Abstract


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The present study analyses the evolution and performance of institutions of the coastal fishery management of Kerala, India. Coastal fisheries partake of the characteristics of Common-Pool Resources (CPRs) and are subject to the problem of CPR dilemmas. CPR management literature suggests that by developing adequate institutions and by enforcing them effectively, problems inherent in CPR management could be resolved. However, the factors and processes of development of institutions are not adequately known. The conventional conception of institutional evolution as a spontaneous and autonomous process perpetuating towards more efficient forms under endogenous pressure of relative prices does not offer, albeit being important, a sufficient explanation. Of course, a search for a more complete explanation of evolution of institutions as endogenous to the economic system is in progress (Ruttan and Hayami, 1984; Drobak and Nye, 1997). The present study is primarily an attempt to contribute to this line of enquiry. Empirical literature on performance of institutions shows mixed results. Along with successes, there are several cases of resource management failures despite strong presence of institutions. The design principle literature (Ostrom, 1990; McKean, 1986; Wade, 1987) that demonstrates conditions for successful performance of institutions too remain contested (Cleaver, 2000). Enquiry into the factors influencing the performance of institutions is also taken up in the present study. The questions are examined in the empirical context of the CPR dilemmas experienced by the Kerala coastal fishery.

The study has made use of both primary and secondary data. Secondary data consisted mostly of the published statistics and the review of selected literature. Primary data were collected mainly through semi-structured interviews; questionnaire surveys were also employed at two fishing harbours in order to collect data related to factors that impact rule compliance behaviour of fishermen. Both qualitative and quantitative methods have been used in the collection and analysis of information.

The review of literature given in chapter 2 highlights the theoretical as well as the empirical importance of institutions, especially of well-defined property right regimes in the efficient management of CPRs. It provides a framework to analyse the problems of coastal fisheries as CPR Dilemmas. The concept of CPR dilemmas is understood as appropriation problems and provision problems (Ostrom et al., 1994). Appropriation problems consist of appropriation externalities, technological externalities, and assignment problems. When one user’s increased appropriation reduces the yield obtained by other users for a given level of appropriation activity, it is said to be appropriation externality. Technological externality arises when one type of technology affects the cost or productivity of some other technology employed in resource appropriation. Assignment problem refers to heterogeneity in the temporal or spatial distribution of the resource flow. Provision problem is basically a conservation problem, namely, of providing for the resource stock. All these problems are qualified as dilemmas because strategies pursued by users may result in sub-optimal outcomes due to their interdependence in the use of common-pool resources even
when better alternative strategies are available. The review also revealed the gaps in research on fishery management institutions.

We argue (in chapter 3) that prior to the expansion of mechanised fishing since the 1970s, thanks to technological, market and institutional constraints, CPR dilemmas were not seriously felt in the Kerala coastal fishery. However, with the increasing technological ramifications and heterogeneities, they got aggravated, especially during the late 1970s and the early eighties. We trace three sources of CPR dilemmas that are basically induced by technological externalities – mechanised fishing sector, deep-sea fishing sector, and also the traditional fishing sector. The major appropriation problems experienced by the traditional fishing sector from the mechanised sector are found to have been reduction in their share of production, output per craft, share of value, and per capita real income. Apart from this, there were direct technological externalities, such as gear destruction, reduction of fishing space etc. Within the traditional sector itself, the introduction of motorisation and ring seine brought new appropriation and technological dilemmas for the non-motorised and non-ring seine using segment. The deep sea fishing sector generated negative externalities in the inshore waters through encroachment, and *discards*. Moreover, the preferential treatment meted out to the deep sea fishing vessels by the Government of India turned out to be a serious, though indirect, technological discrimination against inshore vessels. Over-fishing and destructive fishing practices are found to be two serious demand-side provision problems. All the three sectors have contributed to the aggravation of this problem. The study takes note of the fact that supply-side provision activities are almost absent in the fishery.

After having identified the CPR dilemmas we proceed, in chapter 4, to the analysis of the institutional responses of fishermen. The most notable responses have come up since the late nineteen seventies when the CPR dilemmas felt by the traditional fishermen became acute. Two major responses are discussed – one related to informal and the other concerning formal institutions. An age-old village – based fishery management institution of the northern Kerala coast, called *kadakkodi* has undergone radical changes and in certain villages, even reached the stage of disintegration. The other is the emergence of a new formal institution, Kerala Marine Fisheries Regulation Act (KMFRA). Interestingly, strong collective action of fishermen that preceded its emergence was initiated in the southern coastal villages in which community institutions like *kadakkodis* for fishery management had not developed. These interesting institutional developments are analysed in the light of *Induced Institutional Innovation Model* of Ruttan and Hayami (1984). We find that changes in the *relative resource endowment* and *technology* were the two most important demand factors for these institutional changes; their supply cost is significantly affected by the *cultural endowment* of the community and the already existing *institutional structures*. Heterogeneities in these four factors have determined largely the trajectory of the institutional innovations in the coastal fishery sector of Kerala.

An analysis of the extent to which these institutional responses were of help in resolving the CPR dilemmas was conducted in terms of the *performance* of the institutions (in chapter 5). The analysis brings out the critical role of monitoring in the performance of institutions. It explains why most of the regulations under KMFRA, except the prohibition of trawling during monsoon season, are often violated whereas the regulations of informal institutions such as *kadakkodis* are strictly adhered to. However, *kadakkodis* have only limited scope. The conflicts they resolve and the negative externalities they minimise are mostly those arising
within the traditional sector. Consequently, most of the CPR dilemmas generated by the mechanised sector lie in the domain of KMFRA and remain unresolved due to its poor enforcement. Nonetheless, a possibility of resolving such dilemmas has emerged from the field study, namely, self-enforcement by fishermen, albeit its replicability remained much limited.

Some of these findings offer fresh insights into the problem of CPR management while others verify hypotheses advanced in the literature. To cite a few of the insights: pressure of relative prices alone does not adequately explain institutional evolution fully; factors like technology, cultural endowment, and the existing social structures also are essential components to provide a more complete explanation. The argument in the CPR literature that severe CPR dilemmas lead to institutional responses stands confirmed. However, the responses need not necessarily succeed in resolving those dilemmas. Relative importance of monitoring rule violations comes out strikingly. It is shown that self-enforcement of institutions is plausible, despite its non-replicability on a large scale. The study calls into question the romantic view of traditional ecological conservatism and the conventional conception of community institutions as panacea for all CPR problems. The significance of traditions of social capital and social structures implies that history does matter in the development of community institutions. Within the contested role of heterogeneities in the collective action literature, our study supports the U-shaped relationship between heterogeneities of resource appropriators and success of CPR management.

The study advocates a co-management system as a healthy option for coastal fishery wherein the actual fishermen own the fishing rights and they together with local governments manage the fishing activities.