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Environmental Administration of Dams in the Idukki District: An Analysis

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ABSTRACT
Environmental administration can be defined as the process of directing and managing public policies and activities in the area of environmental affairs. (UNEP, 1984). Obligation to the future generations from the governmental and private players lay on the advancement of small-scale hydroelectric plants. The development of hydroelectric projects is amenable with the United Nations' Sustainable Development Goal (SDG) seven. The dams and water stored in dams have become a matter of dispute between the different states. The water, food, energy of a particular area can be satisfied with establishment of new multi-purpose power plants which will lead to irrigation of crops, drinking water for consumption by the population, energy generation as well as employment for many people in the form of dam administration staffs as well as the economics of tourism involved. Ongoing debate on the feasibility studies on dam from the views on harms it can cause to environment and social development it can bring out needs an extensive study based on the available data on dams from a historical perspective. The need for emphasizing environmental impacts and economic virtues of a dam from a sustainable point of view are a need. The present paper intends to portray the need for environmental administration based dam protection and the major effects of dam in the Idukki region. The paper further elaborates on the need for interventions to solve the disputes related to water resources actively by stakeholders.

Keywords*: dam administration, environmental administration, SDG, hydroelectric project*

I. INTRODUCTION

''Oh earth! Bless me with the sense that neither I destroy you nor I insult you, whenever I exploit you, I regenerate the greenery at the same instant.''

Atharva Veda

Environmental administration can be defined as the process of directing and managing public policies and activities in the area of environmental affairs. (UNEP, 1984). Environmental administration is deeply related to the environmental concerns of any project but the concerns of environment and the vicinity of people around the project need continuous review. Dams are viewed as water bombs which can be demolishing in character if not attended to from time to time. The studies on dam administration, environment and laws pertaining to dams need a monitoring agency for greater good of people. Obligation to the future generations from the governmental and private players lay on the advancement of small-scale hydroelectric plants. The development of hydroelectric projects is amenable with the United Nations' Sustainable Development Goal (SDG) seven. The dams and water stored in dams have become a matter of dispute between the different states. The water, food, energy of a particular area can be satisfied with establishment of new multi-purpose power plants which will lead to irrigation of crops, drinking water for consumption by the population, energy generation as well as employment for many people in the form of dam administration staffs as well as the economics of tourism involved.

II. BACKGROUND OF THE STUDY

Martinez Michael J. (2018) Caring the natural environment and encouraging environmental sustainability have become significant objectives for U.S. policymakers and public administrators at the beginning of the 21st century. Organizations of American government, particularly at the federal level, and the public administrators who work inside of those organizations, performance a vital role in emerging and applying environmental sustainability policies .This study

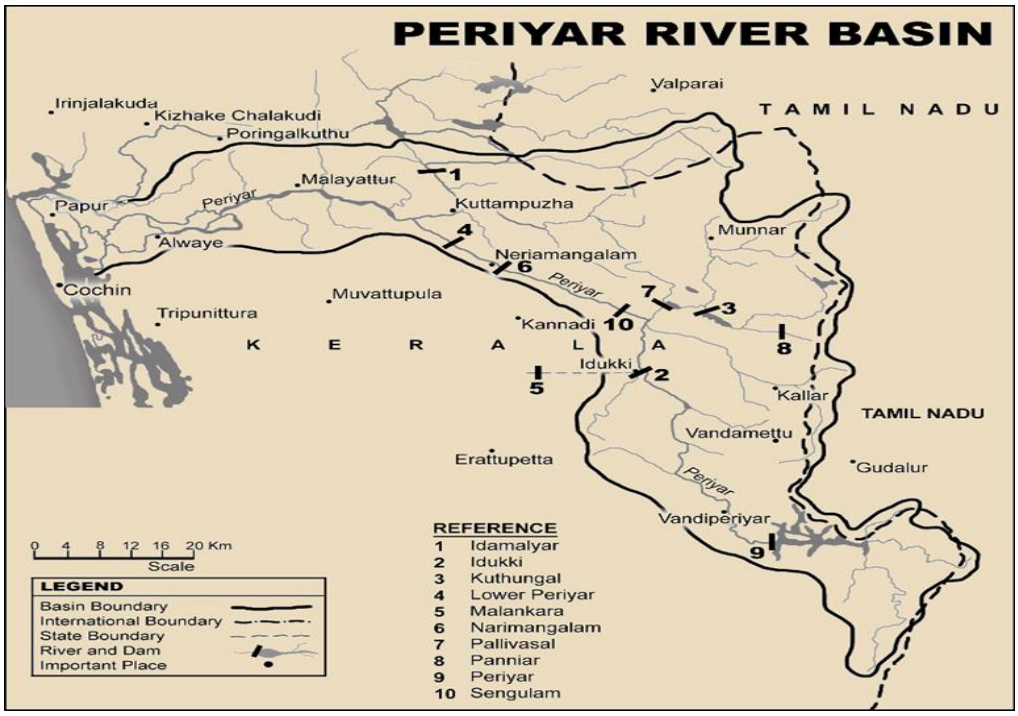
indicate these relevant problems rationally. Primarily, it discovers important ideas such as what it means to be ecologically sustainable, how financial problems touch environmental policy, and the rational schools of thought about what policies ought to be measured sustainable. From there, its attentions on methods and organizations disturbing public administration and its character in the policy procedure. Therefore, it reviews the rise of the administrative state in the United States and then assessments the expansion of federal environmental laws and policies with an importance on late 20th century expansions. This study also debates the progress of American environmentalism by charting the account of the environmental effort and the growth of the environmental lobby. Lastly, this study combines the information to debate how public administration can encourage environmental sustainability.

Laszlo Erika (2019) In this Research, the researcher indicate the central, regional and local levels of environmental administration in Hungary and their tasks. Through two specific examples (the Danube Flood and the 2010 Kolontár Red Sludge Disaster) the researcher analyzes the cases destructive the environment, their concerns and impacts. Researcher also shows that the support between municipalities and regional environmental and disaster management bodies is predictable. Researcher studies the part played by the environmental administration in the guard and makes suggestions for enlightening the efficiency of protection. In the context of the two incidents, she evaluates the potentials of the environmental administration in the protection against environmental damages and makes recommendations on its expansion.

Environmental administration of any project in the district is necessary because of,

III. SPECIALITY OF THE DISTRICT

Idukki district lies nearly at the central a part of Kerala. The district shares its periphery on the east with Madurai district in Tamilnadu State, on the west with Ernakulam and Kottayam districts, on the south with Pathanamthitta District, and on the north with Coimbatore district of Tamilnadu correspondingly. Idukki district lies between North latitudes of 90 15' and 100 21' and East longitudes of 760 37' and 77025'. The twelve mountains of the district which surpass a elevation of 2000 meters above lowest sea level are Tathamala, Chenthavara, Kumarickal, Karimkulam, Devimala, Perumal, Ghudoor, Kabhula, Anamala, Eravimala, Devikulam and Anachal. Anamudi (Anamala) the utmost peak of Westearn Ghats is in Munnar Grama panchayat. This uppermost has a height of 2695 m. The district which lies mostly in the high land has a key part covered with dense forests and has numerous steep hills and deep valleys. About 44% of the district is forestry area. Because of the undulating geography large area of the district is not fit for cultivation.(Kerala Vital Statistics,2018). The district is blessed to have a vast river basin (Periyar river basin) which help thrive the flora fauna of the land and there is a vast amount of water resource which have been capped in dams through work of men.



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IV. SPECIALTY OF DAMS FROM THE HISTORY OF CONSTRUCTION

In Idukki dams is constructed and belongs to Kerala state Electricity Board. Idukki arch dam is built on gorge between Kuravan and Kurathi hills in Kerala. It is a 3rd largest arch dam in the world. This famous curve dam is a wonder that has predicted life of 300years.It is a first ever arch dam in India and biggest hydroelectric project of Kerala. It has the largest reservoir of water. The arch dam construction commenced on 30th April 1969 and therefore the storage process started within the month of February 1973.The dam is 365.85 meters long the entire volume of 450000 m3. The active capacity off dam is 1460 X 106m3.During the dam construction the arch shape was selected which has similarity to 1/4th of coconut shell. The Dam is designed to reduce earthquake. During the construction of dam ice cubes were used in preparing concrete mixture to regulate and reduce temperature.464000 cubic meters of concrete was utilized for the construction of dam. Being a thin arch dam it has top length of 365.85meters and width of 7.62meter at top and 19.81 meter at bottom.

In 1919 E.J Jacob an Italian Engineer had submitted a proposal to Travancore government for construction of small dam with low power generation and hence was rejected as government favored Pallivasal project. In 1932 W H john superintendent of Malankara Estate published an article in Malayala Manorama based on insight received from Karuvellayan chemban Kolumban (Head of (Oorali Tribe). After visit with his friend A. C. Thomas Edattu (who took pictures of Idukki Kuravan Kurathimala) to site W H John submitted a report with help of his brother who was an engineer, however owing to the expenses estimated an amount of twenty six crore for dam construction it was thought non feasible. M J Philip (a photographer of loyal studio in Thodupuzha) accompanied John W. H. to take pictures of Dam later on using field camera. In 1935 the Idukki project was brought to the attention of government of Travancore by assembly member K A Narayana Pillai. In 1937 Italian engineers commissioned by Government of Travancore, Angelo Omedayo and Clantheyo Masele conducted a feasibility study on proposals submitted earlier and found the possibility of two dam's one in Periyar at Idukki and other in cheruthoni interconnected by means of a tunnel and power generation in a power house located on bank of periyar itself. Although In 1947 the site was visited by a group of engineers from Travancore government consisting of chief electrical engineer Joseph John submitted preliminary investigation report in 1949. On request from Government of Travancore of being unable to bear the expenses of construction of a possible dam in Idukki the Government of India took up detailed investigation under central water commission In 1956 Gulzari Lal Nanda the Minister for irrigation and power Government of India did formal inauguration of investigation of Idukki project and was completed in 1961.Project work started in 1963 after sanction from Planning commission with proposal of a single reservoir flanged by three dams 164.6 m (540 ft) high concrete non overflow arch dam at Idukki,132.6 m (435ft) high masonry gravity dam across Cheruthoni and 74.7m (245 ft) high earthen dam in Kilivallithodu and a power tunnel surge shaft, four LP tunnel 8 penstocks and eight 100 MW generators. In 1964 the preliminary works of project started under superintendent engineer E.U. Philipose. Late Sri V Ranganathan was the chief engineer in charge who visualized the project in the present form. A revised proposal based on SNC was approved by planning commission in 1966. The grant in aid from Canada was received by government of India in 1967 after signing aid in agreement under Colombo plan. The project was administrated by Dr D Babu Paul IAS who was the project coordinator for Idukki Hydel Project and District collector. The first phase was commissioned by Prime Minister Mrs. Indira Gandhi. The second phase was commissioned in 1986 enhancing capacity to 780 MW.

Kolumban had vast knowledge of forest accompanied engineers for sight inspection. KSEB later allowed a monthly pension Rs 40 to Kolumban as appreciation of these services. There is a standing memorial Kolumban at dam site. The narrations of legendary curse story of Kuravan and Kurathy being cursed by ram when stayed at seethe beauty taking bath in Periyar River the curse converted Kuravan and Kurathy into hills. When the couple asked for mercy of not being separated ram them freedom from curse (Moksha).When they will be joined forever .Tribals observed the construction of Idukki dam to be the freedom from curse for Kuravan and Kurathy as they are joined by the Idukki dam constructed for the purpose of Hydroelectric power generation. Idukki dam has three inspection galleries at three different levels for visitors. The dam protects Kochi, Ernakulam, western areas of Thrissur district and Periyar river side from extreme flood. When building a dam in the most stable area of Idukki in a George went through serious interventions and technology expertise and material has all the dams gone through the same? This has to be thought of to prevent disaster in future.

There are many other dams but the most disputed dam is Mullaperiyar Dam which is Standing beyond the life Expectancy mentioned by the construction engineers. The dams promote tourism and social development in the surrounding area.. Many dams in Idukki have cracks. On 18 November 2011, small cracks appeared in at least three places of the dam reservoir due to seismic tremors measuring 2.8 and 3.4 on the Richter scale (Singh, Raghavan, and Raju 1992; Patkar et al. 2011) The economics and energy of the state relies on dams but beyond this the human life is important and needs to be given prime importance

In the case of Mullaperiyar the dam and water quantum is in state of Kerala. The treaty of 999 years was made between the Maharaja of Travancore, Visakham Thirunal Rama Varma (who really did not want to sign) and the British Secretary of State for India for Periyar Irrigation Works. The lease agreement was signed by Dewan of Travancore V Ram

Iyengar and State Secretary of Madras State J C Hannington. This lease was made after 24 years negotiation between the Maharaja and the British. 8000 acres of land for the reservoir and another 100 acres to construct the dam. The tax for each acre was ₹ 5 per year. The lease provided the British the rights over "all the waters" of the Mullaperiyar and its catchment basin, for an annual rent of ₹ 40,000 A study conducted by The Centre for Earth Science Studies (CESS), Thiruvananthapuram, had reported that the structure would not withstand an earthquake above magnitude 6 on the Richter scale. Ramnad kings preliminarily studies is against construction. After failed attempts to renew the agreement in 1958, 1960, and 1969, the agreement was renewed in 1970 when C Achutha Menon was Kerala Chief Minister. According to the renewed agreement, the tax per acre was increased to ₹ 30, and for the electricity generated in Lower Camp using Mullaperiyar water, the charge was ₹ 12 per kiloWatt per hour. Tamil Nadu uses the water and the land, and the Tamil Nadu government has been paying to the Kerala government for the past 50 years ₹ 2.5 lakhs as tax per year for the whole land and ₹ 7.5 lakhs per year as surcharge for the total amount of electricity generated. The construction of new dam is opposed by Tamil Nadu for their own concern and Kerala government has their own concerns for safety of people and an amenable agreement cannot be reached. Although the case is in court only central level intervention can prove to be effective to reach a settlement of this issue and needs to be done proactively.

V. LANDSLIDES AND FLOODS

Occurrence of floods in Idukki is not new in history. Landslides in Idukki occur every year during monsoon but since it's localized it goes unidentified in national media. Massive urns and burial sites have been uncovered in Idukki which speaks of a migration from hills in the days before Christ for which reasons are unknown. There have been historical observations that once Idukki district had a land slide which wiped away a large quantum of prehistoric population. The flood of July 1924 (1099 ME) so called 'great flood of 99' mountain called Karinthiri Mala was washed away by this flood another flood hit in August 2019 hit lives of 2 lakh people directly. The existence of Idukki in seismic Zone III and the soil being unstable adds to greater risks. The failure of dam administration can lead to massive destruction. Environment must be cared for before reaching hasty conclusions.

For any environmentally administered projects to be worth enough it should withstand the strides of time such projects which cannot withstand time and is more or less feasible must be dropped in fragile region. The statistics of calculating the environmental value of a region is not in equivalence to the time period of construction and inauguration of a project say, consider building a dam it takes almost ten to twenty years effort in construction of a dam the value of a dam power generation is calculated based on the amount of anticipated power generation after its inaugural and is revived from time to time over the years by authorities while the value of environmental loss in the particular place remains the same. This 'environmental value precision lag' must be accounted for in the future projects to make the projects more environmental friendly and replenish the damage caused to environment with same rigor.

The different recommendations which any stakeholder can introduce with regard to dam are employing a group of engineers who have in detail knowledge of the dam from the very first day of inauguration, a platoon of workers trained under the same engineer. The technical know-how and details must be taught to a second in line engineers in case of emergency. The new induction of engineers trained under the old must happen over years till the dam is decommissioned. A dam security force other than the police personnel is a must. The people in vicinity must be taken into trust and be involved in the replenishment of environmental damage. Eco Tourism activities need promotion and governmental aid for flourishing in dam vicinity. Planting of trees and creation of foliage must take place along with dam construction. New technologies must be imported and collaborations sought for reducing the environmental damage. The dam must be reconstructed if need be for every dam a validity period must be calculated and needs to be decommissioned just after such a period is over, Dam maintenance must review the dam strength from time to time if need arises decommissioning process be prioritized. Disaster risk management measures must be ensured prior commissioning. Alternative ways of disaster aftermath need be studied from possible hazards and rescue measures in varied angles.

VI. CONCLUSION

Dams can prove to be good if the risks involved are given due recognition and the economics involved is studied in detail. The existence and non-existence of dam depends largely on public and governmental opinions. Proper technology its transfer and enhancement will ensure safety. Dams viewed as national assets could be maintained by central committees with review time to time. The environmental administration related to dams ought to leverage the sustainable features of particular project on a need based analysis.

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