

A case study of Sathanur Dam on Thiruvannamalai District, Tamil Nadu

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ABSTRACT: A Dam could be a barrier that stops or restricts the flow of water or underground streams. Reservoirs created by dams not solely restrain floods but also provide water for activities such as irrigation, human consumption, industrial use, aquaculture, and navigation. The main objective of the study has been to evaluate the impact of dam irrigation on the socio-economic condition of the farmers on Sathanur dam. Thiruvannamalai District . This paper is examine profile of the dam, Function of the dam how to catch and store the rainwater from north East monsoon how many hectares irrigated from Thiruvannamalai, and Villupuram District.

KEYWORDS: Dam, irrigation, function, economy, store, rainwater.

Introduction

As civilizations developed, there was a greater need for water supply, irrigation, flood control, navigation, water quality, sediment control and energy. Therefore, dam's area unit made for selected purpose like water supply, flood control, irrigation, navigation, sedimentation control, and hydropower. A dam is that the cornerstone within the development and management of water resources development of a geographic area. The multipurpose dam is a very important project for developing countries, because the population receives domestic and economic benefits from a single investment. Dams is also made to satisfy one or a lot of functions:

1. Irrigation
2. Hydropower development
3. Domestic, municipal, industrial water supply
4. Stock watering
5. Flood control
6. Recreation
7. Fish and wildlife protection and development, and improvement of river ecology
8. River water quality
9. Stream flow regulation for various purposes
10. Navigation
11. Recharge the ground water
12. To feed Tanks and local water bodies.

The primary operate of the many dams is to supply water for farming. Some dams divert rivers into canals or pipelines to irrigate land several miles away. Dams are unit used additionally once a stream flows at a lower elevation than the land to be irrigated. Some rivers have nice seasonal changes within the quantity of their flow, flooding during part of the year and slowing nearly to a trickle at other times. Irrigation dams constructed on such rivers store water to equalize the provision for crops throughout the year. The dam additionally has allowed farmers to cultivate the thousands of acres.

Objectives of the study

1. To bring out salient features of dam in the study area
2. To Know about major role and functions of water reservoir in study area.
3. To know about constructed year and cost of dam
4. To assess the positive impact of environment in the study area.
5. To suggest a suitable plan policy for construct for new dam in forthcoming year.

Study Site

The Sathanur Dam Project was proposed in the First [Five Year Plans of India](#) and started in the year 1953. The Dam works are completed in the Second [Five Year Plans of India](#) and is operational from 1958.^[1] The project was inaugurated by the then [Chief Minister of Tamil Nadu K. Kamaraj](#). This is one of the Major [irrigation](#) schemes were planned in [Kamaraj's](#) period .

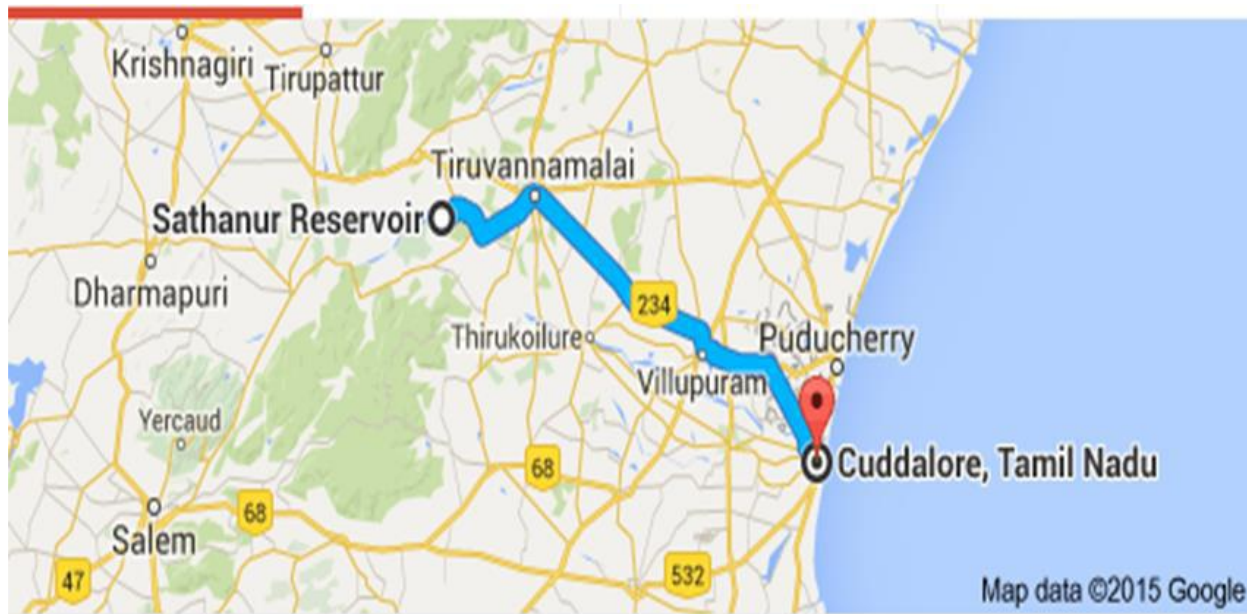
The Sathanur Reservoir is constructed across Ponnir river near sathanur village in Chengam Taluk, Tiruvannamalai District. The location is approachable through barrackpore trunk road and is about 32 km from Tiruvannamalai Town. Detailed investigation of the reservoir was taken up during 1954. The first stage was immediately sanctioned for execution at an estimated cost of Rs. 289 lakhs. Water from the reservoir is let down in the river itself and picked up at about 7Km lower down by an anicut. The Project comprises a reservoir, Pickup anicut and two canal systems. The Sathanur dam is located at Sathanur village of Tiruvannamalai district in Tamil Nadu. The proximity villages i.e. villages which fall within 5 km distance from dam on downstream side, these are Sathanur, Aeithapalyam, Ariyakunjur, Vatankulam and VeppurChekkadi. There are no Schedule V¹ areas in Tamil Nadu. The district consists of seven (07) talukas (Tehsils) namely Arani, Cheyyar, Vandavasi, Polur, Chengam, Thandrampet and Tiruvannamalai, 18 Community Development Blocks, four (04) Municipalities, 10 Town Panchayats and eight (08) Census Towns. Agriculture is the main source of livelihood for the people in the district. The district is dependent on seasonal rains for successful agricultural operations. Agricultural crops like paddy and other commercial crops are traded within the district as well as with other districts and States. There are many rice mills to process paddy throughout the district.

The brief demographic characteristic of the Thiruvannamalai district is given in the table below:

No. of Households	588,836	Household Size	04
Total Population	2,464,875	Population (0-6 age)	272,569
Male	1,235,889	Boys (0-6 age)	1 41,205
Female	1,228,986	Girls (0-6 age)	1 31,364
Sex Ratio	994	Sex Ratio (0-6)	930
Population (SC)	565,329 (22.94%)	Population (ST)	90,954 (3.69%)
Male	282,615	Male	45,956
Female	282,714	Female	44,998
Literates	1,626,813	Literacy Rate (in %)	74.21
Male	909,803	Male	83.11
Female	717,010	Female	65.32
No. of Workers	1,238,177	Cultivators	292,641 (23.63%)
Male	738,995	Agricultural Labours	525,063 (42.41%)
Female	499,182	Household Industrial Workers	46,720 (3.77%)
No. of Main Workers	970,072	Other Workers	373,753 (30.19%)
No. of Marginal Workers	268,105		
<i>Source: Census of India, 2011 (District Handbook)</i>			

Figure I Sathanur Dam



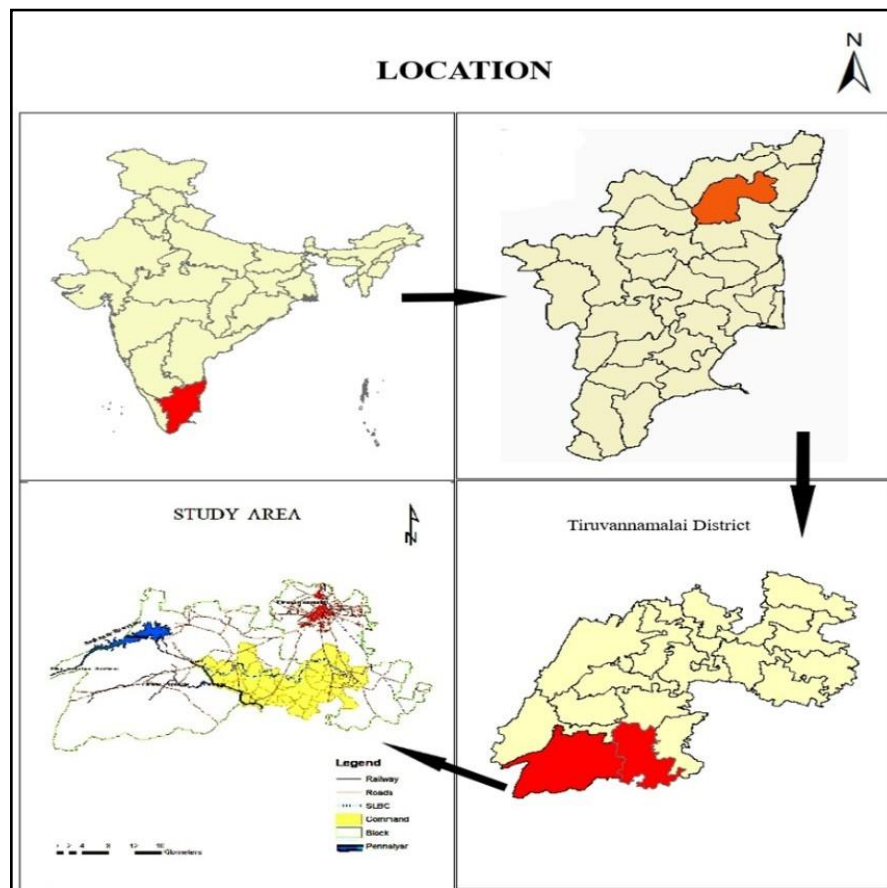
Figure 1I Sathanur dam and Tail End Map

The approved cost of the project is ₹2.02 Crores. The project was completed within ₹3.59 Crore (Actual cost). The project is covered under CADA (Command Area Development Authority) Scheme.^[1]

Technical details

The reservoir has a capacity of 7,321,000,000 cu ft (207,300,000 m³) with a full level of 119 ft (36 m). An area of 7,185 ha (17,750 acres) of land is benefited by the left bank canal and 100 ha (250 acres) of land is benefited by the right bank canal in [Thandrampet](#) and [Thiruvannamalai](#) blocks.

Figure III Location Map



Ayacut (command) area details

Sathanur Dam was meant for irrigation in Tiruvannamalai and Villupuram districts, where a total of 45,000 acres of **ayacut** is covered through the left and right bank canals. The Sathanur Project executed in the North Arcot district is a major source of irrigation for both Tiruvannamalai and Villupuram districts. The reservoir had a capacity of 4,600 million cubic feet in the first stage. But its storage capacity increased to 8,000 million cubic feet ultimately. Further, the water released from the reservoir was again blocked by another anicut situated 4 ½ miles below the dam. Irrigation was carried on by a canal on the left side of the anicut 22 miles long with necessary branch channels and distributaries to irrigate 15,300 acres in Tiruvannamalai district and 4,700 acres in Tirukoilur taluk in Villupuram district.

- Sathanur Command lies between 12.05° and 12.15° North latitude and between 78.55° and 79.05° East longitude. The SLBC is 35.2 km long which irrigates about 9717 hectares of agriculture land in Tiruvannamalai and Villupuram (previously North Arcot and South Arcot) districts. The SRBC is 28.6 km long which feeds about 8,499 hectares of agriculture land in Villupuram District. The Sathanur Left bank Command Area is agricultural dominant area with few mining operations (Quarrying) and allied activities. The Command has 40 revenue villages along the entire length of the canal. Left bank Command Area is sandwiched between the main river and the left bank canal. The Command has been delineated using the boundaries of the village where the canal water are being used for irrigation. The Sathanur Left Bank Canal was excavated during 1954-58, the same period of construction Reservoir. The leftmain canal takes off from the Pickup anicut on its left flank. The SLBC has 25 direct irrigation sluices and 15 Distributaries. The total length of distributaries are about 69.72 Km. The command area under the SLBC is 9717 Ha in which 8531 Ha is comes under direct ayacut and the balance 1186 Ha is wet ayacut fed through 40 System tanks. Initially the main canal and branch canal were excavated earthen the full reservoir level of 119 feet. Nearly 1,887 mcft (million cubic feet) of water is estimated to be stored in the dam against the full capacity of 7,321 mcft. Silt, estimated evaporation loss and water that need to be kept

apart for irrigation schemes reduce the water in dam up to 1,291.51 mcft. Out of the 595.49 mcft finally available for irrigation, 284.6 mcft, need to be released in the river downstream for the benefit of Thirukkoilur Old Ayacut. Hence left and right bank canals of the dam that supposed to feed 45,000 acres of land in Tiruvannamalai and Villupuram districts are left with mere 310.89 mcft. Only 88 system tanks attached to the canals would get water.

Methodology

Secondary Data was collected from Various departments and water user Association of sathanur dam This paper is review paper, based on information gathered from secondary sources. The data has been collected from Internet, Books journals, web-sites, newspapers, and Articles.

Beneficial to crop area

Water from the Sathanur Dam benefited a total of 45,000 acres.

water from the dam helped improve the storage in several tanks in Tiruvannamalai and Villupuram districts. There were as many as 88 system tanks that received water from the dam.

While water from the dam's Left Bank Canal fed 30 tanks in Tiruvannamalai and 10 in Villupuram districts, the Right Bank Canal was connected to 48 tanks in Villupuram district.

Dams provide a range of economic, environmental, and social benefits, including recreation, flood control, water supply, hydroelectric power, waste management, river navigation, and wildlife habitat.

- **Recreation**

Dams provide prime recreational facilities throughout the States. Boating, skiing, camping, picnic areas, and boat launch facilities are all supported by dams.

- **Floodcontrol**

In addition to helping farmers, dams help prevent the loss of life and property caused by flooding. Flood control dams impound floodwaters and then either release them under control to the river below the dam or store or divert the water for other uses. For centuries, people have built dams to help control devastating floods.

- **Water Storage**

Dams create reservoirs throughout the States that supply water for many uses, including industrial, municipal, and agricultural.

- **Irrigation**

Ten percent is irrigated using water stored behind dams. Thousands of jobs are joined to producing crops grown with irrigated water.

- **Electrical Generation**

The dam has produced for hydropower in surplus water Hydropower is considered clean because it does not contribute to global warming, air pollution, acid rain, or ozone depletion.

CONCLUSION

Sathanur Dam plays major role in development of Thiruvannamalai, villupuram and cuddalore district. The river Ponnaiyar serves its source and prevents the district from drought. Almost 60% of peoples depend upon agriculture, forestry activities and livestock. The ground water potential and annual rainfall in this district is not sufficient. So the farmers depend upon the dam for their agricultural activities. The development of fisheries among these areas creates employment and benefits. Thus Sathanur dam creates employment in agricultural activities and reduce drought in Thiruvannamalai, Villupuram and cuddalore district.

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