

Global dynamics and Institutional changes for resource management along Cochin Estuary

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Abstract

Management of common pool resource in transitional economies is becoming a challenge to local communities as well as policy makers. Though local communities in Asia had a long tradition of community based natural resource management, but today they are faced with severe constrains to self organise in a fast changing environment. When natural resources are opened to forces of international markets; communitarian management methods fail to bring consensus among competing stake holders. This has led to various governance and institutional changes where livelihoods and environmental sustainability is questioned. Various methods and measures are adopted by communities to manage this dilemma, which have mixed results. This local experience in resource management is a road map for policy makers for sustainable resource management which promises better livelihood and environmental sustainability

Keywords: Community-based conservation, Traditional ecological knowledge, Institutional changes; sustainability

Global Dynamics and Institutional Changes for Resource Management along Cochin Estuary

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Community-based conservation has recently emerged as an innovative Institutional response for meeting the seemingly conflicting goals of poverty reduction and biodiversity conservation (**Shukla 2004; Berkes 2004; 2007; Murphree, David and Wright 2001**). In many traditional communities these objectives were well established as implicit foundations of institution building for livelihood protection and resource management. These communities work under more or less a closed system and traditional knowledge acted as the backbone of institutional building. Many times, external interventions destabilize their closed system and make livelihoods vulnerable causing further resource degradation. Most often, traditional institutional framework did not have scope for absorbing external pressures and utilizing opportunities for keeping conservation institutions intact. The ability of communities to manage external factors totally depends on their resilience (**John.C, F.Berkes, and C.Folke 2001**). It is argued that when some communities discard local institutions and knowledge systems and move towards modernization and market oriented growth strategies, traditional conservation measures collapse (**Balasinorwala, T., A. Kothari, and M. Goyal,2004**). Ultimately those communities end up in conflicts and resource degradation.

Contemporary discourse on natural resources conservation and development is dominated by three major paradigms: the Classic approach, the Populist approach, and the Neo-liberal approach (**Blaike et al., 1997; Brown, 2002**). The *classic* approach considers people as threats to biodiversity. The *populist* approach stresses empowerment and participation of the local community as keys to sustainable conservation and development. The *neo-liberal* approach, which has been much in debate recently, recognizes institutions, policies, and markets as economic incentives to local people for sustainable biodiversity conservation (**Adger et al., 2001**). However, the neo-liberal approach or new conservation has been criticized by some scholars on two main grounds: First, the new conservation is seen as re-inventing the wheel of old styled conservation that is still top-down rather than being democratic and participatory (**Brown 2003**). Second, purely economic incentives, as envisaged in the neo-liberal approach, are considered inadequate and perhaps irrelevant from a community's perspective.

Ideally speaking, natural resource conservation with community participation have been existing in India for centuries; but such communitarian arrangements were feudal and hence top down in their approach (**Thomson and Burkes 2006**

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; **Balasinorwala, T., A. Kothari, and M. Goyal, 2004**). As a result, conservation and development didn't go hand in hand. Hence fishermen belong to economically and socially backward communities characterized by large families, low levels of income and literacy, high degree of indebtedness and a conservative approach to life and vocation.

After independence more centralized government reforms were introduced to manage fishery. The problems of small-scale fishermen received little attention prior to independence. The post independence developmental efforts too have been directed largely towards areas like establishment of research institutes, provision of training and infrastructure for mechanized deep-sea fishing, establishment of ice-making and refrigeration plants and improvement of domestic and export marketing. The benefits of modernization have been garnered by a minority of energetic fishermen and non-fishermen who could assimilate modern technology, while the majority of fishermen, though marginally benefited by use of synthetic nets, higher market demand for fish and fishery products, etc., have remained virtually unaffected.

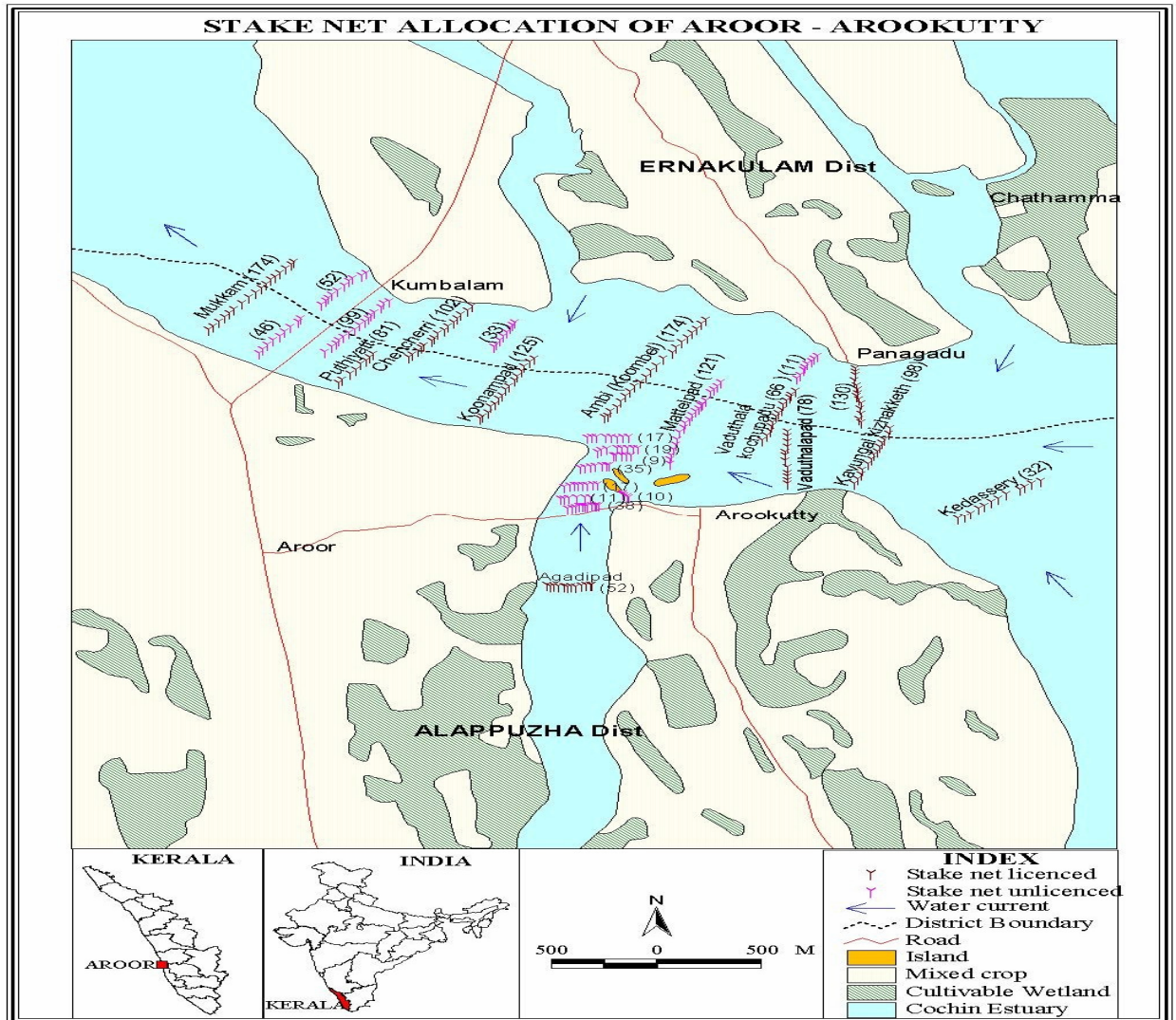
The commoners reorganized themselves with new communitarian institutions which favored market dynamics. As the focus was more on modernizing fishery for lucrative export market, traditional ecological knowledge on conservation deteriorated fast and led to serious problems. **Balasinorwala, Kothari, and Goyal (2004)** argued that centralized uniform models of development and conservation adapted by successive governments have undermined the diverse, site-specific traditions and conservation initiatives of communities. There is inadequate understanding and recognition of community based conservation initiatives, and of their beneficial impacts to biodiversity, livelihoods, and social security. Absence of decision-making powers with communities and insecurity of tenure and control over natural resources, on which communities depend have hampered the initiatives. Outside agencies have a role to play in community based conservation, but very often they bring in inappropriate (including financial) interventions that undermine the sustainability of these initiatives. Many donor-driven or official initiatives towards community participation in conservation have failed due to lack of transparency and accountability, inadequate transfer of powers and capacity, and lack of involvement of communities from the planning stage

The case study presented in this paper highlights the institutional dynamics of local fishing communities engaged in stake net fishery of Aroor-Arookutty region in Cochin estuary in south India. The research on which this paper is based is honored by the Shastri- Indo Canadian Institute was jointly undertaken by Cochin University and University of Manitoba during 2003-2006. The research methodology adopted in the study is participatory rural appraisal put forth by **(Pido, et.al., 1996)**. This case study will contribute to the emerging literature on community-based conservation with special reference to strategies for effective

use of traditional ecosystem knowledge in institution building, market interventions and institutional changes.

Cochin estuary where the research is conducted is a 242,600 hectares brackish water ecosystem with a treasure of biodiversity that supports multitude of livelihoods through a vibrant inshore small scale fishery. The study area “Aroor-Arookutty” are villages evolved in the 14th century, located in the southern end Cochin estuary. The dominant gear used in the small-scale inland fishery is locally referred to as a Stake net (Oonnivala) and is used by small-scale fishers to harvest shrimp as they migrate from the estuary back out to the sea. Stake net forms an important gear among the traditional fishing gear employed in the backwaters of Kerala, the component, perhaps second only to drift nets (**Hornel, 1925**). The Stake net is a fixed gear (fixed engine) operated in areas having good tidal flows and targets for prawns that have a lucrative export market. This gear accounts for 57 percent of the total catch in the estuary and numbering 12,900 nets (**Kurup, et. Al., 1993**) is the most prevalent gear used in Kerala backwaters. The largest component of their harvest is shrimp, which makes more than one fourth of the catch (**Thomson and Berkes, 2006; Lobe, 2002**). The catch to a great extent depends on the tidal function of the estuary. The stake net fishing grounds are “locally called padu ground” and each single fixed engine in a fishing ground is called Stake net, locally called “Ooni Vala”. The ooni’s being the property of fishers is regulated through various state and community institutions.

Location of study area (Aroor –Arookutty)



Traditional Institutions for fisheries management in Cochin Estuary

Stake net fishing originated 400 years back in Aroor- Arookutty area. The “deevara community” was given exclusive right to operate stake nets by the King. The Agricultural Department of Travancore King was entrusted the duty of formulation and enforcement of law. A well formulated local village hierarchy was established to regulate stake nets. In this arrangement the King selected a family “Talaveedu” and that family was entrusted to manage stake nets in each village. A chief is selected from this family as the leader for management. Above them in the hierarchy level it is “Karthakkanmar” who are entrusted in taking petitions on conflicts on fishing. They keep a complaint book called “Beat Book” on which the complaints could be written and the Kings police would come and arrest them. Above them is the Dewan and above all the King. These Institutions survived till the Indian Fisheries Act 1897 was enacted in Kerala.

Four broad aspects of community based management that contributed to the conservation of stake net fisheries might be noted. First, is the use of traditional ecological knowledge to conserve resources. Communities had institutions to protect juvenile prawns that recruit into the fishery. The harvest institutions were focused on protecting recruiters for next generation to achieve sustainability. For example in Stake net fishery high tide fishing and use of nets with smaller mesh size were punishable offence. Second, communities actively involved in monitoring and enforcing institutions. Any offence by a community member on harvest rules will be informed to the immediate hierarchy. If any stake net holder raised complaints against fellow members of fishing ground, the chief of *talaveedu* would call both the parties, visit the place in his canoe with them and resolve the crisis immediately. They will be penalized through fines and any repetition will cost social exclusion. Offended house will be separated by planting a special shrub called “*kaitha*” which mark him and his family separated from social networks. Thirdly, different traditional user groups of stake net fishery maintained strong cross scale interaction that minimized intra-community and inter-community conflicts and access rights. If the conflicts were between rival paadus the chief of respective paadu systems will meet each other with petitioners and would resolve the problems are solved. The common temple grounds were used for arranging the meetings every fortnight to resolve issues. If boundary issues are in question both leaders will visit the location in their canoes and resolve the issues. Finally, cross scale interactions between communities were more focused on rational decisions for conservation rather than who governs commons. This helped them to bring into consensus many conflicting issues as priority.

Dynamics of local institutions on resource conservation due to influence of global markets

While stake net fishing communities had succeeded in maintaining their common property resources through collective action, in some cases pressures internal and external to the community has caused arrangements to collapse (**Berkes, 1986**). Market forces eliminate inefficient property rights structure and introduce new arrangements better suited to exploiting economic opportunities (**Demsetz 1967**). By mid-1960s the “growth-oriented modernization model” was introduced in Kerala. The single most important factor responsible for this was the rising demand for prawns in the international market. The waters off Kerala, being one of the world’s richest resources for the penaeid prawns, virtually became the main “breeding ground” for shrimp. Fisheries development in Kerala state soon became synonymous with increasing prawn harvest and foreign exchange earnings. Rising demand for prawns in the international market, spurred by factors such as the enhanced growth of the United States and Japanese economies and also the formers loss of access to supply from China bring focus to India and Kerala. These demand-pull factors were outside the control of the local economy and communities, and it was difficult to prevent fishery resources from being harvested in response to them. (**Kurian, 1991**). From a commodity formerly used to provide manure for coconut palms, prawns grew to become the “pink gold” of marine exports from India. In 1961-1962 the beach price of prawns was only 240 rupees per ton – less than even the price of mackerels which were considered the “poor man’s protein”. In 1971-1972 prawn prices reached 1,810 rupees per ton. Between then and 1984-1985 prices increased nearly sevenfold while the prices of oil sardines and mackerels rose by 184 and 213 per cent respectively (**Department of Fisheries ,Gov. of Kerala**) Needless to say, such market expansion led to acute resource crisis in stake net fisheries (**Lobe, 2002; Thomson and Berkes, 2006; Gov. of Kerala, 2004**).

State has responded to the resource crisis in a number of ways. First, it took over management of stake net fisheries way back in 1951 with the sole objective to increase revenue. It redefined individual’s access by replacing the historical system of “*pattayam*” to a licensing system. Though state took over fisheries management from traditional landlords, the new system was centralised with least emphasis on conservation. These centralised administrators were unaware of working of ecological systems and local needs of fishing communities. The communitarian arrangement of monitoring was replaced with an expensive system of monitoring by paid “fishery inspectors” which was inefficient in handling the dynamics of the sector. The low investment on monitoring and absence of decision making power for community led to large scale overfishing by illegal means (**Thomson, 2008**).

There were no institutions that linked various communities in their efforts to regulate access and overfishing. Issues that were resolved through mutual dialogues between fishing communities every fourth night got prolonged to a formal judicial system where cases accumulated for want of resolution. This has led to conflicts and violence and more and more violations in community institutions. Community started segregating based on cast, religion, political association, income level etc instead of one network of fishermen (**Thomson and Berkes, 2006**). In a way community became weaker and individual interests became prominent. From a system where indigenous conservation itself turns to be a conflict resolution mechanism, same moved to a system of violation of conservation rules as a counter act on conflicts. The informal sector, driven by market forces, was unavoidably sucked into the self-destructive development trend where conservation of resources were on the back stage. In a way community choose to free ride which led to over exploitation and resource degradation.

III

Responses of community, state and markets to resolve resource degradation

As a matter of fact, state as well as market forces failed to bring in conservation as an agenda of management of resources. The available evidences indicate that all the actors have limitations to resolve resource crisis. Fisher communities as commoners had broken official conservation rules of high tide fishing. The usage of nets with small mesh size for better catch started implementing. This has led to over fishing of juvenile prawns and thereby resource degradation and instability. The responses towards these dynamics were opportunistic without long term strategies for development of sustainable resources and livelihood securities. The community also failed to self organize themselves in such a way where conservation and development are simultaneously achieved. Major reason was the inability of an institutional arrangement that negotiate differences and grievances to bring in consensus among fishing groups and guide them towards building community based conservation institutions that bring in sustainable development.

Though state formalized many traditional institutions, they moved out of traditional institutional framework to a complete displeasure of local communities. Though traditional institutions were executed from top it is only workable with community participation. State failed to act as a regulator or guide to communities and assist them to manage externalities of prawn boom. State also failed in having an efficient implementation mechanism to monitor these institutions. Low investment on infrastructure for monitoring makes it impossible for implementation. Though externalities were inevitable with change, new institutional framework was away from community and neither it contribute towards development nor towards conservation.

Conclusion

An enquiry on what happened to conservation institutions over a period time in Cochin estuary shows that the state, community and market responded in a mixed manner to protect resources and fisheries livelihoods. Despite limitations, community and state attempted to conserve estuarine stake net fisheries not only as individual agents but sometime even collectively. While local communities relied on recognizing and using traditional ecological knowledge systems for their resource protection, state discarded such knowledge systems and relied mainly on modern science and technology. Low level of community participation in building formal institutional processes channelised economic benefits to a small section and that hindered initiatives to built local level conservation institutions.

The positive aspects of traditional institutional building processes such as consultations, transparency, participation, equity, were found missing in the new institutional structure and contributed severely to ecosystem degradation and social conflicts. Market based conservation solutions could not influence state or communities due to institutional bias and its inability to regulate externalities. The end result of such isolated efforts and lack of synergies leads to the present state of resource degradation and livelihood vulnerabilities in the study area. What is needed obviously is to evolve the necessary synergies in institution building that coordinate communities, state and markets. It is sad however, that the present state of affairs in stake net fisheries of Cochin estuary do not offer an immediate solution to such institution building process.

also made communities incapable of managing their resources. All theses aspects led to over fishing and resource degradation.

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