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A STUDY ON MAJOR AND MINOR DAMS IN PALAKKAD DISTRICT, KERALA

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Abstract:

The objective of this study is to conduct a research on the study of Major and Minor Dams located in Palakkad district of Kerala. The study will analyse as how the dams are helpful for irrigation purposes and how they protect and preserve the ecology of the area. Further, it also discusses the social benefits of the Dams. Besides, it also analyses the different types of canal systems prevailing in the district. This study also includes the suggestions for further improvements of the dams.

Key Words: Water Facilities for Irrigation, Boon to the District & Types of Dams

Introduction:

The purpose of a dam is to store water for several reasons, they might be for Irrigation, Hydropower, Industry, for human livestock and other needy purposes. Palakkad district situated in Kerala State of India is called as the "Granary of Kerala". The major occupation of the people of Palakkad district is Agriculture. The main crops that are cultivated in the district are Paddy, Coconut, Rubber, Pulses, Areca nut, Tapioca, Ginger, Groundnut, Sugarcane and Cotton. By nature, Palakkad district is rich in irrigation facilities. Many dams are situated in Palakkad district; they are Malampuzha Dam, Meenkara Dam, Chulliyar Dam, Pothundy Dam, Walayar Dam, Mangalam Dam and Kanhirapuzha Dam. Malampuzha Dam is the largest among all the Reservoir of Kerala state. These Dams or Reservoirs were built to provide enough water to the people living nearby and the surrounding areas. There dams have been constructed across almost all the important tributaries of the Bharathapuzha to provide irrigation facilities to the whole district.

Objectives of the Study:

- ✓ To know about the details of Dam in Palakkad District
- ✓ To study the influence of Reservoirs in day to day life
- ✓ To maintain and preserve the Dams

Methodology:

This study has taken sources from existing primary and secondary sources. The primary data include from Government Reports, News Papers. The sources of secondary data include published data such as books, Journals and web sources.

Area of the Study:

The study was undertaken in Palakkad District.

Malampuzha Dam:

The idea for a dam in the Malampuzha region is to boost agriculture in the district. Malampuzha dam has brought prosperity to the district, making Palakkad the rice bowl of Kerala. The Malampuzha Reservoir is the first large scale Irrigation system attempted in the Malabar District of old Madras State. The project works were commenced during the year 1949 which comes under the First Five Year Plan. The public work Minister sri, M Bhaktavatsalam laid the foundation stone for the project. The dam is commissioned during 1955 under the Second Five-year Plan. In October 9, 1955 the chief minister of Madras State , Thiru K. Kamaraj inaugurated the dam. At the time of formation of the State of Kerala in November 1956 the dam became fully operational. The aim of Malampuzha Project was not only to bring new lands to cultivation and to supply water for the first crop, but also to supplement the rainfall in the season between the South West and North East monsoon in December and January. The cultivation was depending entirely on rainfall which was heavy but ill distributed. The Malampuzha irrigation Project consisted of a masonry dam across Malampuzha, a tributary of Bharathapuzha and a network of canal system to irrigated area of 21,349 ha. The stream lies between the longitude of 76 ^{0}38 and 76 ^{0}42 and latitude the between 10 ^{0}48 and 18 ^{0}55. The Malampuzha river has its source in the hills, due north Palakkad Taluk, extending up to the boundary of Coimbatore District of Tamilnadu.

The Malampuzha dam has two system of main canals, one at Left bank canal (LBC) and the other at Right bank canal (RBC). These canal systems serve to irrigate farm land while the reservoir provides drinking water to Palakkad and surrounding areas. These canal system was designed with a duty of 60 acres/Cusec with a provision of 12.5% for transmission losses. The LB main canal covers 31.60 Km and RB main canal covers

length of 32 Km. The original section can be maintained to the satisfactory during the operation of the project. The canal has been in operation for more than 52 years since 1955. Water is let out from the main canal for irrigation through a network of branch canals and field channels. Left Bank canal irrigates an area of 17,050 ha and Right Bank main canal an area of 4,299 ha. There are three sluices of 1.50× 1.83 m which are provided on the Left side of the main dam each which was designed to allow maximum discharge of 7.000rb/ sec. A similar single sluice is provided on the Right bank.

The two canal system (LBC, RBC) serve to irrigate farm land while the reservoir provides drinking water to Palakkad and surrounding villages. Paddy is cultivated in 50,000 acres in two seasons each were using water from the Malampuzha Dam. The water from the dam is also utilized for mini hydroelectric project. The dam was conceived as a multi –purpose project to provide water for irrigation, drinking, industrial use, power generation, fish farming and for water transport.

Gayathri Project Stage I and II:

Gayathri Irrigation project is considered to be one of the medium projects in Palakkad district, Kerala. This irrigation project consists of two reservoirs namely Meenkara and Chulliyar. Meenkara and Chulliyar rivers are the tributaries of Bharathapuzha. Agriculture is one of the main sources of income of the inhabitants of this area. Paddy is grown intensively in the ayacut of this project under rain fed condition. The Grama Panchayaths coming under Gayathri project are Mthalamada, Kollengode, Elevanchery, Vadavanoor, Pallassana, Puthunagaram, Pattancheri, Koduvayur, Peruvembu.

- ✓ **Meenkara Dam:** Meenkara Dam is situate in Kerala state but very close to the Tamilnadu. The distance from Palakkad to Meenkara dam is about 40 Km and the distance from Pollachi of Tamilnadu is about 20 Kms. The Meenkara Dam Project was taken up in the year 1956 and partially commissioned in 1960 and completed in 1964. The Meenkara dam is an earth dam of length 946m with 30m spillway portion of masonry maximum height of 18.90m. The spillway shutters are vertical lift type of two numbers. The Meenkara Dam or reservoir has water spread area of 249.50ha and capacity of 11.30Mm^3. The Gayathri Project consists of Meenkara dam (phase I) from where Left Bank Canal (LBC) starts and the spillway river act as a part of Right Bank Canal (RBC) for a length of 15km. The excess water from Meenkara flow to the Chulliyar dam through the feeder canal. During the course the water from Chulliyar reservoir boosts the Left Bank Canal at Ch.6/700 and leads to a further distance of 14 Kms. The crop pattern existing in the whole ayacut area of Meenkara Reservoir is mainly having an average of 120 days crop period. The water from the dam is mainly used for irrigation purpose.
- ✓ **Chulliyar Dam:** The Gayathri Project stage II is otherwise known as the Chulliyar dam project. Chulliyar dam is located in Muthalamada panchayath in Palakkad district of Kerala. The Chulliyar dam was taken up in 1961, and Partially commissioned in 1966 and completed in the year 1970.Chulliar dam is earthen dam of 1200m on one side and masonry dam of 555m on another side. The capacity of Chulliyar dam is 13.70Mm^3 at FRL of 154.08m. Chulliyar Reservoir has a water spread area of 165ha. The sluice for regulating the flow of water to canal is having a size of 1.52×1.83m at a sill level of +136.55m. The dam consists of an earthen dam of 1200m in length with a maximum height of 18.29m and a masonry dam of 555m with a maximum height of 21.60m. The spillway shutters are vertical lift type of three numbers. The main sources of irrigation are from Meenkara dam and Chulliyar dam. In addition to that the flood water from Moolathara regulator is diverted to Meenkara dam and then to Chulliyar dam through feeder canal. The water in the dam is mainly utilized for irrigation.

Cheramangalam Scheme:

Cheramangalam is a diversion scheme in Palakkad district with a weir in Gayathri River, now in Killiyar, Melarcode village of Alathur Taluk which was commissioned in the year 1951.The scheme irrigates an area of 1205 ha in Alathur Taluk of Palakkad district. After completion of the Gayathri Project (Meenkara Dam& Chulliyar Dam), the flow in Gayathri River was reduced considerably at the Region and thus the water available at the ayacut was insufficient to meet the requirement of Cheramangalam Scheme. This was mentioned in the Government order No. G.O (MS) No. 1274/ (W&P), dated. 27th March 1974.

Pothundy Dam:

This dam is located in Chittur taluk, about 42 Kms from Palakkad district. The Pothundy dam was constructed with the main aim of providing water for irrigation. The Pothundy dam project on Ayilur River (Bharathapuza Basin) was commissioned during 1967. It is the Second dam in Asia constructed without using cement mixture. The dam is unusual in being constructed without a conventional concrete core, which is considered on the most earth dams to counteract the force exerted by high water pressure. It comprises an Earth dam with an estimated live storage of 43.90Mm^3. Gross command area of the project is 4986 ha and cultivable command area as per record is 4685 ha, where as actual area is 4785.62 ha. Spout wise ayacut verification in Chittilanchery south branch canal of RBMC shows an increase of 100ha. Pothundy one among the first generation irrigation project, has been suffering from innumerable defects due to continuous consumption, Natural calamities, paucity of funds, improper maintenance, Differing soil property and unbelievable development of surrounding area. The efficiency of the system has been reduced so that no work could be

carried out for rectification except annul maintenance. Thus turn system was introduced years back even through it was aimed to irrigate entire ayacut simultaneously. Later, NWMP (phase) was implemented and some sort of rectification works were carried out in a span of three years from1991 to 1994.

There are two main canal system which come under this irrigation project, known as Left Bank Canal system and Right Bank Canal system. Both Left Bank and Right Bank main canal will be kept opened throughout the irrigation season. The distribution of water through branches will be done by turns. The two main canals and their branches and distributaries irrigate 4986 ha land in Chittur and Alathur taluks of Palakkad district. The main aim of the irrigation Project is stabilizing the 1stcrop and proposing 3rd crop, Optimum utilization of water for the second crop by achieving irrigation for Paddy. The dam is one of the major water sources for agricultural and drinking in the Chittur taluk.

Walayar Dam:

The Walayar Dam is one of the medium irrigation Projects in the Palakkad district. The Walayar irrigation project was started in 1953. It was first commissioned in 1956 and the work was completed and opened in 1964. The main component of the irrigation project comprises of an earth dam with masonry spillway section across Walayar, a tributary of Bharathapuzha. The Left Bank Canal covers a total irrigated area is 3238 hectares of land in Palakkad District. The storage capacity of Walayar dam is 18.406 m.cum. The catchment area of Walayar Reservoir is 106.19 sq.km in Palakkad and Coimbatore Districts. The Walayar dam is situated about 200m downstream of the confluence of Walayar and Navakara River. Total water spread area of Walayar dam is 2.59 sq. km. The capacity of the reservoir is 18.40 mc at +203 Mean Sea Level (MSL).

The Walayar dam is Considered as a Masonry dam flanked by earthen dam. The Dam consists of two portions, a Masonry dam of gravity type in the central portion for a length of 148 m with a spillway in the middle for 42 m length and connecting Earth dams in continuation of the masonry dam on both sides for a length of 940.31 m on the left side and 388.62 m on the right side. It is one of the major sources of irrigation in the region. Many industries including Malabar Cements depend on this dam for their daily water requirement.

Mangalam Dam:

Mangalam Dam project irrigates Alathur Taluk of Palakkad district. Mangalam Project comprises a dam across Cherukunnam River, a tributary of Mangalam River, which joins the 'Gayathri' river and then the Bharathapuzha River. With a network of canal system, it irrigates 3440ha. of land in Alathur Taluk of Palakkad district. The Project was sanctioned wide G.O .1368/ PW dated 3-4-1951. Due to subsequent change in Dam site, the work was started only in October 1953. The Dam and Left Bank canal were completed by September, 1956. On 29-10 -1957, and extension of the Right Bank canal by another 6.4 Km was sanctioned and this work was completed in 1964 and commissioned in 1966. The dam is located around 13 Km. North East of Vadakkencherry town. The storage capacity of the dam is 25.35 Mm^3, Right and Left main canals each having a length of 24 Km. and 21 Km respectively serving with a well laid out network of canals. The system was designed to serve this command mainly for the IInd crop. Irrigation is successfully carried out for more than 20 years.

This Dam is located at latitude $10^0$31' and longitude $76^0$32. The dam is situated 50Km away from Palakkad and Thrissur towns. Totally, the reservoir has a water spread area of 3.96 sq.k.m and a live storage of 25.344Mm^3. The total length of the masonry Mangalam dam is 162 m. The total length of the left is saddle in 752m and the total length of the right saddle is 143m. The masonry dam is of the gravity type. The Earth dam is of rock fill type on the right saddle where there will be a maximum depth of 10.82m. The main purpose of the dam is to meet the needs of irrigation of various plantations like rubber, pepper, coffee and tapioca, which spread across 3639 hectares length, and breadth of catchment area.

Kanhirapuzha Dam:

The Kanhirapuzha dam is one of the medium irrigation system implemented in Palakkad district in Kerala State. It was located in Kanjirapuzha Village in Mannarkkad taluk. Kanhirapuzha River is the major tributary of Chaliyar river. The Dam Project was started in 1947 and the project was originally estimated in 1954 for a cost of Rs.365 lakhs. The approval to the estimate was obtained from the Planning Commission as per order No II/14 (4) /64-E-I&P Dated: 23-03-1964 .The work was started in 1964 with a programme to complete within five years by March 1969.Then the project works were restarted in full swing from 1967 onwards. The Project was partially commissioned in 1980. The project comprises of a storage reservoir of 70.82 million cubic meter capacity. The main component of the project comprises of an earth cum masonry dam of 2128m in length, out of which, the earth section is for a length of 1896m and maximum height of 28m. The masonry section is 231.60m in length and maximum height of 38m. The spill way consists of three spans with vertical gate.

Initially, the aim of Kanhirapuzha dam Project was to irrigate and supply water for 2nd crop and also to supplement the rain fall dependant crops in the season between the southwest and north east monsoon in December and January. The second revised estimate was based on the 1982 schedule of rates for 4305.83 lakhs which was submitted in 1984. The second revised estimate proposal was resubmitted in 1998 and was returned by the Government with comments, since then the revision was based on the 1996 schedule of rate. The revised

estimate of the project works out to Rs.11200 lakhs, as per the 2004 schedule of rates. The projects consists of an earth dam with a central masonry spillway portion and a network of canal system to irrigate an area of 9,720 ha. The main purpose of the dam is to support irrigation.

Siruvani Dam:

Siruvani Dam is a straight gravity dam. The reservoir is constructed across Siruvani River, a tributary of Bhavani River. The project was started in 1973 and completed in 1984. The dam is of gravity type made of stone masonry. The dam is located in the Sholayar Panchayat, Mannarlkkad Taluk which is 55 Km both from Palakkad in Kerala and Coimbatore in Tamilnadu. The total length of the dam is 203m and a maximum height of the dam is 57m . The capacity of reservoir is 650 $Mm^{3.}$ The dam is situated at latitude 10^{o58}.36 and Longitude 76^{o38}.30. The reservoir has a water Spread area of 22.7 Sq. Km, and full Reservoir level of the dam is 878.5m. The Gross storage capacity of the Siruvani Dam is 25.50$Mm^{3.}$ The main Purpose of the dam is intended for drinking water supply to Coimbatore town and neighbouring areas. The location being in the state of Kerala, the Kerala Public Works Department utilising the funds executed the project made available by the Government of Tamilnadu. An agreement was executed in August 1973 between the two state Governments and executed in the same year.

Social Benefits of Reservoirs:

- ✓ Under these Dam or Reservoirs, several million units of average and annual power is generated by the Kerala State Electricity Board (KSEB).
- ✓ Scope also exists for the provision of drinking water to the whole district.
- ✓ The reservoir water can also be used for rearing fresh water fish, which will help in providing additional benefit to the society.
- ✓ The facilities like home, gardens, lawns, boating etc., in the reservoir site have definitely attracted the tourists.
- ✓ Increase the efficiency of water use and the productivity of irrigated Agriculture.
- ✓ The beneficiaries would be medium farmers as most of them cultivate Paddy.
- ✓ Optimum utilization of Water for the second Crop.
- ✓ Most of them work as labourers whereas settlers are the land owners of the area and they cultivate various crops like Aracanut, Banana, Ginger, etc.,
- ✓ Changes in agricultural practices-intercropping, multiple cropping etc.,
- ✓ Dams also serve as tourist spots, which bring additional revenue to the government

Findings and Suggestions:

- ✓ Improves canal distribution System
- ✓ Efficient water distribution
- ✓ Assures equitable, timely water supply
- ✓ Increases crop production
- ✓ Provide better water regulating arrangement and repairs to head regulators.
- ✓ Increase additional production of Third crop in the ayacut
- ✓ Regular official visits and periodical check-up have to be done

Conclusion:

Palakkad is one of the major district producing Paddy. As agriculture is a "gamble in the monsoon'', serious of projects were constructed to derive irrigation. Many Resevoirs are situated in Palakkad District like Malampuzha Reservoir, Kanhirapuzha Reservoir, Walayar Reservoir, Mangalam Reservoir, Pothundy Reservoir, Meenkara Reservoir, and Chulliyar Reservoir. Implementation of such proposals, stage by stage increases the stabilization and reclamation of total area. It boosts the agricultural income, economical background and generally improves the prosperity of the Palakkad district, in which 80% of the people depend on agriculture and allied activities as their livelihood.

For preserving the dams, Government should allocate more funds and do the proper maintenances. Regular check-up have to be done at periodical intervals. Even though Government does their part better, public also have to co-operate in preserving dam. Tourist should avoid throwing plastic, garbage's, etc. In the dam. Government shall appoint More staff so that it will be helpful in maintenance of dams and also helping the tourist. We, the people have to be responsible in preserving water resources. Taking shorter showers, using Drip irrigation system in farms, and rainwater harvesting system in every house helps recharge ground water level and improve water resources.

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