Common Voices
Issue 5

Kerala’s Sea Court
The Maine Story
Nagai-Karai Fisheries Management Council
Moving Forward on the Subsidiarity Principle
Science and Community
Editors

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Cover Photo: Mackarel catch from Atharabanki, Paradip, Odisha, India adapted from a photograph by Aarthi Sridhar ©
Welcome to the fifth issue of Common Voices. From pasturelands and forested landscapes, we wish to draw the attention of our readers to an extensive and interesting collection of writings on the seascapes of the world. The oceans and seas appear as limitless commons and we focus in this issue on their meaning and importance to the fisheries sector and fishing communities, among the many entities that stake a claim over these natural resources.

Seascapes, and within these fisheries as commons or common property resources are being recognised as complex socio-cultural-ecological ideas more than finite spaces, making these resource commons one of the most difficult to define. It is this complexity that makes the debates around fisheries commons exciting and offers many perspectives to view the other commons from. The uniqueness of the dynamic use patterns around fisheries coupled with the changing face of the ‘commoner’ have led many scholars to showcase lessons from fisheries to depict ideas such as the ‘comedy of the commons’, where the increased usefulness of a resource is the result of many individuals using it.

The proposition of debate, advocating or even understanding commons that lie in ecotones or in-between physical spaces is not an easy one. In choosing to divide up the land and the sea, thus tearing apart two extremely integrated systems into separate newsletter issues that cover the ‘coastal commons’ and ‘fisheries commons’, we recognise the pitfalls of this severance. It is fraught with the dangers of oversight, the dangers of oversimplification and to borrow from terra firma, the danger of missing the forest for the trees. In doing so, we acknowledge the artificiality of such a categorisation, particularly in describing the issues related to communities whose culture, worldview and institutions merge the coasts and the seas into one unit.

Our choice to restrict this issue to discussions around fisheries commons was driven by simple criteria such as the sheer magnitude of topics to cover including the range of academic work and management examples from a rapidly evolving sector. The academic work that we feature highlights this, and the summary of former IASC President (1998–2000) Prof. Bonnie McCoy’s work sets the tone for this issue. In addition we feature select works of scholars who have deliberated the problem of fisheries management and summarise their collective ideas on cross-disciplinarity.

Many scholars focus on community initiatives for conservation and management. We chose to highlight an idea that emerged from the state of Kerala, considered the birthplace of the fisheries movement in India, to examine how the kadkokodies—traditional ‘sea courts’ dealt with fisheries commons and their role in the community. From the West, we feature experiences from a community management experiment in one of the most developed countries of the world—the US Maine lobster fishery story. The idea of co-management discussed extensively by fisheries academics and commons scholars, is brought to life in the article by V. Vivekanandan where he describes his personal engagement with the co-management experiment on the Tamil Nadu coast.

Has law caught up with these complexities in fisheries? How does the Indian state which held complete authoritarian power over forest commons deal with the outlier fisher community and the fisheries resource? Our article on the marine fisheries legislations traces state engagement over the subject of control of fisheries with a brief commentary on recent changes proposed to these laws.
Bavinck and Jentoft elaborate on how imagination can help break out of deadlocks in fisheries management, and illustrate this with the example of creatively applying the subsidiarity principle to fisheries, whereby lower social units are safeguarded by ‘higher’ political units in an effort to appropriately distribute rights and responsibilities over these commons. Chandrika Sharma in her article makes a case for choosing the right rights-based approach over a quota based system, one that places primacy over the social goals of management.

In seeking a solution to fisheries management, a number of actors are brought together. What happens when scientists and communities decide to collaborate? We summarise the findings of Douglas C. Wilson, who investigated this problem to provide us with a categorisation of outcomes that rings true even a decade after his investigations. We owe him special thanks for his valuable comments on the contents of this issue.

We hope the articles in this issue interest you, and we solicit your feedback and contributions for upcoming issues.

Editors
The ‘fisheries commons’ cannot boast of a universal meaning and experts related to the subject of fisheries focus on different aspects of these commons and its attendant institutions in a variety of ways depending on their discipline (Degnbol et al. 2006). Fishery scientists focus on fish stocks and the health of coastal and ocean ecosystems, biodiversity, and stock monitoring, emphasising the role of government and private research institutions. Economists tend to view the commons from the point of view of its commodity value to individuals, communities and nations, placing a great deal of emphasis on market institutions. Sociologists pay closer attention to the interactions between communities, their dependence and organisation around the resource and locate community institutions at the centre of these commons. However, a common concern to all these disciplines is the crisis in fisheries and its management.

Fisheries scientists concerned with the ecological and biological aspects of fish often begin a description of fisheries commons with fish catch trends, quoting the biennial statistics compiled by the United Nations’ Food and Agricultural Organisation (FAO) whose records reveal that although the total fish landed throughout the world showed a steady increase up till the 90s, the status of the world’s fisheries is presently in a state of crisis. The early part of these records, starting from the period immediately after World War II, was a period of intense fisheries development until the early 60s largely supported by organisations such as the FAO, concerned with the recovery of post-war economies in Europe. The growth in world fisheries was also seen as an opportunity for nations to expand their control of ocean territory. The seas were treated as ‘open’ with access to all; subsidies and promotional programmes were introduced for mechanised and improved-technology fishing vessels and seafood markets began swelling in size and in their influence over the sector. The world saw a shift in fisheries where it transformed from being at a 60% underexploited status in the early 1950s to a 60% overexploited one by the early 1990s (FAO 1997, cited in Hanna 2001). The nature of this over-exploitation is not uniform either, but in areas where it does occur, there is substantial loss of species diversity and abundance and an overall degradation of the habitat. In addition, most coastal seas and oceans today suffer from a decline in biodiversity and ecosystem productivity, translating into economic hardships for local fisher communities.

The unfolding of a crisis

The FAO’s State of World Fisheries and Aquaculture (SOFIA) dated 2008 states that marine capture fisheries accounted for 81.9 million tonnes of fish catch. The ups and eventual downs of global fish catch data is accompanied by a shift in the approach towards fisheries management adopted by international bodies and governments from that of living with resource abundance to the reality of coping with a complex crisis. The acceptance of a situation of crisis was principally on account of a series of collapses of major fish stocks, beginning with the dramatic stories of cod decline in Canadians fisheries and escalating into the recognition of a global fisheries crisis. The anxiety of the crisis is on account of the enormous dependence of human society on this important protein source for nearly half the world and the only source for several poor countries.

Millions of people from Asia depend on fisheries for food security, employment, income and foreign exchange. The FAO estimates that of the 47.6 million fishers worldwide engaged in fishing and fish farming as a full-time or more frequently part-time occupation, as many as 42.3 million (89%), are in Asia. China has the maximum number of fishers and fish farmers, followed by India, Vietnam, Indonesia, Bangladesh and the Philippines. The majority of fishers and fish farmers are small-scale artisanal fishers, whose living is dependent on coastal and inland fishery resources. It is also here that many of the coastal target stocks are over- or fully exploited.

The Indian coastline including the islands, measures over 8,000 km and the country’s exclusive economic zone (EEZ) measures over 2 million sq km. The history of the fisheries in the country is ancient and has evolved into one of its most lucrative trades. A conservative estimate is that nearly 3 million people derive their livelihood from marine capture fisheries, located in over 3,600 fishing villages along the Indian coastline. The sector comprises of an artisanal, mechanised and an ‘in-between’ sector, often described simply as the
‘motorised’ sector. The majority of Indian fisheries however is comprised of small-scale and artisanal fishworkers, who derive their livelihoods from fishing, gleaning, artisanal processing and small-scale trading activities. Women form a significant aspect of fisheries in the country, being responsible for nearly all the land-based activities involved in the sector.

An often quoted study to describe the problems in Indian fisheries is the one undertaken by Bathal and Pauly (2009). They use two popular indices—the Marine Trophic Index (MTI) and the related Fishing-in-Balance (FiB) index to evaluate the status of marine fisheries in India between the years 1950, when 0.6 million tonnes were landed to 2000, when 3.3 million tonnes were landed. Their study shows that the MTI is steadily decreasing in all 13 Indian States and Union Territories, at rates averaging 0.058 trophic level per decade, about the same as in other parts of the world. This indicates that we are fishing down the food web (moving from species on the top of the trophic column to those at the bottom). This decline, however, is not due to the sequential addition of newly exploited species of low trophic level to the multi-species catch from which mean trophic level is calculated. They also attribute the maintenance of landings of higher trophic level fish in India to the geographic expansion of the fisheries, which, until the early 1970s, exploited only waters immediately under the coast, while they now reach to the edges of the continental shelf and beyond. This expansion is quantified here through a ‘spatial expansion factor’ based on which the authors suggest that the Indian shelf fisheries, covered by the year 2000 about 4 times the area they covered in 1970. They conclude that this expansion apparently met its natural limits and predict a stagnation and ultimate decline of catches with serious consequences for the sector.

A transformation of culture
Throughout the world, there has been a complete transformation in the culture of fisheries. Not only have the various development programmes such as the Indo-Norwegian Fisheries Development Programme introduced in India in the 60s brought about sea changes in fishing craft and gear, but the communities, customs, knowledge and institutions built around a certain kind of fishery also underwent change. Supporting an export-oriented fishery was the main concern of many Asian countries, leading to the blooming and flourishing of many export-oriented companies and fish processing units in the country. This rush for ‘pink gold’ led to a large investment in fisheries by non-fishers, to such an extent that the Aquarian Reforms proposed by academics and fishworker leaders in the state of Kerala in southern India (Kurien 2005) was mainly devised based on the idea of ‘land to the tiller’, or in this case, ‘fish for the fisher’. The influence of the distant market was so strong that aquaculture as a means to supplement capture fisheries became the rage in south Asia. Undertaken in an intensive manner with the use of chemicals, antibiotics and excessive nutrient inputs, aquaculture began to render vast tracts of lands polluted, barren and uncultivable in the agricultural season, unlike its traditional organic counterpart (undertaken during the monsoon and alternated with salt resistant varieties of crops). The outbreak of disease devastated this fishery and coupled with poor farm management practices, intensive aquaculture affected several estuarine fisheries and sensitive fish breeding habitats. It is precisely this intimate chain of economic and ecological events beginning from the sea, to the land and back again to the sea, that led scholars to pay closer attention to the transformative element of the boundaries of these commons.

In many regions of the world conflict marks fisheries and this is both internal and external. Among fishers, the mechanised and the relatively marginalised and smaller scale fishers find themselves in adversarial positions competing for a rapidly depleting resource. In many parts of Asia, violence marks these conflicts between the traditional and the mechanised over transgressions over fisheries regulations that demarcate (on paper) areas for each sector, revealing the unimaginativeness of many of these regulations and their implementation institutions in actually effecting these rules. The problem of contested boundaries invites tensions between neighbouring countries whose fishers often move in and out of each other’s waters as they have done years before the international boundaries and EEZs were demarcated based on the UN Convention on the Law of the Seas (UNCLOS) specifications.

Managing the crisis
Much investment has gone into investigating technological solutions, the health of fish stocks, market-based regulations such as the Individual Transferable Quotas and in advocating fishery reserves. This is backed by an understanding that viewed the lack of private property rights over fisheries as the cause of the over-fishing problem.

There are comparatively few well-researched accounts that cover the diversity of traditional and community-based fisheries and marine management institutions and arrangements for fisheries commons management. The interaction of these communities with markets and the state, community systems of incentives and disincentives and notions of rights and their response to the changing perceptions on the fisheries commons by various users is poorly understood. The management of the fisheries commons urgently needs a realignment of interest and commitment to such an understanding that recognises the role of ‘community’ and a wider array of rights as being central to the exercise of management and crisis control.

References
Select Academic Summaries on Fisheries Commons

We begin our summaries with a paper which is not purely fisheries oriented, but in fact explains the problems and perhaps the futility in viewing oceans, seas and coasts as separate bounded commons and then trying to manage them. Prof. Bonnie McCay’s contributions to the field of fisheries and coastal commons are exciting and inspiring. A social scientist specialising in ecological and cultural anthropology, her work has added new dimensions to the appreciation of the challenges in fisheries and marine management and policy. In this thought-provoking article, she explores the ‘liminality’ (the trait of being in transition / in-between / on the threshold) of ocean and coastal commons, including their dynamics and their boundaries, landward and seaward and issues related to their management.

She explores the important yet unresolved problem posed by the 2007 People and the Sea conference, by the Centre for Maritime Research at the University of Amsterdam—‘Who owns the coast?’ Citing this question as belonging to the realm of ownership issues, McCay’s central assumption is that ownership is a statement about belonging and identity besides being a statement about property, claims of rights and attributions of liability and responsibility. All of these are constituted and shaped by the institutions and processes of law and culture. Correspondingly, she describes property as a term for institutions that relate people to places and things. McCay views property institutions as being core to most societies as their way of ordering and allotting rights of access to and use of as well as responsibility for natural and cultural resources on land and at sea. However, the ideas related to property in coastal and marine systems are problematic and therefore interesting. Embarking on an illustration of this point, she views ‘the coast’ as encompassing coastal lands, coastal (or ‘nearshore’ and ‘inshore’) seas, and the intertidal zone in between. Highlighting that coasts have fluid and often indefinable boundaries, her essay describes its dynamic features and the intense natural and socio-economic pressures they are subject to. Coasts have features that can frustrate societies seeking to control and benefit from them through institutions like property or management rules.

Key to her illustration is an important associated idea from cultural theory, where the ‘liminal’ signifies phenomena that do not fit well into cultural categories – things that are ambiguous, ambivalent, untidy, or indefinable. These liminal objects often are treated culturally as sources of fear, risk, and danger, or simply forbidden. McCay observes that coasts and seas, whose boundaries are often vague, shifting, and contested if not feared or tabooed, do pose cultural, political, and survival challenges and opportunities.

A fundamental notion in managing the commons is that one needs clear, agreed-upon, defensible and socially and ecologically sensible boundaries, boundaries that mark off who has rights, who has responsibilities, who has jurisdiction, where, and for what... This is where oceans, seas, coasts, can flummox rule makers. The political ecology of the problem of setting boundaries to these areas is seen in national coastal management zone programmes and fisheries regulations, where legal boundaries reflect both geographical and political realities. These boundaries are often stretched by scientists who emphasise the need to incorporate ecological concerns, such as the effects of sedimentation on marine habitats, or the fate of anadromous fish species, calling for inland boundary to coasts to incorporate whole watersheds or river systems. McCay observes that these ‘bio notions’ of coastal boundaries give rise to governance challenges since historic structures and systems of governance rarely align spatially or temporally with ecosystem processes.

If landward boundaries pose definitional problems, seaward boundaries of national jurisdiction are deceptively simpler as Cartesian representations but McCay says they are largely ‘fictions of national and international treaties and law’ and citing the geographer Philip Steinberg (2001) she declares that their parameters and import are reflective of imperatives of merchant capitalism, industrial capitalism, and postindustrial capitalism. The fluidity, dynamics, and complexity of marine ecosystems make it difficult to come up with a simple institutional solution, and on the contrary there are layers of complexity such as poor ability to enforce these, the phenomenon of ‘roving bandit’ industries seeking globally available products like sea urchins and marine aquarium fish.

McCay ascribes the persistence of ownership claims (sometimes called ‘common property’) to the liminality of coastal and marine systems. Management measures evolve
from the perception of these ownership claims. Therefore when marine and coastal systems are cast as ‘open access’, then the most logical policy solution becomes enclosure. However, McCay points to the importance of seeing another meaning in ‘open access’ whereby it is brought within the domain of common property and leaves open the possibility that such commons can remain open but be effectively managed from the idea of res nullius to that of res communes. She highlights that under various political and historical contexts, open access rights may be strongly cherished as part of citizenship, as well as the last frontier of space and resources not enclosed by private property. Open access also potentially contains the dynamic that leads to ‘tragedies of the commons’, but McCay believes that it equally nurtures the potential for the ‘comedies of the commons’, or situations where a greater number of users leads to the evolution of management rules and restrictions on what one does rather than on whether one has access. The inclusive, open access commons can be a managed commons.

Moving on, she highlights the ambiguities and contradictions concerning ‘ownership’ itself. In this she illustrates the property claims of fishers over fishing grounds and fish, the law and ecology notwithstanding. She calls this a ‘folk version of the Lockean idea’ that ‘ownership’ is derived from and justified as a result of transforming nature into a useful product and ‘belonging’ to them. She predicts that these notions of ownership have the potential of being transformed into a more commodity-oriented sense of ownership, a tendency that is intensified with management regimes such as Individual Transferable Quotas, intensified by the added argument of ownership rights due to monetary investment.

She concludes her article with a reminder to ask that daunting and uncomfortable question -‘who owns the coast?’ having established its criticality to management wherein ownership claims, and property rights are central to policies and eventually shape the distribution of costs, benefits, and responsibilities. She calls these commons as frontiers where property rights are hardly simple or stable but also far less hamstrung by institutional ‘lords of yesteryear’ than some inland systems.


A group of renowned biologists, economists and sociologists, who having worked separately and together for a number of years in fisheries research and consultancy in many parts of the world, authored this paper in an attempt to dispel the practice of disciplinary dogmatism in fisheries management. They note that despite the contribution of several academic disciplines, each with its own perspectives, concerns and solutions to fisheries management, there is still ample room for improvement and indeed better results, if each of these disciplines originated from broader, more integrated analytical perspectives that are attuned to the empirical realities of fisheries management. They describe the creation of a ‘tunnel vision’ and standardised ‘technical fixes’ to complex and diverse management problems and claim that improvements in fisheries management will be realised only by embracing and responding to the complexity of the management problem.

The authors state that the urgency and complexity in addressing the problems of world’s fisheries which are suffering from the effects of over-investment and declining resources has created a market for quick and technical solutions to management problems. They categorise these technical solutions as ‘fixes’ when they are used as wholesale solutions to specialised problems and elaborate on the transformation of three of these tools—individual transferable quotas (ITQs), marine protected areas (MPAs) and community-based management (CBM), each originating and heralded by representatives of specific disciplines. ITQs are mostly promoted by economists and derive from that discipline’s focus on economic efficiency and its orientation towards the commons as open access. MPAs are mainly promoted by biologists and ecologists whose focus is on ecosystem health.

CBM is supported by social anthropologists whose concern is with the empowerment of fisher communities. While appreciating the perspective and value of each of these tools in defining problems, they warn of its futility in being applied singularly to address complex problems—concomitant to using a hammer to paint the floor.

The authors elaborate on the question of how and why tunnel visions emerge and why technical fixes are seen as universal solutions, and begin this task by looking at the social context of the scientific discourse. The authors note the key argument of scholars of the sociology of science that different disciplines have different perceptions—or paradigms—of how the world works, and that there are conceptual and institutional reasons why cross-disciplinary cooperation and even communication becomes a challenge. Thomas Kuhn introduced the notion of ‘paradigm shifts’ in science which lead to a change from the norm, in the manner in which questions are asked and answered.

The investigations by many sociologists on the associations between various scientific worldviews with non-scientific interests became popular in the 1970s. However, demonstrating this was not easy since it was seen that scientists were less influenced by material interests as they were around a reward system which was predicated on the importance and validity of contributions to knowledge. Sociologists began to revise their earlier views about scientific paradigms and instead recognised that scientific communities define what constitutes valid science and, hence, how scientific contributions will be recognised, forming the beginning of understanding the difficulties of cross-disciplinary discussion. While internally committed to the idea of good
science, these scientific communities (related to disciplines but not synonymous) independently developed ideas of what constituted interesting questions and valid answers.

Recognising that cross-disciplinary scientific communities can develop, the authors identify the work environment as a driving force in the choice to be a generalist or a specialist, the former being nurtured in agencies with variable funding and the latter being produced in more stable university style environs. They caution that specialisation and the identity with a discipline can lead to what Thorstein Veblen labelled ‘trained incapacity’—a professional’s inability to understand and solve problems outside his narrow field.

The authors highlight the role that solidarity plays within scientific communities in its competition for resources and power. Boundary maintenance is one manifestation of this and involves the identification of a) what is a scientific claim, and b) who is a scientist. Tunnel vision in science is staying within the discourse of such communities and in the construction of barriers of language, theoretical frameworks, and in the definitions of methods and process. The authors highlight how a number of additional factors facilitate tunnel vision for instance by the demands of managing large amounts of complex information. Therefore if the goal of maintaining Maximum Sustainable Yield (MSY) necessitates a management approach of allocating fishing opportunities, with the requirement of vast amounts of data on stock levels, fishing effort, and details about fishing fleets. Coupled with demands of time management and the mandate of cost effectiveness, specialisation and tunnel vision becomes a way to reduce complexity.

The authors explain why fixes or technical solutions derived from tunnel visions are popular despite their definitions as context specific tools improperly and singularly applied as universal remedies. Fixes not only seem to provide relatively simple solutions to complex problems for managers, but also concentrate the attention of scientific discourse. The authors show how ‘tunnel vision’-generated management tools and targets such as Total Allowable Catch (TAC) and MSY are actually responsible for generating support and demand among managers and policy makers for tunnel vision and fixes, creating a self-serving cycle. Focusing on ITQs, MPAs and CBM, the authors provide reasons why they qualify as fixes.

Calling ITQs the economist’s fix to fishery problems, the authors describe it as the allocation of shares of the TAC among fishermen who are then permitted to trade in these (by buying, selling or leasing quotas) among themselves. The assumptions promoters make is that ITQs create a degree of ownership over the resource and on the basis of self interest it leads to a control over fishing practices since fishermen have incentives to minimise costs and maximise revenues. However ITQs cannot deal with biodiversity loss and are quite useless in multi-species and labour intensive fisheries in southern tropical waters. ITQs are known to have generated social inequities between generations of fishe and also geographical inequities. Thus while aiming to address the question of excess harvests of the resource, ITQs are inadequate in addressing ecological and social concerns.

The authors term MPAs as the ecologists’ fix to fishery problems. Ranging in design from highly protected nature reserves to multi use areas, MPAs have become indispensable tools in fisheries management. A number of positive outcomes are associated with MPAs such as the reducing of fishing of spawning stocks and recruits, an increase in fish abundance within the MPA and a ‘spillover effect’ into neighbouring areas. MPAs are promoted by conservation organisations since the reduction of fishing is seen to result in biodiversity protection. They are also not as dependent on large data sets once they are established and monitored. However, the authors point to a number of weaknesses of MPAs. They are unable to address problems of migratory stocks, are often poorly designed, they lead to over-fishing in neighbouring waters, and in many areas of the world they are established without stakeholder participation and have led to conflicts and a lack of enthusiasm among fisherfolk.

Community-based management (CBM) is the sociologist’s fix to fishery problems and involves granting communities a role in fisheries management since the assumption is that compliance is impossible without the support of the community because legitimacy will be low and enforcement difficult. The criticisms against CBM however are that CBM boundaries and ecological boundaries rarely coincide. There is also a problem of scale, where communities cannot address issues of deeper water fisheries or that of a large marine ecosystem even with contest decisions taken in adjacent states. The diversity in fishing communities and their distribution and ‘shifting membership’ makes CBM easier said than done.

The authors conclude by emphasising the need for fisheries scientists to be ‘pragmatic’ and open to perspectives, assumptions, insights and methodologies of all disciplines. However the challenge would lie in figuring out how to make cross-disciplinary work happen. They state that there is ‘obviously something about the science culture that needs to be changed’. This calls for people concerned to rethink their assumptions, values, and ambitions, and the way they speak to each other. One important factor is to consider the ‘arrogance that often prevail among sciences, nurtured through disciplinary blinders’.

The authors recognise that cross-disciplinary work processes require institutional restructuring as well and offer practical suggestions to enable this such as more cross-disciplinary conferences, and requirements for interdisciplinarity in research programmes and inter-institutional cooperation.

This diverse group of authors, experts in a range of fisheries disciplines end their collaborative deliberation on fisheries management with these noteworthy forthright remarks:

**Before cross-disciplinary interaction works on an informal basis, we cannot assume that it will work on a formal basis and therefore colleagues need to know each other well and respect each other before they can be expected to be creative together and to take on shared responsibilities, for instance a joint research grant.**

**Cross-disciplinary work must be rewarded not punished as is typical of today. One cannot expect that people would freely and knowingly risk their careers.**
Common property resource (CPR) regimes within the fisheries sector are often complex owing to the complex nature of the coastal and ocean ecosystems. Access rights that govern the extraction of these resources have been historically governed by local level institutions. Traditional practices in fisheries have been relatively homogenous at a local scale, in terms of types of gear and craft used, and has ensured fairly uniform access to members of a community. The advent of technological advances, accompanied by increased investment and control by the state, and an opening up of markets, has led to heterogeneities both in terms of extraction practices and existing socio-economic dynamics. These heterogeneities have limited the control and purview of management and regulation of traditional institutions that were once the stronghold of governing CPRs.

This article explores, through an example of one such institution prevalent in northern Kerala, the relevance of informal/traditional institutions in managing CPRs. It draws primarily from the work of Antonyto Paul (2002).

Background
Historically, the traditional fishing communities of Kerala have had strong village level institutions for regulation and management (Jentoft et al. 2009). Unique to the northern part of Kerala is an age old traditional institution called ‘kadakkodi’. In literal translation, kadakkodi means ‘sea court’, but in addition to functioning as a judiciary body, the institution also carries out legislative and executive functions. In some villages, this institution is still active and plays an important role in conflict resolution and decision-making processes regarding access rights over fish stock, sustainable harvest practices and in imposing restrictions on unsustainable fishing practices.

A quick look into the history of the sector within the state is important in understanding the current status of the institution. As elsewhere in the country, traditionally, fishing practices primarily served subsistence needs and contributed to the local economy through sale in local markets. The recognition of the potential to expand the sector, together with the growing demand for sea food worldwide led to the opening up of global markets, with extensive investments by the state to increase production. The effort to ‘develop’ the fisheries sector in India was piloted in the state of Kerala. In the early 1950s, spearheaded through financial and technical support from the Indo-Norwegian Project, new fishing craft and gear were introduced on an extensive basis. This transition from small- to large-scale fishing operations led to community rights giving way to open access. Consequently, traditional institutions crumbled on account of their inability to incorporate external influences of technology and state led interventions and regulations, and the absence of authority over open access rights.

Functioning of the kadakkodi
Kadakkodies function through village level committees constituted of a general body which includes community fishworkers, an executive body which typically consists of village elders, and members of the community appointed as ‘messengers’, with the authority to implement rules and regulations decided by the executive. Three types of kadakkodies have been identified based on their administrative structures. These include:
- Temple centric kadakkodies: Prevalent among the Hindu communities of Kasargod district in north Kerala, these institutions are centered around temples within a village. The ministers of the temple function as magistrates of the ‘court’
and the kadakkodi consists of temple committee members and fishers belonging to the community.

- Multi-community kadakkodies: Although kadakkodies are predominantly institutions within Hindu communities, in certain villages of Kannur district, the religious heterogeneity of the fishing community allowed for the evolution of a secular institution. The general body selects an ‘executive body’ consisting of a president and vice-president, committee members and a messenger (whose duty it is to oversee enforcement of regulations decided by the executive).

- Nested kadakkodies: Unique to Vadakara in Kozhikode district, all seven kadakkodies of the taluk are nested into a federation. Each individual kadakkodi is secular in nature. An Action Committee of selected members from each kadakkodi oversees the overall functioning of, and makes collective decisions applicable to each individual kadakkodi.

**Evolution of kadakkodie**s

Although studies have delved into the operation and functioning of the kadakkodies, few have explored how the institution has evolved. Paul’s exploration of the evolutionary processes points to the need for such investigations into other forms of community property regimes as well, in order to assess the relevance and effectiveness of such institutions in managing common property resources today.

Interestingly, Paul’s study finds that in some villages the system of kadakkodies disintegrated, in some it continued to persist, while in others, a conscious restructuring of the structure and expansion of the purview of the institution helped revive the kadakkodies. Disintegration of kadakkodies in certain villages was brought about by many factors including: 1) the monopolisation by technologically advanced craft and gear leading to further marginalisation of the traditional sector, 2) increased political influences on cooperative credit societies leading to political heterogeneity within the institution, and 3) the inflow of migrant fishermen and the increasing complexity of market supply chains dominated by middlemen who constantly questioned the authority of the kadakkodies.

Kadakkodies continued to persist in villages of Kasargod district, on account of the authority that temple functionaries continued to wield, despite the external influences of technological advancement, expansion of markets and increased state control.

Interestingly however, within the nested kadakkodies of Vadakara taluk, a restructuring of the institution in response to these external influences resulted in the kadakkodi emerging as a stronger and more effective mechanism for control and regulation. For example, the ban on night fishing was upheld, membership was extended to include share owners, and an auction system was introduced replacing the exploitative system of credit and marketing arrangements dictated by middlemen. With increasing demand of the community for the state to recognise community rights, the institution also became a facilitator of collective action.

**The future of kadakkodies**

When it comes to governing the commons, it is important to specify whose commons they are. External actors that influence stakeholders’, and more importantly, rights-holders’ access to a resource should encourage their recognition of conserving resources for sustainable use.

Informal institutions like (kadakkodies) are not an answer for all the problems of resource management and at all times. Sometimes the state may have to come in support of the informal institutions or they may have to be complemented by the formal institutions enacted by the state. Nevertheless, effectiveness of any such institutional innovations would depend on strategies adopted to tackle the problem of resource-related, technological, cultural, and institutional heterogeneities.

– Paul 2002

In the particular case of kadakkodies, Kerala holds some promise when it comes to co-management of resources. With the state government placing increasing importance on village or panchayat level governance, these institutions will form an important link between community access and state defined policy objectives. One way to realise this is by the formal recognition of these institutions by the state. Also unique to the state of Kerala is the influence of political parties within fisher organisations. Therefore, rather than forming an ‘outlier’ community marginal to the politics of the state, the fishermen of Kerala can connect closely to the political process at the district and state level (Jentoft et al. 2009). The flipside of such a complimentarity however might be the overshadowing of the effectiveness of informal systems by increased state driven systems burdened with bureaucratic procedures and driven by political interests. Paul (2002) also warns that a reversion to traditional institutions such as the kadakkodi may not adequately address the management needs of the present, and the fact that such institutions, even when they functioned in the past, are not necessarily democratic or suited to social conditions (Kurien 2003), requires careful scrutiny.

**References**


Self-governance in a US Fishery: The Maine Story

The need for a bottom-up approach in the governance of common property resources has been advocated across the world, and across common property regimes. However, real world examples are hard to come by and the recommendation for such an approach draws more from theory than existing systems of governance. The Maine lobster fishery in USA is one example where self-governance in the fishery has proved to be successful both in ecological and socio-economic terms.

Although self-governance is practiced primarily in advanced democracies around the world (Beem 2007), the Maine fishery model does hold promise in its ability to be adapted in the management of common property resources in the developing world. This article outlines the system of governance adopted by the Maine lobster fishery industry and points out the challenges in sustaining the institution while highlighting how and why it has been successful.

The conservation of a resource for collective gain must ensure adequate incentive for individuals to exercise mutually agreed upon practices of restraint to maintain long-term sustainability of the resource. The model of management followed by the Maine lobster fishery industry is based on the premise that restricting access through limited entry (i.e., restricting the number of individuals who can access a resource, or restricting the quantity of resource that may be extracted by an individual) by an external regulatory agency, such as the state, undermines the willingness of individuals to exercise conservatory practices for sustaining a given resource (Wilson 1993).

The importance of self-governance is that the very process of governance creates the social conditions under which individuals are assured (to the extent possible) that the rules chosen will accomplish the end for which they were adopted and that there will be rule compliance by their colleagues. Under these circumstances it is possible for an individual to subscribe wholeheartedly to the logic of individual and collective restraint.

Wilson 1993

A brief history of the fishery

In economic terms, the Maine’s lobster fishery ranks first in the USA, accounting for half of the country’s landing of American lobster (Homarus americanus) (Taylor 1998). Sustainable harvest practices that are still in place today were developed over a hundred years ago. In the recent past however, a declining trend was observed in the fishery, and was attributed to pressures of over-fishing due to advances in technology, changes in fishing craft and gear, expansion of territories of individual fishers and the opening up of deep water fishing. But despite predictions that the fishery would soon cease to be profitable, over the last decade, the fishery has resulted in increasing yields. Standard governance mechanisms which are based on predictions of economic theory would prescribe limiting entry or access to a resource by the state. In the Maine lobster fishery however, the government sought to involve the participation of the fishworkers in decision-making processes that would help develop management practices for the fishery. The resource users were given the responsibility of implementing management practices and enforcing mutually agreed upon rules and regulations. In 1995, the Department of Marine Resources instituted a management system that formalised the traditional community-based system that was already in place and implemented the system of co-management—where the authority for managing fish stocks was shared between the industry and government agencies (Acheson 1997). The Zone Management Law came into force in April 1995. Decision-making was shifted from the state to the community represented by regional Lobster Policy Management Councils. This legislation allowed council members to determine regulations on methods of catch extraction (Taylor 1998).

The rules on restraint that ensure sustainable extraction of the resource include a restriction on catching egg laying females, a restriction on the minimum and maximum size of lobster that is allowed to be caught, and limitations on fishing gear and extraction methods. Fishworkers have also voluntarily adopted the practice of ‘v-notching’ the tails of egg laying females for easy identification in catch and a ban on catching these females (Taylor 1998). Trap limits and limited entry were two key features of the legislation that have accounted for the success of the fishery today, although the process that resulted in defining these limits had to overcome a large amount of conflict between different interest groups to obtain a consensus (Acheson 2004).

So little time has elapsed since the passage of the lobster co-management law in Maine that little can be said with certainty about its ultimate fate. However given the state of the world’s fisheries, the Maine co-management effort is a very timely experiment. In a field in which a lot of armchair theorizing is the rule, the lobster co-management law provides a case study which will inform all of those interested in fisheries management.

Acheson 2004

The system of industry self-governance

The following outline of the system of management and governance in the Maine lobster fishery draws from studies...
by two of the leading authorities on the subject. Jim Wilson (1993) describes the regulations that the system developed and compares the Maine lobster fishery system of management with conventional sustainable management practices that are commonly advocated. James M. Acheson’s analyses describe the processes that led to the development of a co-management regime. His article titled ‘The development of the Maine Lobster co-management law’ provides relevant insights into these processes. As both Wilson and Acheson posit, the acceptance by the community of the collective and individual benefits that arise from compliance are critical to the success of implementation.

Wilson (1993) presents a comparison between the conventional limited entry [or the individual transferable quotas (ITQs) system] approach to management with the management system adopted by the Maine fishery. In the conventional model, it is an authoritative agency, usually the state, which imposes such restrictions on entry. He presents three principal arguments that challenge the assumption that limited entry and/or limitations on the quantity of resource that may be extracted is sufficient to prevent over-fishing. The first is that a detractor from a single species theory has shown that the complex nature of ecosystem processes limits the control that human societies have over a given species or group of species. This argument is supported by growing consensus among biologists that “recruitment to each species is not so much a function of its own condition (current spawning numbers) as it is a function of the state of the entire ecosystem” (Wilson 1993). The second is that limiting entry does not resolve the conflict between individual and collective incentives—an argument that is applicable to managing other common resources as well. And third, the creation of a ‘privileged class’, i.e., the limited number of individuals who are granted access to the resource, does not achieve the public benefit of conservation. However, the co-management law that was passed by the Maine Legislature in 1995 did provide for defining limitations on entry. It is important to note here that despite the arguments against implementation of a limited entry system, in the Maine fishery, the decision to define these limitations were devolved to the zone councils (comprised of members of the fishing community) and not to the state.

In the Maine fishery governance regime, the objectives of social and economic benefits override that of conservation; however, in the very practice of achieving these objectives, long term conservation of the resource is ensured. This results from a process of rule formation that is centered around fairness, workability and individual rights.

The benefits of the system also extend to the costs that the state incurs in terms of reduced resources needed to manage the fishery and put in place enforcement devices. The devolution of authority to the local community is also accompanied by the devolution of responsibility in sustaining the local economy and for long-term management.

**Challenges to the system**

Although hailed a successful system to manage common property resources, challenges that arise in the governance of the Maine lobster fishery also serve as a warning while advocating the adoption of the system to other parts of the world, and to other resources. First, literature that documents the process of evolution of the system has shown that the development of the institution of co-management and the decision-making processes that follow is time consuming; considerable time and effort is spent in deliberation in order to obtain consensus and acceptance by the community (Wilson 1993; Acheson 2004). The same processes will have to follow in case of incorporating changes to the system. Second, while the objective of adopting a co-management system for governing a resource might be to overcome collective problems and obtain individual and collective benefits, individuals within the community must be able and willing to invest the time and energy required to develop the system and remain involved through its implementation. It also requires the development of mutual belief of individuals in the community that practices of restraint are viable for collective and individual benefits.

Where such benefits are not realised in the short term, acceptance of restraining practices might be low. Thirdly, the nature of the fishery has been conducive to the success of a self-governance regime in Maine: the localised nature of the resource has provided little opportunity for outside actors to partake of the resource, sufficient resources are present to enable local production of gear and craft with minimal dependence on external inputs, and support and information systems to guide the management of the fishery are well in place. It is important to note that the success of this system of co-management can be attributed in part to the willingness of government and legislative agencies to adopt it. Where such willingness or cooperation is lacking, a community's intent or demand to manage its resources can be severely undermined.

All these factors point to the need, therefore, to acknowledge these local attributes while developing a model for self-governance that may be adopted elsewhere.

**References**


**Online resources**

Maine Lobster Council: http://www.lobsterfrommaine.com

Marine Stewardship Council: http://www.msc.org
Through a platform facilitated by the South Indian Federation of Fishermen’s Societies (SIFFS), the development of a self-governance system for the coastal districts of Nagapattinam in Tamil Nadu and Kariakal in Puducherry is being tried out in India. The Nagai-Karai Fisheries Management Council, the principal executive agency, brings together 54 traditional village panchayats in the two districts.

The involvement of SIFFS in the process of developing this management regime is supported by the Food and Agriculture Organisation and the United Nations Development Programme (hereafter FAO/UNDP) following the efforts of the United Nations Team for Tsunami Recovery Support (UNTRS) to promote fisheries livelihoods and set directions in addressing sustainable fishery management in the aftermath of the December 2004 tsunami.

This article details the processes that were employed, the objectives identified, the roles of fishing communities in managing fishery resources and the challenges that lie ahead for the implementation of such a governance regime. The article summarises my observations on the same as an advisor of SIFFS and moderator of the consultative meetings of the villages represented in the council and details of the Fisheries Management and Sustainable Livelihoods (FIMSUL) project of the FAO/UNDP in collaboration with the Government of Tamil Nadu, which I am associated with as a consultant.

The background
The initiative for instituting a self governance regime to manage the fisheries of this region was triggered by the excessive distribution of fishing assets after the tsunami and a realisation that this was the consequence of the absence of an effective fisheries management system prior to the tsunami. It was also based on the recognition that India has adopted a typical top-down fisheries management model that just does not work. The new initiative therefore relies on the traditional village-level self-governing systems that have existed among these fishing communities but have been substantially weakened in the course of time. I believe that these informal institutions could provide the best ‘building blocks’ for a fisheries management structure, which can be strengthened through involving other stakeholders, including the state, and providing formal recognition to the institution.

Through concerted efforts of SIFFS, the initiative which was initially perceived as merely a platform run by the organisation, the acceptance of the need for a self-governance system and a sense of ownership became discernible amongst the village representatives that will be key actors in implementation.

Strengthening existing institutions of self-governance
The pattinavar community that inhabits the Nagai-Karai coastline has had a long history in regulating fishing over large stretches of the Coromandel coast. As with other traditional management institutions, social, religious and political factors are included for consideration within the management regime. This ‘supra-local self-governing’ structure of the fishing community that is still in existence today is probably the oldest in the world. Typically, the pattinavar community structure of governance is based on village councils. Every eight or 16 villages have a ‘head village’, and an overall head
village is identified for 64 villages. This federal structure was weakened in the last few decades by the rapid expansion in the fisheries sector promoted by the state that resulted in the establishment of an open-access regime and increasing social, economic and political heterogeneity in community structure. This was accompanied by the formal assumption of power to regulate and control fisheries by the state, which largely led to weak enforcement, inequitable development of the fisheries and the decline of the traditional institutions. Today, these institutions along the northern Tamil Nadu and Puducherry coast exist in various stages of decline.

The role of the FAO/UNDP

Following immediate relief and restoration activities, the focus of international aid agencies was shifted to the future of the sector. The FAO/UNDP conceived the FIMSUL project in Tamil Nadu and Puducherry in 2005/2006. The focus of the project includes fisheries co-management, credit, market linkages, cost reduction strategies and viable enhancement and diversification of fishery based livelihoods. The Nagai-Karai initiative was therefore a precursor of the FIMSUL project which would experiment with new institutions and management systems that involve stakeholders in ensuring long-term sustainability of the fisheries.

It is important to note that the project advocates the development of a co-management strategy and does not suggest that fisheries in Tamil Nadu or India can be managed entirely on the basis of a self-governance regime. The various changes in the fisheries and fishing communities in the last few decades has made it difficult for the communities to sort out problems entirely on their own and therefore partnership with the state is inevitable. However, for this partnership to work, there needs to be viable community institutions that have the capacity to dialogue with the state and manage its members. A key premise was that the change from the current ‘open access’ to ‘regulated entry’ can be accomplished through collective action than through market mechanisms or through stronger state controls.

Initiating the Fisheries Management Council

The process that eventually led to the acceptance by the community to institute the system was time consuming and tedious. SIFFS had begun an effort three years ago to bring together the traditional village councils of Nagapatnam and Karaikal to encourage greater participation of these communities in issues of managing the fishery. This followed increasing conflicts between various fishing groups and villages on account of extensive investments in fishing equipment in the aftermath of the tsunami. The competition for fish intensified and led to the adoption of new fishing methods like the ‘ring seine’, leading to new conflicts within the artisanal sector itself in addition to the long standing conflict between artisanal and ‘mechanised’ fishing boats. SIFFS’s recognition of the role of traditional village councils in determining management practices for sustainable use of the resource led to the creation of a network amongst these villages, and the organisation was able to build strong ties and restore confidence both among traditional villages as well as trawler owner associations.

While exploring the potential pathways through which an effective system of management could be instituted along this coastline, SIFFS sought to constitute a fisheries management council consisting of representatives of the fishing villages in the area to enable greater participation in the management of the fishery. However, what potentially seemed a beneficial course of action in this regard required the consideration of other factors and influences including political factors, socio-economic dynamics and the established relationships between and within villages. The reconciliation of these concerns took over a year of sustained consultations with all village council members before the decision to form the Nagai-Karai Fishery Management Council was made with the consent of all members. The concerns raised by the members ranged from the intentions of the executing agency (SIFFS, in this case) to selecting which villages will be represented in the council and internal differences regarding the individuals selected from each village to represent it in the council. As of now, the executive body of the council has been constituted.

What the future holds...

Now that the council members have been elected, the stage is set for the creation of strengthened community participation in management and ensuring sustainability of the fishery. The immediate recognised step is to convey the establishment and the roles and responsibilities of the council to all village members. It is extremely important for the council to begin its functions by addressing issues that are of common concern and strengthen ties with government departments before taking on issues of contention which might create hostility amongst member villages and reduce the role of the council to mere conflict management. I foresee the following challenges that the council will have to face while executing its role:

• Internal conflicts of interest within and between villages which could jeopardise the effective functioning of the council.
• While the FIMSUL project supports the creation of a co-management structure, the possibility that the council will serve as no more than a platform for executing co-management objectives, and not as an institution for self-governance, is imminent.
• The integration of traditional systems with the management system that will be developed by the council is important in divesting greater authority and responsibility to the council. This will require the building of trust within villagers who need to ensure proper representation of their issues within the council and the assurance that their concerns are being given equal attention.
• Political, religious and social aspects are entrenched in the dynamics of fishing communities. The boundaries between the various spheres of governance need to be established and the council’s mandate that will specifically addresses management needs should be carefully established.

The initiative towards the establishment of this council is no doubt a giant leap in the effort to divest greater responsibility and engagement in the management of the fishery resources in this part of the coast. However, now that the structure is in place, the more difficult task of making it actually contribute to fisheries management is only beginning.
While some fishing hamlets in India have existed since ancient times, such as those of the pattinavar community of Nagapattinam district in Tamil Nadu on the east coast of India (discussed in Vivekanandan’s article), in other places, fishing hamlets are routinely established and dismantled seasonally, due to a variety of factors, often causing this diverse community to be described as a transient one. Local rules covering the use, management and protection of the seas and its resources have evolved among fishing communities, like so many other natural resources, on a foundation of ecological knowledge and various cultural, economic and social aspects of the community. But rule-making often keeps better time with rulers than with subjects.

Regulations were common among Indian rulers such as the Pandiyan kings of Madurai who controlled the pearl fisheries of the Gulf of Mannar. With the establishment of the colonial state came the first ever state laws on fisheries. The Indian Fisheries Act, 1897 enacted by the British colonial administration sought to regulate riverine fisheries and fisheries in nearshore coastal waters. This law is still in force today and it prohibits the use of poisons and dynamite in fishing and adopts a range of regulations over fishing practices in specified areas. Even the colonial provinces had fisheries rules but pertaining largely to inland areas. As the first written state law dealing with marine fisheries, it contains the basic structure that all laws are designed by. It defined its subject, fish (even if only obliquely, by clarifying that it included shell fish). Its jurisdiction over the sea was defined—up to one ‘marine league’ from the sea coast. Penalties were established and officers of the state (bureaucrats, policy, judiciary) were given various responsibilities to enact, implement, punish and redress on matters contained in its clauses. Unsurprisingly and like many other colonial natural resource laws, it contained no mention of a role for fishing communities or their governance institutions. This striking feature plagues Indian fisheries management to this day.

The present legal system
Responsibility for legislating over marine fisheries and the protection of the marine habitat in India today is spread over several government agencies at the central and state levels as decided by the Seventh Schedule of the Constitution of India. Fish production from India’s Exclusive Economic Zone (EEZ) or deep-sea fishing takes place beyond 12-nautical miles. The central government is empowered by the Constitution to make rules over fishing and habitat conservation in this zone. Specifically, the Territorial Waters, Continental Shelf, Exclusive Economic Zone and other Maritime Zones Act, 1976 (TWA) recognises the sovereign rights to conservation and management of living resources in the Indian EEZ, as well as their exploration and exploitation. The regulation of foreign fishing vessels by the central government is elaborated in the Maritime Zones of India (Regulation of Fishing by Foreign Vessels) Act, 1981 (MZI) and its Rules of 1982.

However, to millions of traditional fisherfolk the legislations made by the different coastal state governments have been more relevant. These Marine Fisheries Regulations Acts (MFRA), were introduced by coastal state governments along the lines of a model legislation that the central government prepared in 1979 ostensibly in response to a demand from traditional fishers to protect their fishing grounds and vessels from mechanised trawlers. In all coastal states, the MFRAs reserve the nearshore waters for traditional fisherfolk (using unmotorised and motorised boats) and relegate
the mechanised and more powerful boats to deeper waters. The maintenance of law and order and conflict management between the traditional and mechanised sectors in this manner was the main objective of the MFRAs.

Kerala introduced its MFRA in 1980 becoming the first state to do so. Gujarat was the last in doing so and its MFRA of 2003 has benefited from greater elaboration, bringing into its fold clauses pertaining to protection and conservation while discussing the development of fisheries in both inland and coastal waters. Each MFRA comes with a slew of regulations and broadly these pertain to the size of fishing fleets (by restricting the number of fishing licenses), fishing area restrictions (either closed areas, or restrictions for different categories of craft), gear restrictions (mesh size, length of fishing nets, bans on specific nets, etc.), and restrictions on species. All the MFRAs also impose a seasonal ban on fishing that coincides with the monsoon season in India with minor variations in the years to ensure the protection of fish resources in what is popularly believed to be a breeding season for many species.

The implementation of the MFRAs in all states has been poor, particularly in regulating fleet size and in implementing zonal and gear restrictions, and resulting in violent clashes between the traditional and mechanised sectors in some states. The MFRAs also make no mention of consultation with fishing communities on the regulations or their implementation. In the interim, states such as Kerala have introduced additional regulations such as the ban on bottom trawling and on specific gear (such as ring seines) but the implementation is far from satisfactory. With a steadily evolving fisheries that incorporates technological improvements in motors, craft and gear, the definitions of terms in the MFRAs (of traditional and mechanised vessels) also merit elucidation without which implementation is fraught with confusion. Despite decades of its existence, the provisions of the MFRA are also not fully understood by fisherfolk in many parts of the coast.

It is noted by scholars like Southwold-Llewellyn (2007) and Bavinck (2005) that some of the MFRAs rules have been incorporated into the non-state legal system and that the former often depends on the latter to enforce its rules. However, since the powers to implement these laws are not legally divested to the community, the actual capacity of fishing community leaders to enforce fishing rules is a function of the degree to which their power is fixed within existing social, religious, economic and political milieu of the community.

Recent developments
In the year 2009, the central government introduced the Marine Fisheries Regulation and Management Bill, 2009 which (superseding the TWA, 1976 and the MZI, 1981) will empower the central government to manage and regulate the fisheries of the EEZ. In its present form, it contains no principles or guidelines that indicate its actual management regime or regulations, but leave these to ‘management plans’ which it is empowered to prepare. The Bill states that fishing for all categories of craft (both Indian and foreign) beyond the territorial waters will require a separate permit from the Government of India. Therefore a good proportion of the existing Indian fishing fleet, at least seasonally, which fish beyond the 12 nautical miles will require an additional permit to do so, depending on the management plans. These plans are only prepared in consultation with the state governments for the territorial waters alone and the role of the fishing community in such planning is missing in this Bill.

The Bill clearly defines violations under two categories: fishing without the above-mentioned permits, and fishing in the EEZ without stowing fishing gear in the prescribed manner, both of which are cognizable offences. The Bill assumes that fishing by Indian boats below 20 metres only takes place within the territorial waters and it only permits ‘innocent passage’ (without fishing) in areas beyond 12 nautical miles in the EEZ. The punishments for small boats (below 12 m length) violating these clauses is a fine of INR 25,000 and for all bigger boats fishing without permits, the owner and master face imprisonment between 3 or 9 years or a fine up to INR 9 lakhs or a combination of both. The fines for foreign fishing vessels is more severe (up to INR 20 lakhs and a similar term of imprisonment). This Bill also does not incorporate an approach that guarantees the rights of small-scale fisherfolk (both Indian or foreign) and its regulations beyond the territorial waters, is slanted towards the mechanised sectors.

This Bill, presently in a draft form is being opposed by fisherfolk associations for various reasons. It contains no detail on actual conservation measures or rules but insists on additional special permits for all categories of fisherfolk, and contains little appreciation of the social or economic entitlements between big and small fishers. Its disproportionate penalties for fishing violations have invited strident opposition. Countering this Bill, the National Fishworkers Forum and the International Collective in Support of Fishworkers also point to the importance of being ‘reasonable’ and realistic in imposing severe penalties on fisherfolk from immediate neighbouring countries, where years of reciprocity and accommodation have helped in relieving border related tensions.

A pluralistic approach
The experience of excessive reliance only on state law is seen in its poor implementation and unpopularity. The complexity of future fisheries management is not only on account of it being multi-species but due to the ignorance of its pluralistic nature. With its diverse institutions and rules developed over a continuously evolving relation with the state, officially endorsing a legal pluralistic approach is a good start at appreciating the complexity of India’s fisheries. To move towards sustainability, a variety of relations will have to be forged between people and the state such as the co-management experiments described in this issue, to ensure that the future of fisheries and fishing communities is safeguarded.

References
Imagining the Future for Small-scale Fisheries: Moving Forward on the Subsidiarity Principle

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If governance is defined as the capacity to think beyond the confines of sectoral interest and immediate needs, imagination is one of its key ingredients. Images for how society might look are critical to efforts for solving problems and opening opportunities (cf. Kooiman et al. 2005). After all, the very definition of what constitutes a problem or opportunity depends also on the way the future is imagined.

To take this discussion to the field of capture fisheries, do we imagine the world’s 30 million fishermen to happily leave their dangerous occupations and blend into the industrial workforce? This is, after all, what has happened to countless other professional groups in history, and their erstwhile members are not necessarily the worse off for it. Or, to present a contrary view, do we imagine a world in which small-scale fishing communities are given historical rights to the resources which they have always relied on, and will hopefully live happily ever after? Although this image will appeal to many of those in support of small-scale fishermen today, it also has its potential shadow-side: historical rights may not only keep others out, they can also lock people in. All we want to point out here is that it is not only important to possess images, but to investigate their possible consequences too.

Principles go beyond images. Where images paint pictures, express ideas, and sometimes also formulate hopes, principles define measuring rods to separate the wanted from the unwanted, the good from the bad. There are many principles floating around, and often they are unspoken. The subsidiarity principle is one of the more powerful ideas to have been suggested for restructuring—or re-imagining—the fisheries field, not only with regard to management but to technology too. We therefore believe it is worth paying more attention.

The adjective ‘subsidiary’ is more familiar to the ordinary person than the noun ‘subsidiarity’: it suggests a relationship in which one entity is auxiliary to another. A subsidiary firm is thus a company that is owned by (or possesses a legal relationship with) another, bigger company. The derivative notion of ‘subsidiarity’ has its origins in the realm of political and legal thought, referring to the relationship between higher and lower political units in society. Carozza (2003: 38, note 1) provides a working definition: “Subsidiarity is the principle that each social and political group should help smaller or more local ones accomplish their respective ends without, however, arrogating those tasks to itself”. Carozza is discussing the relationship between groups or entities situated at various political and social levels, and their respective duties. In his formulation, subsidiarity refers to the task of higher political units to ‘help’ lower units in accomplishing their goals, without appropriation of these tasks taking place. We will return to this unusual perspective below.

Other definitions of subsidiarity emphasise the rights of lower units vis-à-vis higher ones, and the notion that whatever can be decided at a lower level should also be done there. The subsidiarity principle is thereby a potent force in protecting inferior units from the interference of their ‘superiors’: it is only if the task or issue cannot be effectively addressed by the inferior unit that the higher level unit is allowed to step in. In the United States, the notion of subsidiarity has played an important role in defining federalism; in the European Union it has recently been accepted as one of its constitutional principles. The Edinburgh European Council of December 1992 issued a declaration on the principle of subsidiarity, which was subsequently developed into a protocol by the Treaty of Amsterdam. Hereby subsidiarity came to play an important role in structuring the relationship and the distribution of competences between European and national-level agencies.

In the field of fisheries, authors have referred to subsidiarity to
discuss the relationship between government and user groups, and the role of participation therein (McCay & Jentoft 1996). Following the 2004 tsunami in Asia, Kurien (2005) has used the term to discuss the responsibilities of various parties with regard to disaster relief. In both instances resonates an echo of the concerns of co-management, and the most appropriate way to distribute rights and responsibilities between the parties involved.

Mathew (2005) brings in another perspective. In his contribution to the Sixth Meeting of the United Nations Open-ended Informal Consultative Process on Oceans and the Law of the Sea, he suggests the implementation of what he calls ‘scale subsidiarity’. By this he refers to the process “whereby larger fishing units are considered in a fishery only after exhausting the possibility of employing smaller fishing units in the same fishery.” Small is hereby given priority over big—this is a symbolic reversal of events occurring in so many fisheries, whereby the big and mighty have pushed the small off the road.

Scale subsidiarity, or technological subsidiarity as we propose to call it, has results that are similar to other proposals for the support of small-scale fisherfolk. The Statement from the Civil Society Preparatory Workshop to the Global Conference on Small-Scale Fisheries (4SSF) in Bangkok thus requests access and management rights over local or traditional sea territories (Article 1, 2); Article 3 lends priority to small-scale fisheries in Exclusive Economic Zones; and Article 4 strives to prohibit industrial fishing in inshore waters. In all these cases small-scale fishermen are given territorial rights. These are motivated and anchored in a human rights discourse that provides small-scale and indigenous fishing communities a preferential position.

Although an application of the subsidiarity principle to technologies has similar consequences, it is rooted less in a discussion of primordial rights than in effectiveness. The argument is that when small-scale fishers can do the job just as well (or better), they are given priority; when they are not—they up to the task, however, other parties have a role to play. But effectiveness with regard to what? Four criteria suggest themselves:

1. Prevention of harm to the marine environment, which nurtures the fishery;
2. Ability to catch what, taking account of environmental limitations, the ocean allows, thereby contributing to the wellbeing of human society;
3. Generation of a maximum of livelihood opportunities, in accordance with the need thereto;
4. Providing high quality protein for consumers on local, national and international markets (in that order).

The advantages of small-scale versus industrial fishing are proven quite easily for points 1 and 4 above (although there will always be exceptions). This is not to deny that small-scale fishing too sometimes has negative environmental consequences, and that improvements must be made. But point 2 is more difficult to prove. Can small-scale fishers indeed replace industrial fishers in capturing maximum sustainable yield? Are there not many instances where this would be done away as wishful thinking? For some fishing grounds are distant, and some target species are not within reach of small-scale fishing technology. Applying the subsidiarity principle technologically would therefore need careful consideration of the particular ecological and social context because at the end of the day, it is that context that determines what technology is appropriate or not. Then we would also need a finer gradient than big versus small; the technology most appropriate to the situation may well be of intermediate scale.

It is easy to see that the scaling up or down of fishing technology that is already in place and in use is challenging. It would need a governance mechanism with sticks and carrots and a design that allows decision-makers to know and understand the particularities of the social and ecological system within which the technology shall operate. Thus organisational subsidiarity accompanies technological subsidiarity.

In conclusion, we would like to go back to Carozzo and his definition of subsidiarity, which argues that social and political groups should ‘help’ smaller or more local ones to accomplish their respective ends. Translated to fisherfolk and their technologies, it suggests that industrial fishers should assist small-scale fisherfolk in doing their work, before seeing what is left for themselves to do. A start would be for small and large scale operators to get together and negotiate a deal on how to share resources and territories between themselves. A deal developed from the bottom-up is likely to be more sustainable than those that are imposed from the top-down. Facilitating such encounters would be among the responsibilities that government agencies should assume if no one else is there to initiate them.

Isn’t this a wonderful idea—not treating industrial fishers as the ‘bad guys’ who have to be forcibly removed from the sector, but as compatriots who have a role to play vis-à-vis their weaker brothers? Far-fetched it may seem, but not necessarily impossible to realise, As some would argue, it is a matter of getting the institutions right. And the principles behind them. But before we can make it happen, we have to imagine it, as imagination is the mother of all social, institutional and technical reform. Before we can do something, we have to dream it.

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References


Science and Community: Models of Collaboration in the North American Fishery

What is the role of science in informing management of community resources, and what is the nature of the collaborations that have emerged between the scientific- and resource user-community? These are questions that Douglas C. Wilson, Senior Researcher at the Innovative Fisheries Management Research Centre, Aalborg University, began addressing in the context of fisheries science and management in his paper titled ‘Fisheries science collaborations: The critical role of the community’ (1999). We present a summary of this paper which Wilson described as an ‘initial foray’ into outlining the models of collaboration based on data from the North American fishery. A decade later, these conceptualisations are valuable aids to those interested in the challenge that the application of knowledge in solving a societal problem poses.

Wilson’s paper begins by defining science as a quintessential community effort. Recognising that the need for community collaboration is a trait that science shares with fisheries management (which is an attempt to find ways for a group of people to sustainably share a resource), his paper explores the conditions under which scientists and other stakeholders in fisheries management enter into various collaborations. It outlines four basic models of collaboration that existed in the North American fishery at the time, and also offers examples of some of the programmes that fit into the four models.

The deference model
The ‘deference’ model relies on scientific expertise to inform management practices by identifying a distinction between the roles of science (or scientists) and those of other stakeholders (including the fishing community).

Wilson identifies four types of collaborative efforts that fall under the deferential model. The most prevalent amongst these is the gathering of data by community members for scientists. In the North American fishery, a large number of recreational fishers also seem to be involved in the effort. The activities include tagging programmes, maintaining log books, collecting samples and coordinating logistics of data collection. The advantage of this kind of collaboration is that the cost incurred by the agency carrying out the survey/study or the government is greatly reduced on account of being able to use locally available resources. It also enables widespread data collection by engaging community members that utilise diverse resources. Further, it helps create and sustain healthy relationships between the scientific community and the fishing community. The other types of deferential collaboration include the use of ‘industry advisors in scientific funding’ and involving participation of fishers by ‘providing platforms, logistical support and at-sea collaboration’. Wilson identifies the latter to be one of the most effective and venerable types of research interactions. The fourth kind of collaboration is the initiation of issue-oriented research by the fishers themselves. In order to address a particular issue, the community either funds or collaborates with professional scientists to carry out the research.

The traditional ecological knowledge model
The ‘traditional ecological knowledge (TEK)’ model, which has gained acceptance over the last twenty years, acknowledges that fishing communities are capable of contributing to fisheries science on account of the unique knowledge they possess about ecosystem processes and human-natural resource interactions that have developed through their history of use and access. As such, TEK is ‘meant to supplement and refine the work of scientists’ (Wilson 1999).

This model of collaboration first emerged in the developing world but fast gained recognition in developed countries as well. Managers had begun to acknowledge the practical application of this
knowledge in designing development programmes. According to Wilson, this model is both a challenge and a compliment to the ‘deferential’ model. It is widely claimed that traditional knowledge serves location specific management needs, while scientific knowledge contributes to overall development and management. As such, TEK can compliment large scale objectives with local and practical application. The TEK model’s challenge to the deferential model is that while TEK is relevant at a local scale, it more appropriately reflects the views and concerns of the users of the resource in question and therefore could deserve higher consideration in the specific programmes of management. It also challenges the assumption that information that is not gathered or documented in a scientific fashion is less valid than that generated by formal science. A large number of TEK based research collaborations involve the systematic recording of fishers’ knowledge, usually by an external (scientific) agency. However, many locally based efforts, initiated by the local community or local NGOs also make use of this kind of collaboration to address management needs. The need for effective collaboration with the use of TEK therefore requires the acknowledgement of the validity of TEK in informing management decisions and an integration of the two ‘types’ of knowledge systems.

The competing constructions model
The third model that Wilson defines is the ‘competing constructions’ model. Fisheries policy that is designed by differing (and sometimes conflicting) perceptions of the resource in question results in competing interests that inform management. Wilson posits that this model most aptly describes a majority of collaborative programmes that exist in the North American fishery. It incorporates both scientific expertise (the deference model) and inherent community knowledge (the TEK model) where each is suitable to develop a management strategy. Political and legal aspects therefore are strong influences on the outcomes of such collaborative efforts.

This model emerges in situations where scientific information is used to evolve management decisions and objective criteria of the development and enforcement of rules. Where this leads to a conflict of interest (and an oft-cited accusation of scientific information is that it is unable to be applicable to real-life concerns of management), collaborative efforts have sought to incorporate the views and contributions of various interest groups including the government, the fishing industry and local environmental organisations. This model acknowledges the need for science to address legal, political and economic aspects of management. Wilson points out that while it might be good practice to institutionally separate science and management (and this has been done in certain fisheries in Europe, for example), this separation will not overcome the problems of management that need to be addressed.

The community science model
The ‘community science’ model of collaboration incorporates aspects of all three (previously defined) models and is emergent in programmes of fisheries co-management. Science that is applicable to the management of real world systems shares the trait of community collaboration with fisheries management. It ‘relies on a culture, with shared values and behavioral expectations’ (Wilson 1999). As such it draws from knowledge generated by the scientific community and the traditional ecological knowledge of the resource user community and also incorporates differing priorities or ‘competing constructions’ and seeks to resolve these conflicts through collaborative efforts.

This model typically pursues fisheries co-management and community development, and are characterised by ‘an open discourse about all the aspects of the scientific problem’ (Wilson 1999). Wilson comes across two types of collaborative projects that involve science as a community based effort. The first includes programmes that are initiated by the fishers themselves that involves the collaborative efforts of the community as well as scientists to address community based management needs. The second includes programmes that are initiated by external actors. While the advantage of such a model lies in its implied assurance of participatory practices, the system itself might be slow to develop as it requires the inputs and acceptance by all actors in any collaborative effort.

Wilson points out that these models of collaboration that he researched and describes, reflect more than just the content of the (collaborative) programmes. They also are indicative of the advancement of social science literature, on science and natural resources. Therefore, the models are really cumulative in that each one incorporates many factors from the earlier ones.

The most enduring aspect of Wilson’s study is the basic premise of the paper, that perception of ‘nature’ and thereby the appropriate way to manage natural resources differs between that of the scientific community and the resource-user community. All collaborative efforts require a reconciliation of differing perceptions in order to be effective. Wilson calls for a more systematic search of collaborative efforts in the fisheries sector in North America. Today, management and policy analysts in other parts of the world continue to emphasise the need to dwell on the questions that Wilson’s study explores.

Reference
Choosing the Right Rights-based Approach to Fisheries Management

Chandrika Sharma
International Collective in Support of Fishworkers (ICSF)

There is today growing global concern about the state of fishery resources and recognition of the need to conserve and manage these natural resources and habitats. Overexploitation of fisheries resources, and overcapacity in marine capture fisheries have, among other things, been identified as key problems that need attention in any fisheries management regime. Several forms of rights-based approaches to fisheries management have been proposed or implemented to address these issues in small and large-scale fisheries. They include both traditional and modern systems of rights and privileges.

Quota-based system of managing fisheries
The modern category of rights-based fisheries management regime includes quota-based fisheries management systems where fisheries resources prior to harvest are treated as an economic asset and parcelled out to a specific number of fishers based on catch history. Granting quasi-property rights to fisheries resources is assumed to act as an effective incentive to stem overcapacity and over-fishing.

The assumptions underlying quasi-property rights-based approaches to fisheries management are threefold: 1) There is excess fishing capacity in both small- and large-scale fisheries, and fisheries resources the world over are largely over-fished; 2) The core problem of resource overexploitation, as well as the building up of excess fishing capacity, lies in the open-access nature of most fisheries; and 3) Quasi-property rights-based approaches are the only effective way, in the long run, to meet the biological, social and economic objectives of fisheries management.

The experience of quasi-property rights-based approaches to fisheries is, so far, mainly confined to fisheries in temperate waters where there are relatively fewer commercial species caught in larger quantities by a relatively smaller number of fishers. In contrast, there are larger fisheries-dependent population of fishers and a wider diversity of commercial fisheries resources in tropical waters. The annual per capita catch of fishers in Asian tropical waters, for example, is around...
one tonne, whereas in countries such as Denmark, Norway and Iceland it amounts to hundreds of tonnes. Although quota management systems are highly unsuitable for tropical fisheries, there are attempts made by international lending institutions to introduce such systems in the name of a wealth-based approach to fisheries management in developing countries.

**Traditional institutions and fisheries management**

Fishing communities along coasts, rivers, lakes and other water bodies have been living and fishing, more or less, in the same area for generations. Migration of fishers, mainly in pursuit of migratory fishery resources, has also been a common and accepted feature. It is not surprising, therefore, that several communities have developed their own norms to regulate access to resources, resolve conflicts, and ensure equity. Communities often have clear perceptions of ‘clairs’ to the resources (land and water/sea-based), on which their lives and livelihoods depend, which have, in some cases, obtained wider social acceptance in the larger community and attained the status of unwritten ‘rights’. These ‘rights’, and the norms and institutions associated with them, are yet to be formally recognised by the state, in most cases.

Several such systems are also documented. In Indonesia, for example, customary arrangements in relation to marine space such as Sasi Laut, Panglima Laut, Lubuk Larangan, Lebak Lubung, Maawu Danau, Ikan Larangan, Ikan Diniatkan, Suaka Perikanan and others have been documented. Such arrangements have played a role in resolving disputes over access and exploitation of fishery resources, thus contributing to social equity. They have, often indirectly, played a critical role in managing fisheries and coastal resources by regulating access to fishing grounds. In India as well there are several such systems of local self-governance, some of which still persist. Often localised governance structures, through horizontal and vertical linkages present in some areas, as in Andhra Pradesh, Kerala and Tamil Nadu, have taken up issues that transcend local levels.

**Making the right choice of fisheries management regimes in developing countries**

While rights-based fisheries management approaches based on fishing space, fishing gear, fishing vessel, fishing operations and traditional or indigenous rights, especially within a community-based or co-management-based fisheries management regime are welcomed, top-down, quasi-property rights-based approaches to fisheries management such as quota-based fisheries management systems—both of the transferable and the non-transferable kind—are seen with concern, especially by small-scale fishers in developing countries.

Quota-based fisheries management regime has divided fishers into those who hold and those who do not hold quotas. By awarding a quota based on catch history, it often rewards fishers who employ the most efficient and thereby the most destructive forms of fishing gear like trawling and purse seining. By treating fisheries resources as an economic asset, and by distributing them in an exclusive manner, it undermines the social relations in fishing communities. It divides fishing communities, among other things, into large and small quota holders, and workers. While preventing new fishers who may wish to fish with non-destructive forms of fishing gear from entry into fishing, it takes for granted all quota holders as responsible fishers who will fish in a sustainable manner. By leveraging essentially on individual transferable quotas (ITQs), the quota management regime has severely undermined fishers’ organisations in countries such as Norway and Canada from staying together.

A widespread adoption of quasi-property rights-based approaches to fisheries management could have major implications for the lives and livelihoods of small-scale fishworkers and their communities in Asia. The Statement from the Workshop on Asserting Rights, Defining Responsibilities: Perspectives from small-scale fishing communities on coastal and fisheries management in Asia, held in May 2007, in Siem Reap, Cambodia, was unequivocal:

*Fisheries conservation and management measures exist that are appropriate to the multi-gear, multi-species fisheries of the region. There is thus no need for the blind adaptation of fisheries management models from the temperate marine ecosystems, which stress individual rights and do not fit the collective and cultural ethos of Asian countries.*

It also pointed out:

*Many communities in the region have been implementing measures to restore, rebuild and protect coastal and wetland ecosystems, drawing on traditional ecological knowledge systems and deep cultural and religious values, reiterating the right of traditional and community-based organizations to conserve and co-manage coastal and inland fishery resources, and to benefit from them.*

The challenge is to strengthen forms of collective and customary rights and associated governance regimes to address fisheries conservation and management issues, on the one hand, and to strengthen or develop, on the other hand, an inclusive rights-based regime, based on designated fishing space, season, resources, gear, vessels and fishers. Both sets of regimes should be within a community-based co-management framework to ensure maximum legitimacy to the decision-making processes. They should ensure effective participation of fishing communities and fishers’ organisations, and regulated access to fisheries resources that would pay heed to pressures of overcapacity and over-fishing. In this context, capacity-building of customary institutions to meet challenges originating from influx of capital and technology, adaptations of fishing methods and fishing vessels, and the indiscriminate growth in fish trade as well as the competing uses for inland and coastal spaces, is important.

To conclude, we need local solutions for addressing global concerns. Rather than introducing incentive-based regimes such as quota-management systems that are alien to Asian fishing traditions, what we need is to build upon existing institutions or to adapt them to meet new challenges of fisheries management such as over-fishing and overcapacity.
Reading List


# Pre-conference workshops at a glance 10th January 2010

## Workshop

| People, Institutions and Forests: Moving Toward a New Governance Research Agenda |
| Changing Perspectives Within Policy Processes |
| Understanding Change: Introducing Community-driven System Dynamics for Modeling the Commons |
| Mapping On the Ground – First Step in Revitalising the Commons |
| Policy Discussion on Commons: Lessons from Recent Policy Experiences in the UK and Europe |
| Introduction to Commons in India |
| Analytical Frameworks as Learning Heuristics in Common Pool Resource Research |
| Biocultural Community Protocols (BCPs) – A Tool for Securing the Rights of Pastoralists and Livestock Keepers for In-situ Conservation and Access to Common Property Resources |
| Naranpur Water Game |
| Introduction to the Commons, Collective Action, and Property Rights |
| Defining an Applied Research Programme for the UNDP-GEF Small Grants Programme on Community-based Natural Resource Management, and the Challenge of the Commons |

## Workshop Leader / Organiser

| Andrew Wardell, CIFOR a.wardell@cgiar.org |
| John Powell – Countryside and Community Research Institute, University of Gloucestershire, UK and Tasmin Rajotte – Quaker International Affairs Programme, Canada |
| Peter Hovmand, Social System Design Lab, Brown School of Social Work, Washington University in St. Louis, USA; Gautam Yadama, Foundation for Ecological Security, India |
| Radha Gopalan, Sagari R Ramdas, Nitya S Ghotge, Sanyasi Rao, Rajamma, Apparao, ANTHRA, India |
| Chris Short, Countryside and Community Research Institute, University of Gloucestershire, UK |
| Andreas Thiel, Konrad Hagedorn, Jes Weigelt and Markus Hanisch, Division of Resource Economics and Division of Cooperative Sciences Humboldt-Universität zu Berlin, Germany |
| Ilse Köhler-Rollefson, League for Pastoral Peoples and Endogenous Livestock Development, India (ilse@pastoralpeoples.org) and Kabir Bavikatte, Natural Justice (Lawyers for Communities and the Environment), South Africa (kabir@naturaljustice.org.za) |
| Sunderrajan Krishnan and Shilp Verma, Indian Natural Resources Economics and Management (INREM) Foundation |
| Leticia Merino and Ruth Meinzen-Dick, CGIAR Program on Collective Action and Property Rights (CAPRI), UNAM |
| Terence Hay and Eric Patrick, UNDP |

## Supporting Organisation

| Center for International Forestry Research (CIFOR), Indonesia |
| Countryside and Community Research Institute, UK and Quaker International Affairs Programme, Canada |
| Foundation for Ecological Security, India and Social System Design Lab, Brown School of Social Work, Washington University in St. Louis, USA |
| ANTHRA, India |
| Countryside and Community Research Institute, University of Gloucestershire, UK |
| Foundation for Ecological Security, India |
| Division of Resource Economics and Division of Cooperative Sciences Humboldt-Universität zu Berlin, Germany |
| Natural Justice (Lawyers for Communities and the Environment), South Africa and League for Pastoral Peoples and Endogenous Livestock Development, India |
| Indian Natural Resources Economics and Management (INREM) Foundation |
| CGIAR Program on Collective Action and Property Rights (CAPRI), UNAM |
| United Nations Development Programme (UNDP) |

For any queries regarding the pre conference workshops, kindly write to: iasc2011fieldvisits@fes.org.in
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