irrigation Commission was appointed in 1901 to bring out the role of irrigation as a means of protection against famines in India. The important public works recommended by the First irrigation Commission were Chankpur storage on the river Girna, Maladevi storage reservoir as possible to provide irrigation to scarcity tracts, improvement of Kurnool-Cudappah canal, storage works on the rivers Cauvery and Krishna, investigation of Tungabhadra project, diersion of Sarada waters into the Ganga, investigation of storage and diversion schemes on the rivers Sabarmati, Mhai and Narmada (Government of India, 1972). Most of them were taken up subsequently. On the whole the irrigation development in India during the first half of the 20th century was very slow.

There are some major features of the growth of irrigation during the colonial period. Emphasis was given on creating large scale canal irrigation works, which were reckoned to be productive. Productive works suffered relatively in spite of farmers need and despite strong recommendation by the First Irrigation Commission (1901) and the Royal Commission of Agriculture of 1928. Private works comprising largely minor and small scale irrigation were continuously neglected. Maintenance was neglected resulting in a number of negative externalities, e.g., waterlogging and salinity developed in irrigated areas.[8]

Regional disparities in terms of irrigation investment were largely the ryotwari areas of the Madras Presidency or colonized areas of the Indus Valley, where financial returns were relatively high and assured. Areas where irrigation was critically needed but returns were low did not attract any investment. With the introduction of the major irrigation works like the canals, the new administrative hierarchical structure for irrigation management was constituted. As a result, the growth in the agricultural production in India was almost insignificant between 1900 and 1947.

Development of Irrigation during Post Independence Period

The Planning Commission recognized the importance of the development of irrigation to increase agricultural production and assigned priority to it in various plans (Government of India, 1972). These included the giant schemes of the Bhakra-Nangal, the Damodar valley and the Hirakud Project on the river Mahanadi. The development of irrigation in India after Independence can be assessed mainly on the basis of various criteria, viz., area, source, potential and utilization and its investments. The proportion of the gross irrigated area to the gross cropped area increased significantly during 1959-51 to 1996-97. Source- wise irrigation shows the convenience and economic viability of different sources of irrigation. The intensity of irrigation can be assessed through the potential and utilization of irrigated lands. Total investment for construction of large, medium and small irrigation projects shows the government was interested in the

development of irrigation, but did not case much about its negative effects in during the waterlogging and salinity.[9]

During the last five decades, there has been a large scale development of irrigation network in India. In 1950-51, 131,900 thousand hectares of land out of the total geographical area of 328,726 thousand hectares was under different crops. The use of total cropped area had increased from 131,900 thousands hectares in 1950-51 to 189543 thousand hectares in 1996-97. Gross irrigated area was increased from 17.13 per cent in 1950-51 to 38.663 per cent in 1996-97. Similarly, the proportion of the net irrigated area to net cropped area was increased from 17.59 per cent in 1950-51 to 38.61 per cent in 1996-97. This shows that major efforts are undertaken to increase the net irrigated through various fiveyear plans.[10]

Conclusion

Irrigation can significantly boost agricultural productivity by providing a consistent water supply, enabling multiple cropping seasons and allowing the cultivation of high – yield and water- intensive crops. The Indian Government has prioritized irrigation development and water conservation, recognizing its importance for economic growth and food security. Various schemes and programs are in place to improve irrigation infrastructure, promote water-efficient technologies and encourage sustainable water management practices.

End Notes:

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