

## **Activities of State Fishery Department of Nagaland: a study of Doyang Reservoir**

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### **Abstract**

Nagaland – a land of colours and tribes of Northeast India is having a huge potential of development in fisheries with sufficient water resources. It is the state where the capital investment and industrialization is low so the growth of the state can be boosted by recognizing the available untapped natural resources. The state is having number of water resources including 14 major rivers and number of freshwater lakes and reservoirs. Other than agriculture, livestock is another key economic factor of Nagaland which includes fishery, animal husbandry, cattle farming, piggery and poultry. The livestock in Nagaland has huge possibilities for future growth. People here are very much fond of non vegetarian items. So, with available water resources and high demand for fish and meat items, the local people of the State is left with very good opportunity of undertaking fish farming or pisciculture. Since, the local folks are poor and ignorant, for the proper development of fishery, role of the government is very important. Hence, this paper attempts to review the activities and supportive assistance of the State fishery department. Further, it is attempted to assess how far the local fishermen of Doyang Reservoir are satisfied by the State fishery department of Nagaland. The study result shows that the role of state fishery department is significant with number of developmental activities. However, that is not sufficient and lots more activities could be taken up for the development of fishery and fishermen on regular basis.

**Keywords:** *Fishery, State Fishery Department, Fishermen's satisfaction, Doyang Reservoir*

### **Introduction**

Nagaland- one of the states of Northeast India is an abode to a rich variety of flora and fauna and it has been suggested as the “Falcon Capital of the World”. The state is endowed with rich natural resources especially water resources making it a potential place for various indigenous activities. The major rivers of Nagaland are Doyang, Dikhu, Dhansiri, Tsurong, Nanung, Tsurang, Tsumok, Menung, Dzu, Langlong, Likimro, Lanye, Dzuza and Manglu. Besides these rivers Nagaland is blessed with beautiful freshwater lakes like Shilloi Lake, Dzudu Lake, TotsuWozhu Lake, Tsumang Lake and Lake Aizuto. Because of the presence of numerous rivers and water bodies in the state, there is a huge potential for development of fish farming in the state. Livestock being one of the significant economic factors of the State, it is important to upgrade the practice and boost the production of various fish and

meat products. The local people of Nagaland include a lot of fish and meat items in their daily diet; hence it is natural that the fish and meat products are in high demand. Also there is a ready market for dairy, poultry and fish products in Nagaland. So, the role of the State Fishery department is very significant to develop, promote and maintain the fisheries with proper utilization of the available water resources of the state.

### **Importance of the Study**

With the remarkable growing demand of fish and having blessed with the significant number of water bodies, aquaculture serves as one of the best means of livelihood for fishing communities in Nagaland. It is revealed that the objective of the State Fishery department is to attain the level of self sustenance in fish production through efficient utilization of available resources by laying special emphasis on human resource development, diversifying fishery activities and applying more technological inputs. Hence, it turns out to be essential to review the activities and achievements of the State Fishery Department. In this connection, for getting more clear picture, opinion of the fishermen of Doyang Reservoir, Wokha, Nagaland have also been assessed.

### **Methodology of the Study**

The study is based on both the primary as well the secondary information. For studying the activities and functioning of the State Fishery Department, information are collected from face to face discussion with the officials of the Department with the help of an unstructured questionnaire. Also various secondary records are obtained from the Department's Annual Reports, others publications etc.

In connection to the role and activities of the State Fishery Department, a small primary survey of fishermen has been done to find out whether the activities of the State Fishery department is satisfactory to the fishermen or not. For this, 60 fishermen have been selected who were available at the time of survey in and around the lone reservoir of the State i.e. the Doyang Reservoir of Wokha district. The survey has been done to assess their opinion on the working and performance of the Fishery Department using unstructured questionnaire.

### **Activities and achievements of State Fishery Department 2007-14**

The State Fishery Department of Nagaland attempts to develop the aquaculture scenario in the state in all the possible ways. Some special efforts are made by the Department to fish culture by way of adopting semi-intensive fish culture, paddy-cum-fish culture, reservoir fisheries, integrated farming etc. the farmers and the Department. Some of the activities of the Department are summarized below:

The department established a Giant Freshwater prawn hatchery at Nathanglu Government Fish Farm, Mokokchung as a pilot project during 2008-09. This is the only facility in the entire of Northeastern region of India, besides Tripura, to have successfully bred Giant Freshwater Prawn using artificial sea water. The hatchery unit has begun operation since May 2007, and has successfully bred and produced 60,000 numbers of prawn larvae in the experimental operations.

In celebration of culmination of the “Year of Farmers 2007” in Nagaland, the department has supplied 16.5 million fish seeds free of cost to the local fish farmers to increase fish production in the state.

The Department imparted training to 400 persons on Intensive Aquaculture in Ponds/Tanks through the assistance of various Centrally Sponsored Schemes on Training and Demonstration in 2008.

The Riverine Fisheries project funded by NABARD under RIDF XI at Dzüleke was made operational from February 2009. The implementation of this project has increased the awareness on resource mobilization among the rural folks.

With the adoption of Chocolate Mahseer (*Neolissochilus hexagonolepis*) as the state fish, arduous studies on collection, artificial propagation and various research programmes are being initiated towards replenishment and conservation of this species,

In commemoration to the “Year of Capacity Building 2008-09” in the state, the department imparted training to 200 in-service technical personnel and ministerial staffs to update the technical know-how and professional skills respectively through organization of training on skill up-gradation, orientation and motivational programmes. Till the ending of 2009, 700 farmers were trained on Intensive Aquaculture in Ponds and Tanks, Value Additions, Ornamental Fisheries etc.

Beginning from the Annual Plan 2009-10 onwards, the Department introduced a new scheme/programme entitled “Development of Community-Based Fisheries and Water Bodies” that brought community-based fisheries into developmental folds by creating sizeable water bodies, aimed at more fish production which fetches sustainable income for the rural communities who are deprived of opportunities. Through this scheme, water spread area of 1.00 hectare and above was retained under composite fish culture technology at a unit cost of Rs. 6.00 lakhs/hectare under the assistance of negotiated loan of RIDF, NABARD. This ambitious programme is conducted at phase-wise manner especially located in foothills and low-lying areas of districts. During the Annual Plan 2009-10, an area of 20 hectare has been developed and a sum of Rs. 100 lakhs was spent which contributed to the production of about 38 metric tons. During 2010-11, an amount of Rs. 200 lakhs was spent. In 2011-12, a sum of Rs. 200 lakhs was earmarked to develop about 40 hectare of water area. A sum of Rs. 300 lakhs was earmarked to develop about 60 hectare of water bodies during the Annual Plan 2012-

13. And finally during the Annual Plan 2013-14, a sum of Rs. 400 lakhs was spent to develop about 80 hectare of water area.

Under Fish Farm construction programme, the Department in 2009-10 initiated developing a new Demonstration cum Seeding Farm/Centre at Kade, Kami village, Pfutsero block, Pheck and is targeted to complete within a time frame of 4-5 years in phase manner and will become operational since then.

Over and above the achievements/programmes under State Plan, the Department successfully implemented the ambitious District Agricultural Plan (DAP) under RKVY by harnessing the untapped water-bodies in the state which facilitated commendable contribution towards sustainable fish production.

With the declaration of 2010-11 as the “Year of Entrepreneurs” by the State Government and continuation of the year round State-Wide Road Show Programmes, the Department spent an amount of Rs. 30 lakhs to showcase the Department activities in the districts, benefiting the grass root populace of the State.

During 2010-11, the State Government had formulated a noble scheme towards upliftment of women/girls through Gender Budgeting. Through this flagship scheme, the Department emphasize on integrating women in fish farming through development process and activities by organizing Awareness programmes/Capacity Building and assisting the grass root women Self Help Groups (SHGs) in providing inputs, additional returns and benefits towards pond management that directly sustains family livelihoods, economic development and food security of the members of the SHGs. The Department further imparts various trainings under Capacity Building to women SHGs on value addition products of fishes so as to develop means of sustaining their livelihood. An amount of Rs. 10 lakhs has been incurred in 2010-11 to organize these programmes.

Besides the normal State’s Plan programmes, starting from Annual Plan 2010-11, the Department proposed to implement few ambitious programmes funded under the Special Plan Assistance (SPA) schemes namely to; Development of Paddy-Cum-Fish culture, Additional Infrastructure for Cold Chain/ Cold Storage Project and Compact Area Fishery Development Programme (Mission Mode) amounting to a total of Rs. 400 lakhs.

The department has been assisting fish farmers through supply/distribution of fast growing compatible major carp seeds at 50% subsidized rates so as to augment more fish production in the State. During the Annual Plan 2011-12, 18 million seedlings were supplied that covered an area of 1450 hectares water area. During the Annual Plan 2013-14, 11 million seedlings were supplied that covered an area of 1100 hectares or water area.

The Department has successfully completed the Cold Storage-Cum-Ice Plant at Brooders' Fish Farm, Half Nagarjan, and Dimapur by way of installing new updated machineries and equipment during the year 2011-12.

In addition to the normal State's Plan programmes, the Department has been implementing Compact Area Fishery Development Programme under State Earmarked Programme through PPP mode as Fish Seed Production Units/Farms along with Centrally Sponsored Schemes to develop more numbers of new ponds and tanks in potential areas that may facilitate in benefiting a large section of progressive farmers. And in the Annual plan 2012-13 another programme, Innovative Programme (Culture of Swamp Eel), was implemented along with the previous year's Compact Area Fishery Development Programme.

RashtriyaKrishiVikasYojana (RKVY): Development/harnessing of untapped water bodies in all the districts as Compact area/Convergence Programmes amongst the Agri and Allied Departments and Specified Departmental Programmes as National Mission for Protein Supplement (NMPS) is being successfully implemented.

#### **Supportive Measures to Lakes/Reservoir Fisheries- with Special Reference to Doyang Reservoir:**

The Department has undertaken number of developmental and support measures to Lakes/Reservoir Fisheries. The state fishery department adopted a new and innovative technology in underutilized lakes and reservoirs especially the lone reservoir of the state i.e, Doyang Reservoir which offers a major opportunity to enhance fish production in the State. The Doyang Reservoir occupies a water area of 2258 hectares and offers a potential resource for augmenting fish production in the State. Presently there are around 250-300 fishing families (which often rise to 500 in the peak fishing season) belonging to 23 villages who depend on the fisheries of the reservoir.

The Doyang Reservoir, situated in Wokha District of Nagaland, is one of the largest reservoirs in the north-east region of the country. It is situated between the coordinates 26° 13' 10" N and 94° 17' 90" E. The impounded Doyang Reservoir with a catchment area of 2258 ha falls under the category of "medium reservoirs" and is mainly fed by the rivers Doyang, Chumeya, Djupvu, Tzuza and Chubi. It is important in view of its biodiversity and has been a source of livelihood and employment generation for many fishing communities surrounding it. The fish fauna are recruited to the reservoirs from the riverine antecedents. The fish fauna of the reservoir is comprised of 90 species belonging to 19 families. It is documented that 51% of the fishes of the Doyang Reservoir are potential ornamental species and 35% are commercially important food fish.

During the Annual Plan 2009-10, multifold activities namely towards post-harvest management programmes, organization of the villagers (23 nos. of displaced villages whose lands are under submergence) into co-operatives, SHGs, societies etc. were undertaken by the State fishery department to facilitate better fishery activities and marketing.

The department have been regularly ranching the reservoir since 2001 and has adopted scientific approach in managing the water bodies to harness the potential to an optimum. Recent records of fish catch by locals are highly appreciable and have shown signs of high productivity level of the reservoir. The Department has also initiated awareness campaign to fishermen for fuller utilization of the reservoir and sustainable fisheries. During 2007-08, the Department have ranched the Doyang Reservoir with 10 lakhs of fish seeds to enhance the natural stock and fish production of the reservoir.

The Department has completed the Ice Plant at Doyang Reservoir, Wokha during April 2012 which helps the fishing community in preserving fish to increase commercial productivity, market production and improve the economic standards.

The Doyang Reservoir which offers a potential resource for augmenting fish production in the State, the Department has dedicated Motorised Boat to the fishermen and ranch the Doyang reservoir with 12 lakh fish seeds to enhance the production of fish in 2008-09.

#### **Survey Results of Fishermen in Doyang Reservoir:**

It has been seen that the crafts and gears used in Doyang are mostly locally made crafts and traditional gears except the nets, which are usually imported from outside. They usually use plank-built boats contributing more than 80% of the total catch. Gillnet was the most widely used major gear accounting for 80% of the fish catch from the reservoir followed by hooks and lines with 9%, traps (8%) and cast nets (3%). Most of the fish catch from the reservoir are transported to other districts of Nagaland and nearby districts of Assam. The fish catch is sold off to the retailers and dealers at landing centers, where it is packed in thermocol boxes and disposed to different places for further marketing. Table 1 shows the general information of the surveyed fishermen.

*Table 1: General information*

Total number of respondents/fishermen	Average Educational qualification of the respondents/fishermen	Average age	Average annual income of the fishermen before entering into the trade (in Rupees)	Average annual income of the fishermen after entering into the trade (in Rupees)
60	Class 8	35 Years	810000	2080000

Source: Field Survey

From the above table 1, it is clear that the average annual addition to the state’s national income from the people living in and around the reservoir was Rs. 8,10,000 but after entering into the fishing trade the average annual income of the fishermen has risen considerably to Rs. 20,80,000. This statistics shows that Doyang Reservoir has served as a boon to the rural population of the Wokha District.

According to the data collected from the field survey 30% of the respondents were agricultural labourers, 60% had their source of income from their own farm and the remaining 10% were either non-agricultural labours or others prior to their entering into the fishing sector. But with the construction of Doyang Dam in Wokha District, the occupational structure of the population was adversely affected. Around 23 villages in and around the reservoir was affected due to submergence of the land by water. This resulted in the loss of agricultural (cultivable) land and the people were forced to shift their occupation into the fishing sector.

An enquiry on whether the local fishermen are satisfied with the assistance and facilities provided by the Department shows that only 20.00% were fully satisfied with the assistance from the Department and the remaining 36.67% and 43.33% were either not satisfied or their satisfaction level were average respectively ( fig 1).

The figure 1 below shows that most of the fishermen were more or less satisfied by categorizing their satisfaction level as ‘average.’ From this it can be said that the expectation of the fishermen from the government is very large. The study revealed that there have been training conducted by the Department but these training was provided till 2012 only. It is also pointed out that the fishermen face large problems from the mosquitoes and other insects in the fishing area for which no action has been taken.

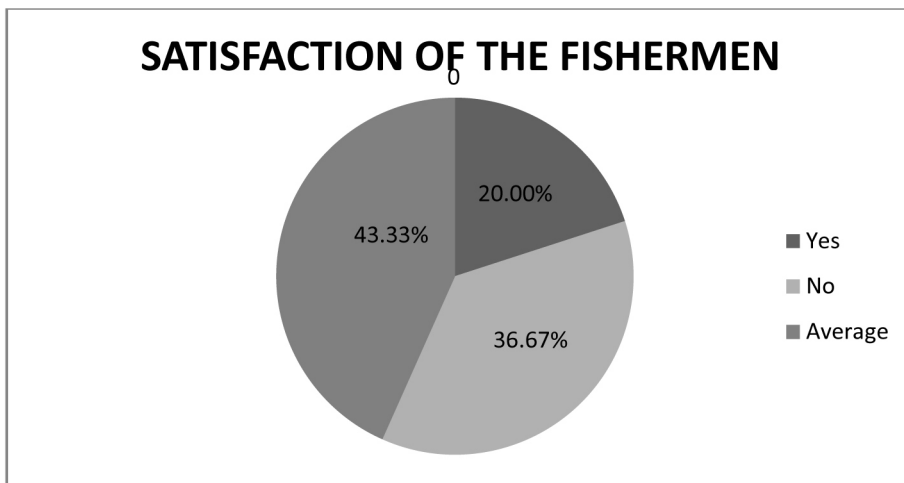


Figure 1: Satisfaction of the Fishermen on the Assistance given by the Department

## Conclusion

It has been seen that the State Fishery Department has been playing a vital role in developing the fishing activities in the State to promote self sufficient fish production and also to enhance export. To be particular the Department has been ranching the Doyang Reservoir since 2001. Regulation of local fish catch and systematic management of the reservoir is initiated with support from the District Administration. Moreover the Department has been providing the reservoir with fish seeds annually to enhance the natural stock and fish production of the reservoir. But, still there are lots more to be done for proper development of the fishery sector as well the fishermen. The promotional and developmental activities like distribution of assistive equipments, training and awareness etc should be undertaken on the regular basis in different places. If the fishery in Nagaland could be promoted and maintained sustainably it would serve as one of the best option of livelihood for the local folks.

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