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## LIVLIHOOD OPTIONS CHANGING IN SCENARIO

### Fisheries Livelihoods in Mettur Dam Reservoir, Tamilnadu, Current status and future possibilities.

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**Abstract :** Mettur dam reservoir and its water resources dependent livelihoods face multiple challenges. The Mettur Dam, Stanley reservoir remains one of the largest reservoirs in south India and the oldest in Tamil Nadu. Physical limits of reservoir is 85 km long and 8 km wide encompassing a river banks of over 290 km. The study aims at understand the livelihood patterns of fishermen around the Mettur Dam Reservoir, a tributary of river Cauvery located in Mettur Taluk, Salem Districts, Tamilnadu, Peninsular in India. The study focuses the fisheries in Mettur dam source of livelihood, house hold surveys, current status and future possibilities besides trying to identify the key issues and constraints the fisheries development. Fisheries provides food and income for rural communities of people dependant on it. This study investigates the dependent Fisherman of 56 villages and their livelihood practices and fisheries change over in the last decade and its alternative income and food generating strategies. Dams tend to be constructed to enhance socio-economic development activities. A fish seed farm was introduced in 1928 fish carps such as Rohu, catla, Mrigal and calbasu established in farm continues to supply fingerlings for release into the Stanley reservoir. In Mettur fishing is done by licensed and the catches are sold in agreed rates exclusively to the marketing Co operative which disposes of the fish to highest bidders. In other remaining reservoirs, fishing is directly controlled by the Department and has an introduced fish breeding centre to produce necessary stocking material and quick-growing carps.

**Key Words :** Livelihood strategies, Fisheries trade, Reservoir fishing, sustainable livelihoods and rural commodities.

### 1. Introduction

Fish stocks, both marine and inland, have either degraded or collapsed from their historical peaks (Allan et al., 2005; Pauly et al., 2002). The main threats to biodiversity associate with either overfishing or being fished at their biological limit, putting them at risk with increasing human and environmental pressures. Overfishing has been natural resource concerns in both industrialized and developing world. It is considered to precede all other human disturbances in contributing to the resource extinction (Jackson et al., 2001). In Southeast Asian countries, overfishing leads to several negative impacts, such as decreased employment opportunities and revenues, food security, poverty, social stability and conflicts (Salayo et al., 2008). From the governance perspective, it is being compromised by the failure of the centralized governance system of resource (Acheson, 2006; Pomeroy, 1995) which drove an increased recognition of community role in resource management.

It is estimated that 12 million people are directly engaged in fishing and about 60 million are exclusively dependent on it for a living in India. The National Water Policy, 2002, emphasizes on efficient planning and management of water resources in view of its importance for human and animal life, to maintain ecological balance and for economic and developmental activities not only in terms of its importance for human and animal life, but also for ecological balance and economic and developmental activities. Although it stresses the importance of bringing all water resources available within the category of utilizable resources, allocation for fisheries development has not been specified, considering the fact that it supports livelihoods of majority of marginal fishermen. In Tamil Nadu India, the state water policy 2002, has ranked fisheries as fourth in order of its importance while operating any water resource projects. The assumption is that, given the proper socio-economic, environmental and institutional frameworks, fisheries can contribute significantly to the household income and provide a way out of poverty for a significant section in India. However, the absence of integrated policies or management approach in sectors such as water resources in a majority of developing countries including India, limits diversification of livelihoods.

## 2. Aims and Objectives :

The aims and objectives of the study area are Livelihood options changing in scenario in Fisheries livelihoods in Mettur dam reservoir are :

1. To study the ability of livelihoods strategies sustainability.
2. To assess the sustainable livelihoods linking poverty alleviation and nature conservation.
3. To identify the communities and determinants the livelihoods of fisheries in Mettur taluk.
4. To measure the economic impact of adaptive responses to future scenario change in the Mettur Taluk.
5. To analyse the urban and rural trade and consumption in Mettur Dam.
6. To suggest the impacts of potential study areas were selected by first conducting a preliminary review of data available from household and market studies.

### 3. Status of Fisheries:

Mettur can be divided into upper and lower Mettur based on whether the part of the town lies upstream or downstream of the river. Mettur, meaning "town with crests and troughs", obtained its name from the undulating rocky nature of the land that makes the town an ideal place for the dam on Cauvery river. Nerinjipettai is about 4 kilometres from the top of Mettur at the foot of Palamalai. The hills almost reach out to the river with just the State Highway from Mettur to Erode between the river and the hills. There is a boat transportation to Poolampatti, a place known for shooting films.

Pannavadi parisal thurai near Kolathur is located 12 kilometres far from Mettur. There is a boat transportation in between the Kolathur and Nerupur of dharmapuri district. The boat transportation also available from koattaiyur 20 kilometres from Mettur. When the water level decreases in Mettur dam, it is possible to see an Old Nandhi statue, an old church, and a palace (Koattai) of Tippu Sultan which has sunk beneath the water. Palar, located 30 kilometres from Mettur, is at the border for Karnataka and Tamil Nadu State. for a considerable portion of population dependent on fisheries, whose livelihood improvement.

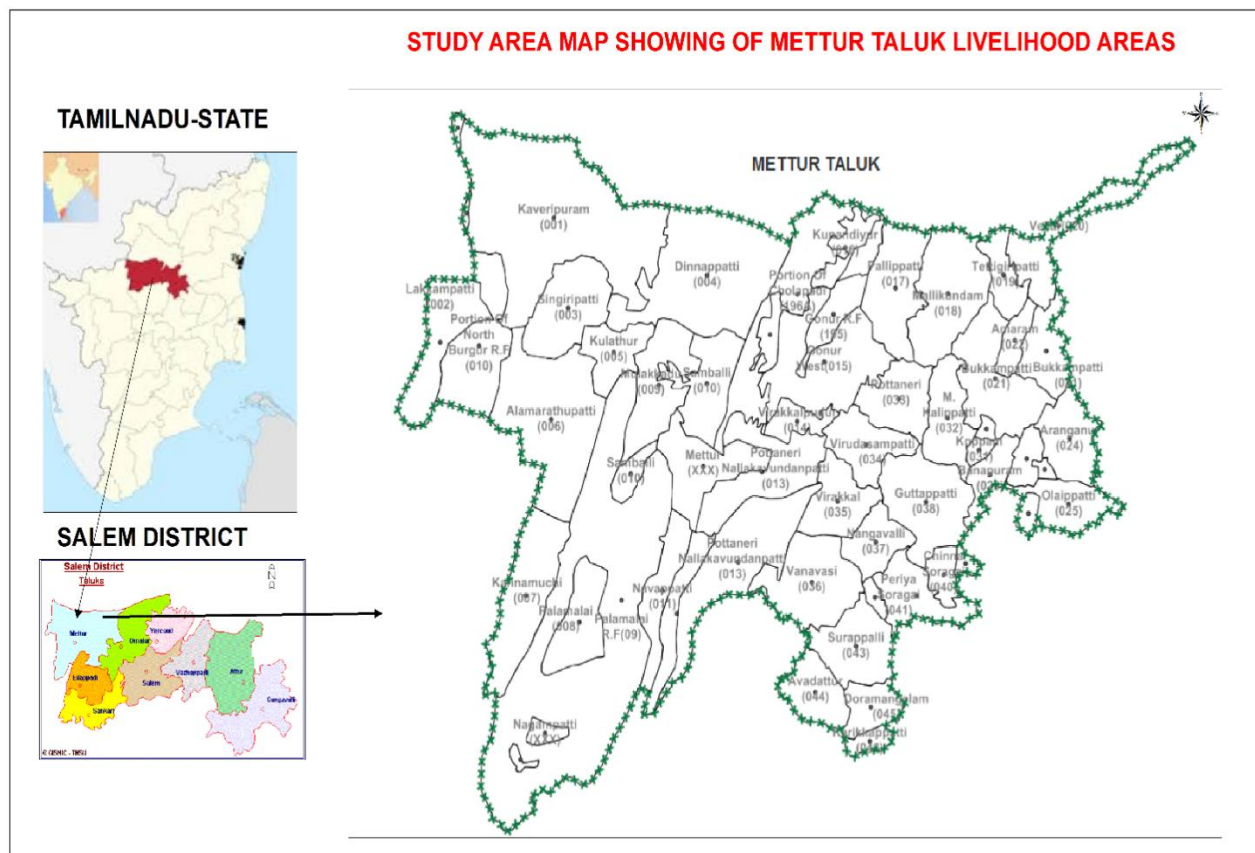
#### 4. *Methodology :*

The data was collected from the ten fisher family pertaining to income and livelihood related activities in Mettur reservoir. The field studies in six villages followed by the wider validation exercises made it possible to develop a composite rank for each of the different stakeholders group based on their primary livelihood activity. Mettur can be divided into upper and lower Mettur based on whether the part of the town lies upstream or downstream of the river. Fisher populations and their changes. Fish yields from the Stanley Reservoir were surveyed. Fishing communities and major markets of fish trade are spread along the basin .

However, the number of households within these communities vary from 4 to 100. During the course of the study, the team interacted with sixteen communities. Small-scale fishermen are more vulnerable and are forced to migrate across the basin. Fisheries have emerged as an important food production sector of the State contributing to the livelihood as well as food security of a large section of the people. Fishing activity, starting as a traditional livelihood activity in early fifties has now transformed into commercial enterprise contributing to the State.

#### 5. *GEOGRAPHICAL EXTENT OF METTUR TALUK:*

Stanely Reservoir (Mettur Dam ) is the only large reservoir in the state of Tamilnadu. It is located in the 11<sup>0</sup>50 N and 77<sup>o</sup> 50 E. The water spread area at SRF is 14,690 ha.with a capacity of 2646 million m<sup>3</sup>. And has a maximum length is 53 km, width is 8.85 km and depth is 47.8 m maximum, mean depth is 18.5m. It has multilevel outlets and shoreline 293 km.simultaneously impounding with the Cauvery River, fisheries planning development has undertaken. The dam was commenced in 1925 and completed in 1934. Fish was stocked in the headwaters of ahead of closure of the dam. The gangetic carp was introduced in 1928 the ccatla, Roghu, Mirthual, Kalpaz,Karuvillzhi kendai,milky fish from 1948 onwards stocked. In Tamilnadu, the state water policy 2002, has ranked fisheries as fourth in order of its importance while operating any water resource projects. The assumption is that, given the proper socio-economic, environmental and institutional frame works. Fisheries can contribute significantly to the household income and provide a way out of poverty for significant section in India.



**6. Fisheries of Population:**

The Mettur dam is the largest reservoir in the state having a total water spread area of 15346 ha. The Department stocks 46 lakhs of fingerlings every year at Mettur Dam reservoir to enhance fish production. Different varieties of fish as Rohu, Katla ,Kalpauz,Jilabhy ,Mirtual,kendai meen,virali fish, Nethli fish.These variety of fish has farm an in this reservoir. Villages in mettur taluk near by cauvery basin like poolampatti,kirakaranur,kattur,kolathur,pannawadi,pullavadi,chettipatti and palar are the areas specifically livelihood peoples in these site.

**7. Livelihood Vulnerability :**

**Agricultural expansion**

Rice and fish are backborn of the Mettur Taluk’s flood plain. Salem Districts considers rice as “white gold” and has an ambition to become one of the major milled-rice exporting countries in the global market. This has its effects on the Cauvery river basin area as well.

**Fishing sources :**

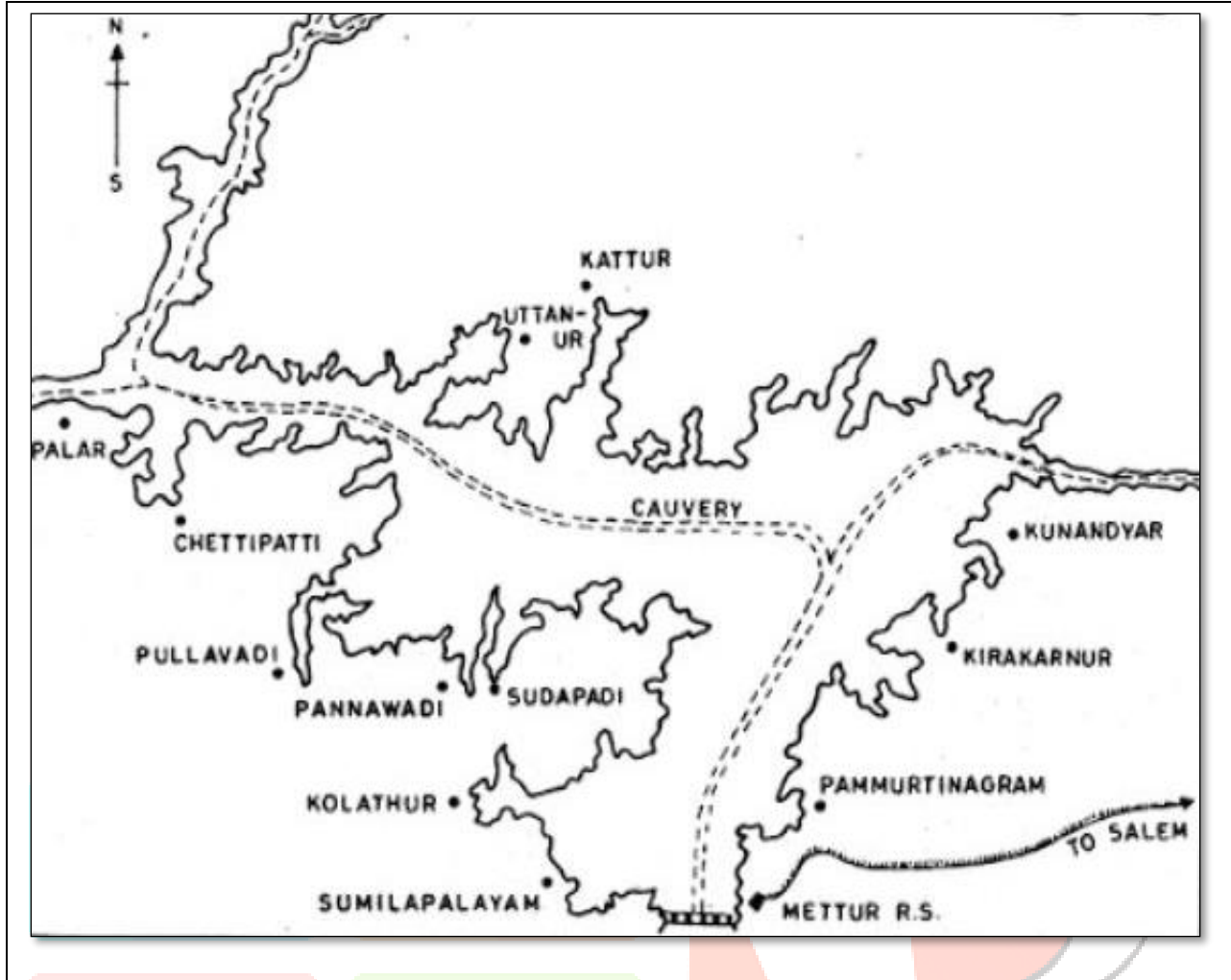
The fisheries of the Mettur livelihoods fisheries were traditionally divided into three types: small scale or subsistence fishing, middle-scale or licensed fishing and large-scale or fishing lots. Open-access areas are shared between small-scale and middle scale fisheries, which are outside the fishing lots and fish sactuaries. While small-scale or subsistence fisheries can fish for the whole year round, middle-scale fisheries can only operate with a fishing license restricting the number and kinds of gears used and the fishing period which is allowed only during the open season.

Itollu has been noted in commercial catches since 1968-69 but, unlike mrigal, has been continuously increasing the first rank in 1973-74 with 26.51 percent of landings. Labeo calbasu is another species of transplanted fish that has established itself firmly in Stanley Reservoir. In 1966-67, it contributed a mere 2.4 percent to the fish landings but rose to a pre-eminent position in 1970-71 with 32 percent. Thus, even if some species decrease (e.g. Catla, C. cirrhosa), others like rohu, calbasu, etc., could compensate for them. Impounding has caused a decrease of Siloniu silondia and Pangasius pangasius but the overall trend is a blight increase and stabilization in the total catfish population. Since 1963-64 catfish have become dominant through increased landings of Walla~oa ttu and Mjskus aor. The former formed only 0.8 percent of catches in 1942-43 but rose to over 17 percent in the next ten years. It is believed that the very low water levels and high turbidity might have contributed to the increase in the predatory catfish population. The highest catch (yo percent of landings) was recorded in 1964-65.

### Fishing yield :

These fish yields from the mettur dams These are under estimated by at least 10 percent. In the case of Stanley Reservoir, the catches range from 550 tonnes for 1 year. .This wide variation is due to low water levels, restricted fishing, etc. few landing centres are authorised- Pannavadi, Keerakaranur, konandiyur, kulathur, madeyankuttai, etc. Each licensee's catches are weighed, taken into account and he is issued a receipt --for payment to be made subsequently at Mettur. The running of water catches of each centre are iced and transported Mettur either by a carrier boat (6 m parisal padagu (wood boat), and wooden boat diesel engine) or by road in vans. After fulfilling local retail demand, the catches are weighed and handed over to the contractor. Annual tender is invited from the districts of tamilnadu, and the highest bidder is given the contract for one year. Based on the tender, the price to be fixed for the fishermen-licences is decided by the Cooperative.





*Livelihood villages near by reservoir*



Mirthual Fish



KatlaFish



Roghu Fish

*Fig. Varieties of Fish in Mettur Dam*



*Photo.1 Mettur Dam site and varieties of fish in cauery basin.*

### 8. Fishing in Mettur Today & Fishermens co-operative:

Fishing in today mettur is organized around licenses. Fishermen are allowed to fish the reservoir if they have a valid licence. License should be renewed by every year and fishermen have to sell the fish in local cooperative society. The society will sell to the contractor. The society buys fish from fishermen according to their weights at a guaranteed rate, categories were graded the weight and kind. This guaranteed minimum price is decide by the society every year and issues a “Tender “to distribute the Mettur dam fishes. In present fishermen have their

log their daily catchment fish can be graded and earnings will be earned depend upon the quality and quantity of fish caught. In summer, May was observed that downstream of the dam, the river seemed to flow, it's also a hydropower dam, and fresh water is released regularly into the river as electricity is generated. Today migratory fish is stocked and make its

### 9. Fishing in Mettur today:

Today, in Mettur, fishing is organized around licenses. Fishermen are allowed to fish the reservoir if they have a valid license. Fishing licenses need to be renewed every year. Fishermen have to sell their catch to the local cooperative society, the Mettur Dam Fishermen Co-operative Marketing Society. This society in turn sells the catch to a contractor who then sells the fish to wider markets in Bengal and Kerala after retaining a certain minimum for the local market. The society buys fish from fishermen according to their weights at a guaranteed rate. Fish are graded along four categories of weight and kind. This guaranteed minimum price is pre-decided

by the society every year. Every year, the society also issues a "tender for the disposal of Mettur dam fishes" "Through this tendering process, the highest bidder over the minimum price (set by the society) wins. In the last three years, the tendering process has not been initiated in Mettur leading to a monopoly by one contractor. Currently, in Mettur, about 200 licenses are issued every year. Each license costs about INR 1200 and is valid for a year. Fishermen have to log their daily catch according to grade of fish caught in a 'passbook'. Their earnings depend on the grade and quantity of fish caught, Mettur's Stanley reservoir remains one of the largest reservoirs in South India and the oldest in Tamil Nadu. At its maximum the reservoir is 85 km long and over 8 km wide encompassing a shoreline of over 290 km. B. Sundar Raj, the then Director of Fisheries in Madras remarks that the Fisheries Department was perhaps not consulted when the dam was being designed, to create a fish friendly design. Although the dam was not built with a fish pass/ladder, it was assumed that the Ellis surplus and gradual gradient of the surplus channel would allow for fish migrations upstream. According to Dr. Sunder Raj, the Gangetic Carp was introduced in 1928 while other carps such as *rohu*, *mrigal* and *calbasu* were introduced from 1948. A fish seed farm was also established near the dam. This fish seed farm continues to supply fingerlings for release into the Stanley reservoir. Hatchlings are supplied to the Krishnagiri reservoir upstream of Mettur and other reservoirs in Tamil Nadu. Regulations such as the Indian Fisheries Act (1897) and Tamil Nadu Amendment (1927) were enforced to prevent fishing in certain areas below the dam as well as enforce mesh regulations to prevent

the capture of small fry. Furthermore, fishing is prohibited for 2 km immediately downstream of the dam (in fact, all dams in Tamil Nadu), that stretch of the river has been declared a sanctuary in order to ensure that biodiversity is preserved. Visiting in the height of summer in May, it was observed that immediately downstream of the dam, the river seemed to flow. Given that Mettur is also a hydropower dam, freshwater is regularly released into the river as electricity is generated. Currently, fingerlings that are about 45 days old are released into the reservoir.



## 10. Conclusion

Fishing in mettur populating the reservoir with the kinds of fish believing and free moving Cauvery river in this area and its biodiversity may be impossible to recreate in a reservoir, the fisheries dept. needs to think of other fish that might also be suited for the reservoir and thus increase the diversity of fish caught with emphasis on local varieties and fished in the reservoir. This study reveals that livelihood is context specific and suggested four distinct Villages as keerakaranur, pannavadi, poolampatti and koneripatti relating to different types of resource dependency.

The choice of household's strategies is associated with a range of socio and ecological factors. The primary sector in Mettur dam is substantial of the population, particularly in rural areas. People now rely more on natural resources than before while the cultivation land per capita continues to decline. Thanks to the uniqueness of the ecosystems and abundance of natural resources. The resource abundance can be both blessing and a curse. On one hand, it indicates the significant role of environmental income in household livelihoods.

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