

Relevance of DVC in India

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ARTICLE DETAILS

Article History

Published Online: 17 August 2020

Keywords

Socio-Economic development, Irrigation, Damodar Valley, Navigation.

ABSTRACT

To promote food production, significant development of a vast irrigation network in India has been recognized as a landmark in the history of agricultural development. India is one of the developing countries, who attach maximum importance to the development of irrigation in recent years. The river Damodar known for frequent flood which resulted in enormous loss of life and destruction of property.

The Damodar runs through some of the most mineral-rich regions of India. The basin provides the country with valuable minerals, such as coal and iron ore. There is considerable agriculture in this region and rice and potatoes being the major crops of this region. The basin is also one of the dirtiest parts of the country. The levels of dust and smoke in this region are Living conditions of the people appear to be very poor, the population has been growing in this region. Jobs in the region may not be well paying and the working conditions may be wanting. In view of the economic activity, job availability is better in the Damodar Valley. Hence Damodar Valley Project plays important role in socio-economic development of this region.

1. Introduction

To promote food production, massive development of a vast irrigation network in India has been recognized as a landmark in the history of agricultural development anywhere in the world. India is one of the developing countries, who attach maximum importance to the development of irrigation in recent years with ambitious plans to create a gross irrigational potential of 113 million hectares by the end of twentieth century.

The river Damodar was known for frequent floods which resulted in enormous loss of life and destruction of property. The river runs 541 km from the origins in the Khamerpet Hills, in the eastern part of India, to meet the river Hugli. The basin area is 17,506 sq. km. In comparison, the River Ganges (or the Ganga as it is called in India), of which the Damodar is a tributary, is over 5,000 km long and has a basin area about 30 times as much as the Damodar.

The Damodar runs through some of the most mineral-rich regions of India. The basin provides the country with valuable minerals, such as coal and iron ore. There is considerable agriculture in this region and rice and potatoes being the major crops of this region. The basin is also one of the dirtiest parts of the country. The levels of dust and smoke in this region are unimaginably high. The chimneys of the hundreds of industrial units vie with the domestic coal-fired *chulas* (crude stoves often used for cooking in Indian homes) to make the air dense with smoke and soot and create pollution to that area. The many coal washeries empty thick black effluents into the river at different points. The River Damodar is entirely rain fed. About 80% of the annual discharge occurs during the four monsoon months from June to September. So, called the river of sorrow. The scheme essentially involved construction of dams along the length of the river, so that the flow could be better harnessed for agriculture and industry. It results in economic development of the region.

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2. Irrigation & Its Importance

Irrigation is the method in which water is supplied to plants at regular intervals for purpose of agriculture. It is used to assist in the growing of agricultural crops, maintenance of landscapes, and revegetation of disturbed soils in dry areas and during periods of inadequate rainfall. Apart from this, irrigation also has a few other uses in crop production. In contrast, agriculture that relies only on direct rainfall is referred to as rain-fed or dry land farming.

Irrigation systems also have some other uses like, dust suppression, disposal of sewage, and in mining. Irrigation is often studied together with drainage, which is the natural or artificial removal of surface and sub-surface water from a given area.

Increase in agricultural production and productivity depends, to a large extent, on the availability of water (main resource for crop production). Hence the importance of irrigation is, however, the availability of irrigation facilities which is highly inadequate in India. For example, in 1950- 51, gross irrigated area as percentage of gross cropped area was only 17%. Even now 60% of gross cropped area depends on rain. For this reason, Indian agriculture is called a gamble in the monsoon. It, increases crop yield. With the help of irrigation, droughts and famines can be effectively monitored and controlled. Since India has a tropical and sub-tropical climate, it has potentialities to grow crops on a year-round basis. However, since 80% of the annual rainfall is received in less than four months, multiple cropping is 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 enhance agriculture production and productivity. It protects from famine. It helps to cultivate superior crops with the water supply.

Ultimately it helps in economic development. Irrigation water improves water conditions in the soil, increases water content of plant fibers, dissolves nutrients & makes them available to plants. Irrigation affects temperature conditions also. In fruit & berry crops that receive optimum quantities of moisture, the sugar content of the fruit increases & in oil crops the fat content in the seeds is greater.

3. Different Types of Irrigation System in India

Irrigation systems are designed to maximize efficiencies & minimize labor & capital requirements. There are three broad classes of irrigation system:

- Pressurized distribution.
- Gravity flow distribution.
- Drainage flow distribution.

Pressurized distribution: The pressurized systems include sprinkler, trickle, in which water is conveyed to & distributed over the fields.

Gravity flow distribution: This system conveys & distributes water at the field level by a free surface, overland flow regime.

Drainage flow distribution: Irrigation by control of the drainage system sub irrigation is not so common but is interesting. Relatively large volumes of applied irrigation water percolate through the root zone & become a drainage or ground water flow. To supply water, the entire field uniformly so that each plant would get sufficient amount of water, there are various types of irrigation techniques that differ in how the water obtained from the source is distributed within the field. These are:

Surface Irrigation: In this irrigation system water moves over & across the land by simple gravity flow in order to wet it & to infiltrate into the soil. Surface irrigation can be subdivided into furrow, border strip or basin irrigation. It is often called flood irrigation.

Ditch Irrigation: This is the simplest & oldest irrigation system & it is still common in many parts of the world. The only technology essential is the manpower or machines to dig ditches or furrows between the rows of plants.

Localized Irrigation: It is a system where water is distributed under low pressure through a piped network, in a pre-determined pattern, & applied as a small discharge.

Drip Irrigation: This is also known as trickle irrigation. Water is delivered at or near the root zone of plants; drop by drop. This method can be the most water efficient method of irrigation.

Overhead Irrigation: This is the artificial application of water to crops from above. Central pivot systems which are in wide use in areas of flat terrain, have sprinklers spaced along very long aluminum or steel pipes that extend in two directions from a central supply point.

- a) **Sub-Irrigation:** This is also called as seepage irrigation used for many years in the fields where water table is high. This method artificially raises the water table by allowing the soil to be moistened from below the plants' rootzone.
- b) **Manual Irrigation:** This system has low requirements for infrastructure & technical equipment but needs high labor inputs by using buckets or watering cans.

According to the different sources of irrigation there are two major divisions found. These are:

1. **Flow Irrigation:** The water of a reservoir or tank usually remains at a higher level & when a channel is connected to it, water automatically flows down the channel.
2. **Lift Irrigation:** Where the fields lie at a higher level & the canals or tanks lie at a lower level; it becomes essential to lift the water by pump etc. to irrigate land. Water is lifted from tanks, wells & tube wells by pumps for irrigation through channels.

4. Role of Damodar Valley Project in Economic Development of this Region

Damodar valley project is a big landmark in the economic development of this region. Several benefits are given below:

- 1) Floods are controlled in the flood prone areas of Jharkhand and WestBengal.
- 2) Irrigation facilities are provided to about 5.15 lakh hectares of land.
- 3) Installed capacity of 2, 60,000 KW of hydroelectricity at various dam sites.
- 4) Soil erosion can be controlled through regulated flow of water.
- 5) Additional land reclamation for agriculture.
- 6) Navigation in Damodar River, its tributaries and channels.
- 7) Proper drainage system Promotion of public health through control on malaria and other diseases as a result of proper drainage of water.
- 8) Encouragement to fishing in the reservoirs and other water bodies.
- 9) Helps to promote tourism in this region.
- 10) Project has provided a broad industrial base to the area.

5. Conclusion

It is true that Damodar Valley Project plays important role in the economic development of the region and irrigation system plays important role in this aspect. Proper irrigation system helps to promote agriculture which in turn develops economic growth of the region.

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