

EQUITABLE WATER DISTRIBUTION IN CANAL SYSTEM : A TODAY'S NEED

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ABSTRACT: This paper will outline the current global water situation and discuss the current contentious views on preservation, responsible management and equitable distribution. The natural resources of any region are considered of vital importance for the economic development. Hence, it is necessary to explore the potential in term of economic and social aspects. Land is the basic resource of human society. Its utilization shows a common relationship between ecological conditions of a region and man. The varied nature, namely, climate, soil, transportation, occupational structure, population, vegetation, water etc. have provided scope for further development. It is therefore, necessary to evaluate a spatio-temporal analysis of agricultural land use and productivity. We know that water is very scarce and important resource so proper planning is needed to distribute water equitably to everyone.

KEYWORDS: Equitable water distribution, Economic development, Water saving, management of water. UIP (Ultimate Irrigation Potential), Assessment of Irrigation,

INTRODUCTION:

Water is a prime natural resource, a basic human need and a precious national asset. Planning, development and management of water resources need to be governed by national perspectives. Water is part of a larger ecological system. The importance and scarcity attached to the fresh water, it has to be treated as an essential environment for sustaining all life forms. India is a large country with a proven potential to utilize its all resources for multigonal and steady development of mankind. For existence of life water is an at most essential commodity for us. Indian agriculture was solely dependent on annual tropical monsoon rain fall to occur. In past man performed storage of water for drinking and for crops in many forms, irrigation was his invention in crop yield. Use of irrigation with reference to soil drainage nature, type and nature of soil, climate variation and availability of surface and subsurface water quantity has helped farmers to raise their yields and also their living standards. Thus irrigation is an inevitable. As a part of Indian economy. Irrigation covers two types as canal and lift, both of them have a specific role to play for assured water distribution and utilization.

THE IMPORTANCE OF IRRIGATION IN THE INDIAN ECONOMY:

Till the 1990s, Finance Ministers used to say that 'Every budget is a gamble on the monsoon'. For the more than 70 per cent of the Indian population, living in rural India and dependent on agriculture directly or indirectly, the monsoon controlled their purchasing power year after year. Even now, when agriculture contributes less than 20 percent to the national economy, more than 600 million people are dependent on agriculture for their livelihood. Therefore, irrigation infrastructure, which has the potential to insure the farmer against the vagaries of the monsoon and increase his income from a small (and diminishing) landholding, is the most critical infrastructure for rural India.

In terms of food security in India, the 35 per cent irrigated area provides more than 60 per cent of the food production.

UNEQUAL DISTRIBUTION OF WATER BY NATURE:

As per the latest assessment (1993), out of the total precipitation, including snowfall, of around 4000 billion cubic meter in the country, the availability from surface water and replenishable ground water is put at 1869 billion cubic meters. Because of topographical and other constraints, about 60% of this i.e. 690 billion cubic meter from surface water and 432 billion cubic meter from ground water, can be put to beneficial use. Availability of water is highly uneven in both space and time. Water, as a resource is one and indivisible: rainfall, river waters, surface ponds and lakes and ground water are all part of one system. The distribution of water on the Earth's surface is extremely uneven. Only 3% of water on the surface is fresh; the remaining 97% resides in the ocean. Of freshwater, 69% resides in glaciers, 30% underground, and less than 1% is located in lakes, rivers and swamps. Looked at another way, only one percent of the water on the Earth's surface is usable by humans, and 99% of the usable quantity is situated underground.

STATUS OF IRRIGATION IN INDIA:

In India, the irrigated area is 34 per cent of the net area sown. The **gross irrigated area is 80 million ha** which gets India the prize for the largest amount of irrigated agriculture in the world. The so termed 'minor' irrigation is now the major source as groundwater provides 50 per cent of the gross area under irrigation area, groundwater provides 60 per cent of the net irrigated area.

Irrigated Area in India:

	Utilization(in million ha)	Capacity(in mha)	Ultimate irrigation potential (in mha)
Major & Medium	28.02	32.69	58.50
Minor			
Groundwater	42.50	45.73	64.05
Surface	10.12	10.89	17.38
Minor Total	52.62	52.62	-
Total	80.54	89.31	139.00

The Ultimate Irrigation Potential (UIP) is an estimate prepared by the Ministry of Water Resources of the overall potential for irrigation). The above table shows the distribution of the irrigated area in India.

The major issues concerning minor irrigation are:

1. Lack of attention by the Irrigation institutions. 2. Siltation and non-availability of power. 3. Though technically they belong to the panchayat, they are neither managed by them nor are the funds routed through them. Hence, the community ownership of many of these panchayat is very low. 4. Traditional institutions—Community Based Organizations (CBO)—which used to manage these tanks, do not exist now and new institutions at the village level to address the changing needs of the villagers have not yet evolved.

WATER POWER ACT 2005:

To provide for the establishment of the Maharashtra Water Resources Regulatory Authority to regulate water resources within the State of Maharashtra, facilitate and ensure judicious, equitable and sustainable management, allocation and utilization of water resources, fix the rates for use of water for agriculture, industrial, drinking and other purposes, and matters connected therewith or incidental there. Whereas it is expedient to make a law to provide for the establishment of the Maharashtra Water Resources Regularity Authority to regulate water resources within the State of Maharashtra, facilitate and ensure judicious, equitable and sustainable management, allocation and utilization of water resources, fix the rates for use of water for agriculture, industrial, drinking and other purposes, and matters connected therewith or incidental thereto, for the purposes aforesaid; it is hereby enacted in the Fifty-sixth Year of Republic of India.

WHY EQUITABLE DISTRIBUTION?**WATER DIVERSITY:**

The climate of the Maharashtra State is tropical. The Western Ghats hill ranges run north to south separating the coastal districts of Thane, Mumbai, Raigarh, Ratnagiri and Sindhudurg from rest of the State. The coastal areas receive very high monsoon rains while to the east of the Ghats rainfall drops drastically within short distance from the Ghats. Towards further east, the rainfall once again gradually increases. The State experiences four seasons during a year. March to May is the summer season followed by rainy season from June to September. The post monsoon season is October and November. December to February is the Maharashtra has got variable climate from continental to typical maritime depending upon the location and physiography. The coastal districts of Konkan experience heavy rains but mild winter. The weather, however, is mostly humid throughout the year.

EQUITABLE DISTRIBUTION ACT 2005:

This is act which tells us equal water distribution among farmers. This is started after 2005. To regulate water resources within the State of Maharashtra, facilitate and ensure judicious, equitable and sustainable management, allocation and utilization of water resources, fix the rates for use of water for agriculture, industrial, drinking and other purposes, and matters connected therewith or incidental thereto. This Act may be called the Maharashtra Water Resources Regulatory Authority Act, 2005. It extends to the whole of the State of Maharashtra. It shall come into force on such date as the state Government may, by notification in Official Gazette, appoint, and different dates may be appointed for different areas and for different sections of this Act. Words and expressions used are not defined in this Act but defined in various irrigation or water resources related Acts. State shall have the meanings respectively assigned to them in those Acts. Water User's Association" means a Water User's Association formed at the minor level or above, which represents the users of irrigation water from that segment of any project, canal or natural flow storage system.

Advantages of equal distribution:

1. Avoid discrimination. 2. Water is available upto tail end. 3. We achieve sustainable development. 4. More land is cultivated and production is more. 5. We can avoid water losses.

WATER ALLOCATION, MANAGEMENT AND ASSESSMENT:

Each unit of culturable command area (C.C.A) is allocated a certain rate of flow termed as water allowance. Distributaries and water courses are designed on the basis of this water allowance. The value of this water allowance at water course head is generally 2.5 to 3 cusecs per 1000 acres of C.C.A

The distribution of water up to outlet is managed by Govt. agency. The distributaries are always run full in **8 days periods**. The distribution of water coming out of an outlet (called mogha) is managed by cultivators. The distribution of this water is done

on a 7 days rotation basis with the help of an approved roster which divides 160 hours. (i.e.7 days) in the ratio of the holdings. The outlets have no gates and it is illegal to keep any of them closed, when the parent distributary is running. The distributary is to run for 8 days. i.e. one day more for the filling of distributary so that all water courses can get water at least for 7 full days.

Along water course the water distribution proceeds from head to tail. Each cultivator is entitled to receive the entire water course only on a specific day in a week and at a specified time. For sustainable development of a society one of the most important is equal distribution of water. To make equal distribution of water first of all we have to check the availability of water in reservoir then we have to find balance water. Balance water is nothing but the total water available for irrigation purpose only. The balance water is calculated by deducting the total losses like evaporation losses, percolation losses, transmission losses and water requirement for industrial and drinking purposes.

Equal distribution of water is done from tail to head. For this purpose we have to know total irrigable land available as well as the crop pattern.

CONCLUSION:

Equitable distribution of water is one of the most crucial elements in developmental planning in irrigation conveyance system. Farmers located in the tail end part of command area are deprived of their share of water when compared with farmers closer to canal water. The benefits of irrigation are replaced by the category of farmers closer to the water at various levels of the system. They have better accessibility compare to farmers in distant location. This unequal distribution of water is found among the systems that are managed in principle & in practice by the state department irrespective of their size of operation. For equitable distribution of water in the command area of the project, every land holder in the command area shall be given quota. The quota shall be fixed on the basis of the land in the command area: Provided that, during the water scarcity period each landholder shall, as far as possible, be given quota adequate to irrigate at least one acre of land. In India many people are based on the agriculture which requires water. But there is unequal rainfall in the India & climatic variability across the command which has impact on inequitable usage of irrigation water from head to tail, so we have to manage the available water in such a way that everyone should get sufficient water for the irrigation, hence it is necessary to do equitable water distribution. We can achieve this by proper canal co-ordination. Canal irrigation is one of the best way to distribute water equally hence the people who are at the tail of should also get the same water as the people at head of the system gets. Most of the canals provide perennial irrigation and supply water as and when needed. This saves the crops from drought conditions and helps in increasing the farm production. Some of the canals are parts of multipurpose projects and, therefore, provide cheap source of irrigation. Although the initial cost involved in canal irrigation is much higher, it is quite cheap in the long run. Most of the canals provide perennial irrigation and save the crops from drought conditions.

There must be scheduling or time table for distribution. All farmers get their precise share of water as long as the pumps are running. Irrigation system performance in the country need to be assessed from strategic point of view & corrective measures are need accordingly for sustainability of the irrigated agriculture. By equitable water distribution more land is cultivated which results in increasing productivity of land which in turn leads to sustainable development. By checking the availability of water in the canal by considering all the losses and other consideration like Industrial purpose, drinking purposes etc. So water should be made available to each farm according to their farm and there requirement.