

# Availability and Sectoral Demand for Water in Tamil Nadu

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## Abstract

The demand of water is also increasing day by day not only for Agriculture, but also for household and Industrial purposes. The perennial rivers are becoming dry and ground water table is depleting in most of the areas. Country is facing floods and drought in the same year in many states. This is because, no concrete action was taken to conserve, harvest and manage the rain water efficiently. Due to the nature of the terrain and distribution of rainfall, it is estimated that only 69 million hectare meter run-off can be harnessed for irrigation 175 million hectare meter water enters soil, of which 130 million hectare meter is retained in the soil and 45 million hectare meter is added to ground water every year. The demand for water, currently estimated at 75 million hectare meters, is expected to rise to 105 million hectare meters in another 25 years. Agriculture and allied activities make the single largest contribution to the Gross Domestic Product (GDP), accounting for almost 27 percent of the total. Agriculture growth has direct impact on poverty eradication and also an important factor in contain inflation, raising agricultural wages and for employment generation. Water resource contributes to agricultural production in three ways; It raises productivity by inducing the use on complementary inputs, like fertilizer, HYV of seeds, etc., increases the cropped area by making double or multiple cropping possible, and bring out a change in cropping pattern.

**Keywords:** Water, Fertilizer, Seed, Economic good, Water Infrastructure.

## Introduction

Water is the most important factors in modern agricultural production; it offers opportunities for improving livelihood, particularly in rural areas. Access to reliable, good quality irrigation reduces the cost of production and increases the quantum of food production by reducing the risks faced in rain fed agriculture. The demand for water, currently estimated at 75 million hectare meters is expected to rise to 105 million hectare meters in another 25 years. That is almost all the utilizable potential will have to be harnessed to meet the demands of agriculture, industry, energy generation and domestic consumption. These figures released by the Indian Water Resources Society in 1995, foretell the shape of things to come.<sup>1</sup>

Due to irrigation, India has been in a comfortable position with regard to the availability of food grains over the last ten years. The productivity differential between irrigated and un-irrigated lands being quite substantial, irrigation has acquired a pre-eminent place in the Indian

Planners Agenda for agricultural growth along a stable path. As the incidence of rural poverty has been found to be inversely related to both the rate of growth of crop output and the irrigation factor investment in irrigation becomes an indirect instrument for eradicating much of the rural poverty in India. Irrigation is the essential input to increase agricultural production. The current state of agriculture provides a contrasting picture of low growth of food grain and productivity. Among the inputs, water is the basic input essential for applying new technology in agriculture.<sup>2</sup>

**Water as an Economic Goods:** Chirapunji gets more than 11,000mm of average annual rainfall but face drinking water problem before monsoon commences whereas in Ralegoan Siddhi, in Maharashtra there is no water scarcity problem though the annual average rainfall is only about 450mm. Hence to mitigate water problem drought etc., there is an urgent need to follow our ancestral way of water harvesting and the latest technologies adopted in Soil and water conservation. Need has come to harvest the rainwater including roof

water to solve the water problems everywhere not only in the arid but also in the humid region. For the improvement of water infrastructure in the developing world, subsidies are vital.<sup>3</sup> The principle of full cost recovery sometimes handicaps developing nations that are striving to provide basic needs by subsidizing their basic water infrastructure. However, water is a basic human need and access to minimum quantities of safe water (20 liters per person per day) should be everyone's right. Lack of access to safe drinking water, sanitation, and irrigation is directly related to poverty and poor health. For example, in South Asia 300 million people have no safe drinking water and 920 million people have no adequate sanitation.

**Climate Change and Demand for Water:** Climate change could result in global, large scale changes in natural and social systems. In many developing countries, the very poor actually pay a great deal for water relative to their income, but these costs are often hidden. Water is priced by all urban societies, and the poor often have no choice but to pay high prices, spending between 5-10% of their income; however, in contrast in most industrialized countries, the lower-middleclass spends 1-3% of their income on potable water and sanitation. For example, in OPEC countries, households spend about 1% of their income on water; on the other hand, in Onitsha, Nigeria, the poor spend as much as 18% of their income on water.<sup>4</sup> The application of economic principles to the allocation of water is acceptable, and provides a simple tool for the development of water services in a more efficient direction. However, water should not be treated as a market oriented commodity when it comes to domestic use for very basic needs particularly for people in extreme poverty. More discussion, analysis, study, and commitment are needed in deciding whether water is a common or an economic good. Global demand for water has tripled since the 1950s, but the supply of fresh water has been declining. Half a billion people live in water-stressed or water-scarce countries, and by 2025 that number will grow to three billion due to an increase in population. Irrigated agriculture is the dominant user of water, accounting for about 80% of global water use. Population and income growth will increase the demand for irrigation water to meet food production requirements and household and industrial demand. The global population is projected to increase to about 9 billion by 2050. In response to population growth and rising incomes, worldwide cereals and meat demand has been projected to increase

by 65% and 56%, respectively. Being the largest user of water, irrigation is the first sector to lose out as water scarcity increases.<sup>5</sup>

**Water and Agricultural Production:** Agriculture takes major share of the existing water resource. Thus increasing the productivity of water used in agriculture is essential to meet the enhanced requirement of food, fodder and livelihood security. Some action plans *viz.*, change in water use of agriculture, fight poverty by improved productions, improve environment ecosystem, upgrade rain fed farming systems, conservation of water bodies and indigenous technology of water and its resources management etc., are needed to mitigate the water problems. Water management, crop genetic material, agronomic practices and economic and policy incentive to produce are the essential components of water productivity.<sup>6</sup> As a result of growing population, the per capita water availability is reducing day by day. The estimated annual per capita water availability which was 5177 cubic meters in 1951 has come down to less than 1700 cubic meters. At the same time, certain unplanned activities for the development of water resources have resulted in unsustainable exploitation of water, also affecting its quality. It is estimated that 69% of worldwide water use is for irrigation, with 15-35% of irrigation withdrawals being unsustainable. In some areas of the world irrigation is necessary to grow any crop at all, in other areas it permits more profitable crops to be grown or enhances crop yield. Various irrigation method involve different trade-offs between crop yield, water consumption and capital cost of equipment and structures. Irrigation method such as furrow and overhead sprinkler irrigation are usually less expensive but are also typically less efficient, because much of the water evaporates, runs off or drains below the root zone. Other irrigation method considered to be more efficient include drip or trickle irrigation, ground level. These types of systems, while more expensive, usually offer greater potential to minimize runoff, drainage and evaporation. Any system that is improperly managed can be wasteful; all method have the potential for high efficiencies under suitable conditions, appropriate irrigation timing and management. One issue that is often insufficiently considered is salinization of sub surface water.<sup>7</sup>

**Availability of Water:** The demand of water is also increasing day by day not only for Agriculture, but also for household and Industrial purposes. The perennial rivers are becoming dry and ground water table is depleting in most of the areas. Country is facing

floods and drought in the same year in many states. This is because, no concrete action was taken to conserve, harvest and manage the rain water efficiently. The availability of water in the world, in India and in Tamil Nadu is given below with rainfall.<sup>8</sup>

**Table 1: The Availability of Water in the World, in India and in Tamil Nadu**

Places	Rainfall in mm	Population	Availability of Water/Person/Year in m <sup>3</sup>
World	840	6.99 Billion (United States Census Bureau 2011)	700
India	1150	1.21 Billion (India's Census2011)	2200
Tamil Nadu	925	72.1 Million (India's Census2011)	750

Source: Various sources of secondary data

If the availability of water is 1700 M<sup>3</sup>/p/y, there will be occasional water stress, and if it is less than 1000 M<sup>3</sup>/p/y, it is under water scarcity condition. Though India is not under water stress conditions but Tamil Nadu state is already under water scarcity condition, but there is no need for panic since it is possible to manage this condition as in the case of Israel where the availability is only about 450 M<sup>3</sup>/p/ y, by means of water harvesting, water conservation and water management.

**Future Requirements of Water:** The requirement of water for various sectors has been assessed by the National Commission on Integrated Water Resource Development (NCIWRD) in the year 2000. This requirement is based on the assumption that the irrigation efficiency will increase to 60% from the present level of 35 to 40 percent. The Standing Committee of Ministry of Water Resources (SCMWR) also assesses it periodically. These are shown in the following table.

**Table 2: Projections of Water Requirements of Various Sectors of Indian Economy**

Sector	Water demand in BCM*					
	Standing Committee of Ministry of Water Resources (SCMWR)			National Commission on Integrated Water Resource Development (NCIWRD)		
Year	2010	2025	2050	2010	2025	2050
Irrigation	688	910	1072	557	611	807
Drinking water	56	73	102	43	62	111
Industry	12	23	63	37	67	81
Energy	5	15	130	19	33	70
Others	52	72	80	54	70	111
<b>Total</b>	<b>813</b>	<b>1093</b>	<b>1447</b>	<b>710</b>	<b>843</b>	<b>1180</b>

Billion Cubic Meters

Source: Govt. of India, Planning Commission.

### Conclusion

Irrigation is the essential input to increase agricultural production. The current state of agriculture provides a contrasting picture of low growth of food grain and productivity. Adequate availability of water resources is a precondition for applying new types of raw materials, mechanization and modern method of cultivation. Among the inputs, water is the basic input essential for applying new technology in agriculture. While analyzing the role of irrigation, point out that in many places, the constraint on agricultural development is the supply of water for irrigation, rather than the supply of land. The major advantages of irrigation are: it

helps in increasing crop yields, and hence to attain self-sufficiency in food, optimum utilization of water is made possible by irrigation, mixed cropping and multiple cropping. The timely availability of water reduces cost of production and increases output. Therefore, planning and implementation of irrigation schemes are essential.<sup>9</sup> The March 22<sup>nd</sup> has been dedicated as World Water Day and UNESCO is celebrated the year 2012 as International Year of Water Co-operation. The goal of International Year of Water Co-operation is to make awareness on the potential for increased co-operation in water management as there is an increase in scarcity of water. It also tries to highlight how to use water effectively and identify steaming issues on water scarcity. It is said that,

if there is any chance of third world war it will be for water. There is an increased chance of conflict between neighboring countries or state which share same water resources.

**Ethical Clearance:** Completed

**Source of Funding:** Self

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