SOCIO-ECOLOGICAL STUDIES ON MARINE FISHING VILLAGES IN THE SELECTIVE SOUTH COASTAL DISTRICTS OF ANDHRA PRADESH

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ABSTRACT

Coasts are an amazing gift of nature. Multiple pressures and excessive technological invasion on the marine fishing villages had created an environment in which life has become physically and mentally unhealthy. This paper emphasizes that investing in large-scale industrial fishing, building bigger boats, and giving subsidies would be a waste of resources as the fish hauls in these selective districts i.e. Krishna, Guntur, Prakasam and Nellore coastal communities have dropped off alarmingly in recent years. Investigating coastal regulations, policies, and their implementation is an urgent social need for the sake of the socio-ecological safety of coasts and host communities.

Keywords: Fishing, Ecology, Economy, Welfare, Sustainability.

INTRODUCTION

Today, fish are being over-harvested until the catch has become a fraction of the original resources and the fish are incapable of breeding successfully to replenish the population. If fish is over-harvested, the ecological functions of the marine ecosystem are lost. Unfortunately, the traditional fishing communities are also forced to adopt a technological fishing mechanism to satisfy the economic development of the country. The small traditional fishermen, who are no match for organized trawlers, are the worst affected by these developments (Pauly *et al.*, 1998). Thus, there is a constant conflict of interests between the conservation interests of environmental scientists and the developmental interests of economists in this rising fishing sector. Fish is an important source of protein in many parts of the world. While the supply of food from fisheries has increased phenomenally between 1950 and 1990, in several parts of the world fish catch has since dropped due to overfishing. In FAO 1995 reported that 44% of the world's fisheries are fully or heavily exploited- 16% are already overexploited, 6% are depleted and only 3% are gradually recovering. Marine fish resources show evidence of exhaustion. Modern fishing technologies using mechanized trawlers and small meshed nets lead directly to overexploitation, which is not sustainable. It is evident that fish have to breed successfully and need to have time to grow if the yield has to be used sustainably. Unlike agriculture or manufacturing, fisheries sector involves fish harvesting and not production. Fishing Down, that is, catching smaller fish at the lower tropic levels, is already a reality for India as for many other countries. India is an example of where the large fish are disappearing leaving behind ecosystems dominated by smaller prey fish (Pauly *et al*., 1998).

STUDY AREA AND METHODOLOGY

THE STUDY AREA

Andhra Pradesh State (A.P.), with 974 km of coastal line covering nine coastal districts from Srikakulam (north) to Nellore (south) it is situated between 13º N and 20º N. Length of marine coast line– 974 kms, continental Shelf– 33,227 sq. kms., No. of Fish landing centers–353, No. of fishing villages– 555, No. of fishermen families– 1,63,427, fisherfolk population – 6,05,428, stands 5th in the marine fish production among the maritime states of India. The study area covers 350 kms distance, which includes four endogamous fishermen populations namely the Jalari, Vadabalija, the Palli, and the Pattapu in the selective south districts of Andhra Pradesh i.e. Krishna (43), Guntur (36), Prakasam (67) and Nellore (94). Two sample villages were selected randomly in every selective district of the study area.

METHODOLOGY

The study is both descriptive and analytical in nature. It is descriptive with respect to the socio-ecological features of marine fishers and the impact of modern technologies on marine fisheries. The analytical part of the study is that it interprets and analyses the primary data to reach conclusions. The basic approach followed in this investigation highlights the eco-crises of fish and fisherfolk, coastal economy in the wake of modern technologies of marine fishing villages of selective districts of Andhra Pradesh. Both primary and secondary data are extensively used in this investigation. The primary data collected in this study focus on two areas. 1. A general profile of the socio-economic status of marine fishermen in the coastal villages (sample fishing villages). 2. The impact of modern technologies in the fishing villages (sample fishing villages). The primary data tends to focus exclusively on the fishermen community of the coastal belt of fishing villages of the selective districts of Andhra. Generally, these fishermen are backward in nature as caste and communal equations still operate to a great extent. Hence their position in the socio-economic ladder ends at the bottom.

RESULTS

In order to collect primary data, complete information regarding marine fishermen population has been obtained from District Fisheries Departments. The marine fisherfolk of the four selective districts constitutes the target in the study. The study area of the coastal belt comprises 240 fishing villages from which eight sample villages are chosen. The eight fishing villages selected are as follows:

1. Manginapudi
2. Gilakaladindi
3. Nizampatnam
4. Suryalanka
5. Vodarevu
6. Ramapuram
7. Krishnapatnam
8. Maipadu

The geographical significance of the sample villages selected represents its rich and varied bio-diversity. The selection of the sampling villages is based on three major criteria. 1. The predominance of both motorized and artisanal crafts particularly motorized marine plywood boats and non-motorized wooden canoes. 2. These villages have mechanized fish landing centers and have a sizeable number of Kattamarams. Thus small crafts, as well as deep sea trawlers, operate from these centers. These two aspects are relevant because a sizable mix of traditional and modern crafts enable the use of modern devices in fishing. 3. Another crucial factor regarding the selection of these villages is the pattern of their socio-communal composition. The total populations in eight sample villages are 5667 and 6164 for the year 2010 and the year 2015 respectively. In both the years 2010 and 2015, the respondents (fisherfolk) from the eight sample fishing villages are selected by random technique.

The most important aspect of the framework of the sample design is the information on the total number of respondents (fisherfolk) selected in two periods of time in data collection. In the year 2010, the total numbers of respondents in the sample villages are 200 respondents are selected during that period. While for the year 2015, a total number of 400 respondents are being selected, a total of 50 each from the eight sample fishing villages. Primary data was collected with the help of a structured schedule (FAO 2006). The schedule was administered to the respondents by personal interview method. Analysis, explanation, and interpretation of the data are mainly done on the basis of percentages and Pearson's Chi-square test. Secondary data have also been extensively used in the study. It is being mainly collected from State Department of Fisheries, Andhra, Central Marine Fisheries Research Institute, Centre for Development Studies, news papers, magazines, journals, various websites etc.

Major variables in the study

1. Population 2. Communication parameters 3. Modern Technology 4. Socio-economic composition 5. Fish harvesting

DISCUSSION

i. Socio-economics of fishing villages

The fisherfolk are almost at the bottom of the social ladder. They belong to the four fishermen castes Vadabalaji, Jallari, Aqnikulakshatriya (Pallis) and pattapu. These are “backward classes”, and fishing is considered to be a low-status occupation. The joint extended family pattern of the traditional Indian agricultural community no longer exists among the Andhra Pradesh fisherfolk. The trend now is the nuclear family, i.e. husband, wife and children. The size of a household varies considerably the average number of members in a household is six. Most members of the family including the women generally take part in fishery activity. The women engage themselves actively in sorting the catch, processing, and marketing; the children mostly mend nets. "Sangams” or associations of fishermen deal with social and religious affairs in fishing villages. Worshippers of a particular deity meet regularly for worship and help one another in times of emergency or need such as death, sickness or marriage. Tribal leadership, where the position is exclusively inherited, is still in practice among the fisherfolk communities. The caste headman with a group of elders constitutes this informal system which generally concerns itself with solving problems connected with caste, family, marriage, divorce and other intra-village affairs. This informal system complements the formal system of administration, consisting of the “panchayat” with an elected president (sarpanch) and the elected members of the council. Their activities centre on problems of physical infrastructure and the village's relations in the wider political and administrative set-up of the “taluk samithi” and zilla parishad. Both systems are to some extent identical as far as members and representatives are concerned e.g. office holders in the formal set-up are often members of the informal system. Only a few fishermen own gear and/or craft. Many of them work for the gear/craft owners in return for a cash wage or a share of the catch. Earnings from fishing vary with the type of craft and gear used and ownership status. The average income ranges from Rs. 2,500 to 3,000 per month for a household of five members. While in the south and the north, fishing is usually the sole source of income, fisherfolk in the central and south area (Guntur, Krishna, Prakasam and Nellore Districts) earn additional income from agriculture (paddy, tobacco, coconut, cashew nuts, sugarcane, maize) and salt production. A major portion of the daily income is spent on food and liquor. Housing in most fishing villages is similar to that of most agricultural communities or crowded agglomerations on the outskirts of towns of a poor standard, without basic amenities. However, the housing situation is aggravated by factors like the exposure of fishing villages to extreme climatic conditions (cyclones, floods) and the scarcity of housing sites along the coast, which lead to congested

settlements where the fire is a constant threat. The daily diet of the fisherfolk consists of coarse rice, millet, and fish. People usually suffer from severe vitamin deficiencies. Malnutrition is common among children. This, in addition to low hygienic standards in the villages and lack of proper water supply, is the main reason for the frequent occurrence of maladies. Medical services in the villages are either lacking or of very poor quality. The literacy level among the fisherfolk is low. Facilities for primary education exist; however, enrolment is low. Invariably the children do not go to school as families make the children earn from an early age. Feeder roads, transport facilities to nearby market towns, drinking water supply, health services, etc., are some of the immediate needs of fisherfolk communities.

ii. Fishermen co-operative societies

The fishermen co-operatives in the maritime districts of Andhra Pradesh can be differentiated into two functional groups, one functioning at the village level called Primary Fisherman co-operative Society and the other functioning at the district level called District Fishermen co-operative Society. The primary fishermen co-operative societies which take the membership of the fishermen from the fishing villages are formed in most of the villages of all the coastal districts of Andhra Pradesh. Fishing has been a traditional occupation for millennia, supporting a plethora of communities, both along the sea coast and inland. The sector contributes significantly to employment and is a big foreign exchange earner. After agriculture and weaving, fishing is the largest sector in terms of livelihood generation. However, traditional fishermen are under pressure from large scale unregulated industrialization, export-oriented, mechanized fishing and aquaculture. The sector faces multiple challenges with the result that today around 90% of fishermen are below the poverty line. Environmental factors such as exhaustion of water resources, contamination of the ecosystem and extinction of various marine and freshwater species have impacted sharply on the livelihood of the traditional fishing communities. Lack of credit facilities, gaps in policy-making, poor implementation of aid schemes and near-absence of education and health facilities have compounded their problems. Recognizing the nutritional, economic, social, environmental and cultural importance of this sector, there is an urgent need for a comprehensive fisheries policy that addresses, first and foremost, the needs and sensibilities of the fishing communities and recognizes their intimate organic link with the fishing environment. Traditional fishermen have been the victims of not only the neglect; rather policies designed by the governments in the name of the development of fisheries have actually been working against the fishing communities in general. Faced with deprivations of many kinds, including income disparities; poverty hunger and malnutrition; ad-hocism and gaps in policy especially related to depletion of fishery resources; inadequate education and health infrastructure; rising sea level; destruction of mangroves; pollution; inadequate provisions for disaster management; encroachment on territorial waters; overfishing and unsustainability; land acquisition along the coast, existence of traditional fisheries communities under severe threat. The absence of an integrated approach by different departments of government has contributed to the distress of the fishing communities. The traditional skills and knowledge of this vast population are present, underutilized to exploit the marine wealth of the coast line.

iii. Existing welfare programmes for fishing communities

A plethora of programmes exists to empower fishing communities, focused on delivery of education, health, housing, potable water, communication and access to information, etc.

A. National scheme for welfare of fishermen

The centrally sponsored programme has broadly

three components. **(1) Development of model fishing villages–** provision of basic civic amenities, such as housing, drinking water, and construction of community halls. Every 20 homes are entitled to a tubewell, at ₹ 30,000 per unit. Every 75 houses are entitled to a community hall at ₹1, 75,000 per unit. For construction of homes, ₹ 40,000 per unit is allowed. **(2) Technology-** Centrally sponsored scheme on strengthening of database and information networking for fisheries with the objective of (i) Improving database of inland and marine fisheries and catch fish by adopting a standardized methodology of data collection through sample survey for estimation of inland fisheries; and (ii) Improving information technology systems in the States/Union Territories as well as national level fishery institutes so that data collection and their analysis can be done efficiently and effectively. (2) Other schemes like the development of Marine Fisheries; Motorisation of traditional crafts & Reimbursement of Central Excise duty on HSD Oil; Development of Freshwater Aquaculture; Integrated Coastal Aquaculture; National Welfare of Fishermen; Fishing Harbour Facilities at Major and Minor ports; and Fisheries Training and Extension, are already being implemented. The Government of India carried out a Marine Fisheries Census in 2005, as well as an impact evaluation study of the National Scheme of Welfare of Fishermen. The study was conducted by the National Bank for Agriculture and Rural Development Consultancy Services (NABCONS) Pvt. Ltd and suggested modifications in the guidelines. The National Fisheries Development Board (NFDB) was set up in September 2006 at Hyderabad to realize the untapped potential of the fisheries sector, with a budget of ` 30 crores. The National Federation of Fishermen's Co-operative Ltd. (FISHCOPFED) is a national level Co-operative Federation established under the Multi-State Co-operative Societies Act, 2002 which operates under the administrative control of the Ministry of Agriculture, Government of India. The objective of the FISHCOPFED is to facilitate, coordinate and promote fishing industry in the country through co-operative action. During the last three years, an amount of ` 4.37 Crore has been released to FISHCOPFED.

B. Deprivation of fishermen

1. Income disparities: There is a wide disparity in income in different areas of the fisheries sector. The annual per capita catch of fisherfolk in the mechanized sector is 3,701 kg, while that for the motorized sector s 1,320 kg against 408 kg for the non-mechanized sector. This results in the marginalization of the indigenous sector. **2. Poverty and malnutrition:** The Food and Agricultural Organization (FAO) observe in a 2001 report that "In purely income terms, small scale fishers may often compare favorably with small-scale farmers or agricultural laborer. But in terms of educational, health and nutritional status, participation in political decision-making, and vulnerability, small-scale fishers and fishing communities often appear to rank lowest in society." **3. Gaps in policy:** Despite the plethora of welfare measures in place, at the macro-level policy initiatives have tended to favor big business at the cost of traditional fishermen. **4. Disaster management:** Fisheries are highly prone to natural calamities, in terms of cyclones, floods or landslides. Advance warning systems and timely rescue, relief, and rehabilitation are necessary safeguards, as well as bio-shields in the form of mangrove plantations along the coasts. Comprehensive insurance schemes and compensation mechanisms are required to provide greater resilience to the sector. **5. Encroachment on territorial waters:** In the absence of sophisticated navigation systems, it is not unusual for fishing vessels to stray into the territorial waters of maritime neighbours, with unfortunate consequences. **6. Overfishing and sustainability:** The stated policy of state governments is to end subsidies that contribute to overfishing, in line with WTO rules, but in actual fact continue to subsidize "small" vessels. Small-scale fleets are major competitors in international trade and substantially responsible for overfishing.

Development in its intrinsic form must promote all round progress of humanity in all sectors viz. better health, opportunities for knowledge and empowerment, broad economic activity and above all personal liberty and freedom for enhancing human capabilities. Development in this context depends upon the spread of scientific knowledge and the adoption of scientific knowledge into traditional knowledge system and vice versa. This is a process that is evolutionary, intricate and dynamic in nature. The marine fisheries sector plays a critical role in the socio economic development of Indian economy. This sunrise sector has been accepted not only as a powerful income and employment generator but also as a stimulant behind the growth of a number of subsidiary industries, as a source of cheap and nutritious food as well as a chief livelihood option for the majority of the coastal population. The marine fisheries sector, which began as a subsistence operation by employing exclusively traditional crafts during the pre independence days has today attained the status of a capital intensive industry (Neogy 2010). However, there are a number of barriers to the adoption of information and communication technology due to the following reasons. 1. Lack of proper knowledge to use the new system. 2. Cultural barriers existing in various coastal regions. 3. Lack of co-ordination among various related process in fishing activities. 4. Lack of adequate public investment.

CONCLUSION

Even a cursory glance at the fishermen in coastal villages reveals that they are in very pathetic condition besieged by object poverty, with 90 percent of traditional fishermen living below poverty line. With almost no support from the banking system, our fishermen have to depend on depending on the age-old tools for processing and marketing. The technological development, which has taken place in our country, has not reached our traditional fishermen. The large scale industrialization which has been allowed in recent years in coastal areas without having any strict regulatory regime has a devastating impact on the marine live stock, on the health of fishermen and their livelihood. At places wherever SEZ's and large scale industries have come up the fishing villages have lost access the sea. This, in turn, is forcing the fishermen to migrate to other places. The fishing villages are totally deprived of the basic infrastructure such as potable water, connecting roads, street electrification and sanitation. Womenfolk are subjected to humiliation and hardships of these inadequacies. Health infrastructure is either absent or non-functional. The central government has circulated a draft on Coastal Regulatory Zone Act which requires a thorough discussion involving the fishermen.

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