

USE OF WATER RESOURCES FOR AGRICULTURAL DEVELOPMENT IN INDIA

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ABSTRACT

Water is the source of life and development of earth. It is a regional resource and is essential for human life, development and environment, but it is a finite and vulnerable resource which has quantitative limitations and qualitative vulnerability. However shortage of water is becoming a global issue due to the increasing population, economic growth and climate change. Rapid urbanization and new found passion for consumerism along with the population influx has brought about an uncertainty with regards to India's food and water supplies and it is not a surprise that some Indian river basins are already experiencing physical water scarcity. Worldwide, agriculture accounts for 70% of all water consumption. It also face the enormous challenge of producing almost 50% more food by 2030 and doubling production by 2030. However this has to be achieved with less water, mainly because of growing pressures from urbanization, industrialization and climatic change.

1. Objectives-

- i) The main objective of this study is to discuss the use of water for agricultural development.
- ii) To increase the efficient use of water and improve agricultural water management.
- iii) To improve increasing population & economic growth for agricultural development.
- iv) To improve human life, development and environment, the use of water for agricultural development.

2. Hypothesis:

This study is based on one hypothesis that is water resources are the integral part of agricultural development.

3. Methodology:

In the present study and analytical method is applied. So far as the sources of materials relevant and use in this study concern, they are mainly secondary sources.

4. Major findings:

- i) To increase agricultural production proper management of water is very critical.
- ii) Economic efficiency and environmental effectiveness of policies that seek to improve water resources need to be improve by the Government.
- iii) To make its suitable for use in irrigation ground water can be combined with surface water to dilute salt concentrations to level.
- iv) Engineers and agronomists have always traditionally dominated the designs and implementation of irrigation projects.
- v) To achievement of these objectives is dependent on adequate allocations of water to agriculture.
- vi) To find increasing water productivity considerably economic cost benefits analysis and pricing regimes could play a significant role.

5. Discussion:

Agriculture still remain to be a integral part of India's economy and society in spite of the recent growth in industrial production agriculture remains the mainstay of Indian economy. Contributing 14 % of Gross Domestic Product (GDP) and with its allied sectors like forestry and fisheries providing employment to 50% of the country's work force. India's demand for food grains will be at 240 million tonnes by the end of the XII Five year plan (2012-2017). So to boost agricultural production we would need more water for irrigation. In India some of the major challenges is agriculture water management relates to again infrastructure and low water efficiency. Climate changes will impact water availability and will pose a threat in times to come. To meet the increasing demand for food it is important to attain efficiency in irrigation developing ways to produce more per unit of land thereby reducing the impact on environment. India's agricultural sector currently uses about 90% of total water resources. Even though irrigated agriculture has been fundamental to economic development, it has unfortunately led to the reduction of ground water. Due to water pollution in rivers, India draws 80% of its irrigation water from groundwater. But as river scarcity becomes a bigger and bigger problem, rural and farming areas will most likely be hit the hardest. Thus far, food scarcity has been one of the highest priorities for politicians and the large farming baby has grown accustomed to cheap electricity, water allows extremely fast pumping of ground water which is something they are

unwilling to give up for the sake of water conservation India will end up being an importer of food if it does not maintain its level of food security and for the farmers will have to switch to less water intensive crops.

Water is one of the natural resources which are very vital for sustaining human life, achieving sustainable development and maintaining ecosystems services. Its unique characteristics determine both its distribution and use as a resource by agriculture irrigation is vital component of agricultural production in many developing countries. Agricultural use of water for irrigation is dependent on land resources. An overview of economic characteristics of water and their implication is presented below. Improved allocation of water within the agricultural sector is very important. Reassessment of sector allocations of water is inevitable, in a situation of growing water scarcity and rising demands for non-agricultural (household and industrial) use of water. Irrigated agriculture plays a vital role in contributing towards domestic food security and eradicating poverty in developing country. Achievement of these objectives is dependent on adequate allocations of water to agriculture. It is needed that irrigated agriculture be a cost effective means for achieving stated political or social objectives, such as food security or poverty alleviation. To achieve greater efficiency in the use of irrigation water and existing irrigation infrastructure improved allocation of irrigation water is required within the agricultural sectors of developing countries. Because agricultural crops are so dependent on water, purposely adding water is widely practiced to increase agricultural production, beyond what naturally falls as rain. This critical practice is known as irrigation.

Agricultural irrigation uses both surface as well as groundwater. Ground water for irrigation enables the extensive of irrigated area beyond that which surface water alone can support. It also assists with drainage of the soil. Ground water can supplement surface water during period of low flow, making surface water available for alternative uses. It is also used as a sole source of irrigation water. For example- In India, more than half of irrigated land is supplied with ground water, providing one third of the country's food production (Roy and Shah 2003). Some of the advantages of ground water over surface water are ground water can be stored in aquifer for years with little or no evaporation; it can be available throughout the year, the percolation of aquifer recharge water through the ground constricts pollution levels making ground water particularly suitable as a source of drinking water, especially in areas with no water treatment facilities, ground water can be withdrawn near the point of use, and it is available immediately on demand, water enables more timely applications of irrigation water.

Water for irrigation is stored either in natural storages like lakes and wet lands or artificial storages like dams. Dams are constructed for purpose of storing water for

irrigation, generating hydroelectric power, flood control, or a combination of these. However, lots of conflicts can arise in case of dual purpose dams, which are both designed to store water for irrigation and for generating hydroelectric power. The conflict might be due to increase in demand for both irrigation water and power during the dry season. This might create difficulties in the specification of the required storage capacity and the timing of water releases. The case gets even worse for dams designed to provide flood protection too. Conflicts arise because storage of water for hydroelectric power generation and irrigation requires the storage capacity to be kept as well as possible whereas effective provision of flood control requires storage capacity that has to be empty. However these conflicts get limited during seasonal flooding and wherever flood prediction is done. Despite the possibility for conflict, provision of storage capacity for irrigation combined with other use can have advantages. The combined value of storage capacity for multiple purpose may be required in order to make large dam developments more profitable. Also provision of storage capacity for non- agricultural uses can provide relief against failure of irrigations to meet predicted uptake and economic returns.

Engineers and agronomists have always traditionally dominated the design and implementation of irrigation projects. In response to the commitment, a broader multidisciplinary perspective on irrigation is evolving (FAO, 2003). Social cultural, environmental and wider economic impacts of irrigation projects are incorporated in this approach. However, development and management of irrigation projects and programs still possess persistent challenge and can be handled by appropriate deployment of the functional approach to water management.

Conclusion:

To increase agricultural production proper management of water is very critical. It is to be ensured that water can be stored with other users so as to maintain the environmental and social benefits of water systems. Economic efficiency and environmental effectiveness of policies that seek to improve water resource management are necessary. However as by nature water is multidimensional. It involves uses from different sectors with widely different needs. This is even worse in this country because of its enormous population and its federal administrative structure. A long term vision needs to be conceived through public debate and participatory process as the reform programs are implemented. The water conservation measures adopted by companies included direct seeding of rice, use of drip and sprinkler irrigation, rain water harvesting and watershed management. The Sustainable Agricultural Water Management Report highlights some of the best practices adopted by the industry in minimizing fresh water intake and enhancing food production. The important areas of work lies in development of low cost

technologies and its use for better irrigation scheduling and this has been receiving major attention. One of the most urgent needs and prerequisites for sustainable food production particularly in water scare region is the efficient use of water resources in agriculture through improving irrigation system and techniques.

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