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# Institutional landscapes affecting small-scale fishing in Southern Sri Lanka - legal pluralism and its socio-economic effects

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## Abstract

This paper demonstrates the variety of institutional arrangements affecting small-scale fishing in southern Sri Lanka, highlighting legal pluralism and focusing particularly on its consequences for livelihoods and resource conservation. Evidence derives from two landing centres in Hambantota District, and is grouped according to three institutional types: norms, community working rules and state working rules. The authors argue that these institutions play differential roles in providing access to fishing, preventing conflict, structuring fishing operations, reducing risks and conserving resources. Interactions between state and community legal systems consist of four types - indifference, competition, accommodation and mutual support. Institutional effectiveness is threatened most where implementation is poor or rules are in direct competition.

**Keywords:** Small-scale fisheries; Legal pluralism; Livelihoods; Conservation; State institutions; Community institutions; Fisheries governance

## Introduction

Despite a recognition of their overall importance (FAO 2015) as well as the failure of current management approaches (Andrew et al. 2007), fisheries scientists note a lack of data on small-scale fisheries, particularly in developing countries (Kolding et al. 2014). Data deficiency pertains also to the institutions fishers develop in local contexts, as well as the way such institutions interact with state law. As Jentoft et al. (2009:35) point out, however, for South Asian fisheries: “state intervention would, at best, be consistent with and complementary to local rule but may potentially also be superfluous or even hazardous, as it may interfere with or eliminate local regulatory systems, with unforeseen consequences for the moral and institutional fabric of communities.” In view of the various possible effects of regulatory configurations on small-scale fisheries and the livelihoods of their members, it is therefore relevant to map the workings of the institutional landscape in various contexts, while acknowledging their immense diversity (Jentoft and Chuenpagdee 2015).

This paper maps the institutional landscape of the small-scale fisheries of southern Sri Lanka, adding to available insights on the sector (Amarasinghe 2006; Bavinck et al. 2013). It blends an institutional economic approach with insights from the field of legal pluralism. Scholars in the latter domain argue that many ‘situations’, particularly in developing countries, are characterized by multiple, overlapping normative systems (von Benda-Beckmann

2001). In line with recent literature that emphasizes the pervasiveness of legal pluralism in the governance of natural resource use (Bavinck and Jyotishi 2014), we distinguish state institutions from community institutions. Although there is scattered evidence of the co-existence of state and non-state institutions for fisheries governance in Sri Lanka (Amarasinghe and Bavinck 2011; Bavinck et al. 2013), there is a dearth of specific information on their interaction. We make use of a typology of legal pluralism to investigate the impact of different modes of legal plural engagement, especially with regard to livelihoods and resource conservation.

The paper's first purpose is to further demonstrate the richness of the institutional landscape in fisheries in southern Sri Lanka. We then determine that state and community institutions have parallel but also contradictory impacts on fishing practice, livelihoods and conservation objectives. In line with the argument of Gupta and Bavinck (2014), we suggest that improving the coherence between the two will enhance the effectiveness of fisheries governance.

We first present the conceptual approach and the methodology employed (sections 2 and 3), then introduce the fieldwork location and the practice of small-scale fishing (section 4). Section 5 reviews the wide range of state and community institutions governing local fishing practice, and organizes their interactions into a typology. Our analysis focuses on institutions in which there is strong dissonance between state and community institutions.

### **Conceptual approach**

We define livelihoods as: "the command an individual, family, or other social group has over an income and/or bundles of resources that can be used or exchanged to satisfy its needs" (Blaikie et al. 2004). As fishing livelihoods rely on the availability of fish resources, their sustainability depends also on the health of the marine environment. Fishers generally engage in fishing not on an individual but on a collective basis, and socio-economic interactions between them are normal. We distinguish interactions within and between working units, defined as the group associated with a particular craft. Further, we know that in capture fishing, catches derive from a common pool resource (Ostrom et al. 2012), where individual property rights are weak (Ostrom and Hess 2007). In such situations, fishing populations often create regulatory institutions (Ostrom 1990; Bavinck and Gupta 2014). Alternatively – or in parallel - the state introduces institutions with an effect on fisheries.

We build on North's (1991) definition of institutions as any form of constraint devised to shape human interaction. Bromley (2006:41) describes institutions as "the essential ordering – the architecture – of our existence", and argues that they "define realms of choice for individuals in a going concern" (2006:217). He distinguishes two kinds of institutions: norms – or behavioural regularities, based on beliefs, moral principles and normative explanations - and working rules. Working rules are collectively devised decisions that are put to actual use.<sup>1</sup> The institutions we discuss are both economic and social in nature. We have limited ourselves to beach-level institutions that have an immediate bearing on the practice of fishing.

In the Sri Lankan case, as we shall see below, community institutions are often non-codified and consist of norms and working rules. State institutions in contrast are generally codified and laid down in law – needless to say, however, not all codified rules are necessarily implemented. Although state-sponsored cooperative societies have a relatively long

history in the region, many of these village-based organizations are defunct. They have not assumed a significant role in fisheries governance, limiting themselves largely to the provision of credit and welfare (Amarasinghe and Bavinck 2011).

We argue that institutions related to fishing livelihoods in Sri Lanka derive from both fishing communities and the state. This condition is referred to as legal pluralism (Tamanaha et al. 2012; Bavinck and Gupta 2014). Efficiency of enforcement of these institutions can be calculated on the basis of transaction costs, or the costs incurred in ensuring compliance (North 1990). The costs of compliance and the efficiencies of enforcement are inversely related.

Schlager and Ostrom (1992) make a division between access rights and extraction rights. Institutions provide shape to such rights in local settings (Wickramasinghe 2010). Institutions first of all provide access to the fishery, defining right holders from non-right holders. They also provide structure to fishing operations and reduce the incidence of conflicts within and between working units (Pascual-Fernandez et al. 2005). Conflicts within working units may arise during fishing operations, in the preparation thereof (such as with regard to the repair of fishing gear), and after fishing has taken place (such as with regard to the sharing of proceeds). Conflicts between working units occur with regard to the allocation of beach space in a landing center, the competition for fishing grounds, or the incidence of negative gear interactions.

Institutions can reduce the risks inherent to fishing, and raise as well as stabilize incomes (Wickramasinghe 2010). Finally, they can have long-term community benefits, such as by reducing the impact of fishing on the marine environment. In summary, institutions may have six important effects:

- i. Higher incomes for right holders,
- ii. The stabilizing of incomes over time,
- iii. Conflict reduction (conflicts otherwise creating transaction costs),
- iv. Reduced risk to life and equipment,
- v. Benefits to other members of the communities to which fishers belong, and, or
- vi. Benefits to the marine environment and the plant and animal life it contains.

It must be noted that common pool resource institutions may also have negative effects, and that these are often caused by political dynamics (Agrawal 2003). Thus, institutions may benefit some and exclude others, generating elite capture and marginalizing the poor. Although we recognize the possibility of institutional bias, this has not been our research angle, and it is left aside.

We define resource conservation in a limited sense as a reduction of extraction to prevent overexploitation (Baland and Platteau 1996) and recognize that it can have a positive livelihood impact on small-scale fishers in future but may result in costs in the present. As such, attention for livelihoods and conservation combine in the notion of sustainable livelihoods as promoted by the Brundtland Commission (WCED 1987).

## **Methodology**

### **Data collection**

Data collection took place over the period of a full calendar year (2006) in the context of a PhD research project in social economics by the first author (Wickramasinghe 2010). The

second author has a long history of socio-economic research on fisheries in South Asia and specializes in legal pluralism and governance. It is to be noted that the research period coincided largely with the post-tsunami phase of rehabilitation in Sri Lanka, and that this affected results in various ways. First, government institutions were probably in more disarray than they are normally. Secondly, since the field research took place, Hambantota district has been subjected to rapid development, with major infrastructural works (airport and harbor) having been undertaken. It is possible, although not very likely, that this has impacted the institutional landscape in small-scale fisheries.

The PhD research project concentrated on the small-scale, motorized and non-motorized boat fisheries of Hambantota District in southern Sri Lanka, and did not look at the beach seine fishery and the semi-industrial, multi-day fishery which takes place in the same area (Alexander 1995 [1982]; Amarasinghe 2006). Small-scale fishing is defined as operations practiced in inshore waters (up to 30 km distance from shore), making use of small fishing craft and relatively simple, mainly stationary gear.

Aiming for in-depth knowledge of beach-level institutions and the way they affect fishing practice, the researchers focused on two adjacent landing centres - Kalametiya and Welipatanwila – which were demonstrated in a pre-study to be representative of small-scale fisheries in the district (Wickramasinghe 2010). The research sample included 85 skippers<sup>2</sup> of whom 64 were from Kalametiya and 21 from Welipatanwila. Qualitative data included information on types of fishing practice and fisher institutions, fisher compliance with institutions, and fishers' attitudes towards institutions.

Fisher institutions were identified through participant observation and informal discussions at the landing sites, and subsequently verified with respondents. All institutions but one proved to be present in both locations. We then categorized institutions on the basis of our understanding of the theoretical literature. State institutions that relate to small-scale fisheries were investigated through the study of relevant documents and interviews with personnel of the Department of the Fisheries and Aquatic Resources (for details see: Wickramasinghe 2010). Participant observation, informal discussions and a structured questionnaire were used to identify fisher compliance with both sets of institutions.

### **Location and fishing practices**

According to the Coastal Zone Management Plan of Sri Lanka, Hambantota District possesses different coastal habitats such as coral reefs, estuaries, lagoons, mangroves, sea grass beds, salt marshes, barrier beaches, spits and dunes (CCD 2003). Hambantota comes under the Fisheries Administrative Division of Tangalle and counts 53 fishing villages. The total number of active fishers in the district is approximately 7,000 (Amarasinghe and Bavinck 2011) who landed 27,320 MT of fish in 2012 (NARA 2012). Craft types in small-scale fishing vary from non-motorized outriggers (Sinhalese: *oru*), to motorized fiberglass boats. The gear types used by fishers include various types of gill nets, hand lines, long-lines, cast nets, and small purse seines.

Fishers operating in Kalametiya landing center are from three *Grama Niladhari* divisions – Bata Atha South, Gurupokuna and Hathagala. These divisions include approximately 1000 fisher households (Personal communication). All fishers are Buddhist by religion and of the Sinhala ethnicity. Kalametiya is situated about 4 km from the Matara-Tissa main road, and is an important landing centre where different types of fishing gears are used. Bounded by large rocks to the east and

west, the geo-physical features of the beach are favorable to year round fishing operations. Beach space, however, is limited, and there is a considerable crowding of craft (Plate 1). Although small-scale fishing is the main source of livelihood for most households, additional sources of income include signing on as a crew member on a semi-industrial fishing boat for deep sea fishing, repairing nets, selling fish and various other non-fishing activities. Before the tsunami of 2004, the number of small-scale craft at this landing site was as follows: 45 sail powered outriggers, 5 outboard-engine powered outriggers, 65 outboard engine powered fiberglass boats and 10 vessels with inboard engines. After the tsunami, the number of outboard engine powered fiberglass boats increased by twenty as the fishers with outriggers obtained fiberglass boats as tsunami aid. The main fishing season here is from March 15 to September 15 (*warakan* season). There are two fishing cooperative societies in Guropokuna and Batatha South GN division. Both provide credit and welfare facilities but are otherwise not involved in fishing.

In contrast to the sheltered nature of Kalametiya, the Welipatanwila landing site is relatively long and unprotected (Plate 2). The river Walawe, which enters the sea here, and the proximity of mangrove forests, however, have a favorable impact on marine resources. The landing site is used by approximately 400 Sinhala Buddhist fisher households from Welipatanwila village, which is located about 1.5 km away. Fishing is the main source of livelihood of these households, although supplementary income derives from migratory fishing, enlisting as a crew member on a semi-industrial vessel, repairing nets and other land-based activities. Before the tsunami of 2004, there were 51 crafts at the landing site, including 46 outriggers and 5 outboard engine powered fiberglass boats. After the tsunami, this number increased to 80 crafts (75 outriggers and 5 fiberglass boats with outboard engines). It must be noted, however, that not all these crafts were being operated. The main fishing period in Welipatanwila is from September 15 to March 15 (*harahakan* season). The two fishing cooperative societies are more or less dormant.

Gillnets of different types – the most prevalent of which are sardine nets (*Hurulla dela*), scad nets (*Bolla deala*), lobster nets (*Pokirissa dela*) and frigate tuna nets



**Plate 1** Kalamatiya landing centre



**Plate 2** Welipatanwila landing centre

(*Alagodu dela*) - constitute the most popular fishing gears in Hambantota district. In Kalametiya landing centre, sardine nets, scad nets, lobster nets and frigate tuna nets are owned by respectively 69, 56, 55 and 42 % of the interviewed fishers respectively. In Welipatanwila landing centre, sardine nets, scad nets, lobster nets and trammel nets are owned by 95, 86, 70 and 83 % of the interviewed fishers respectively. In addition, fishers in the two landing centres use various longlines, named according to their target species (such as bottom set rock fish longline – *baby lone*, bottom set trevally longline – *para lone* and drift tuna long line – *Kelewalla lone*).

Craft and gear in both locations are generally owned by the skipper. In some cases, the owner does not engage in fishing and a skipper is then recruited. The crew generally consists of two persons. Returns from fishing are divided according to share systems that take account of investments, operational costs, and labor inputs (see the Appendix to this paper for more details). Important fish species in Kalametiya are yellow fin tuna (*Thunnus albacores*), big eyed tuna (*Thunnus obesus*), Indian scad (*Decapterus ruselli*), frigate tuna (*Anxis thazard*) and spotted sardinella (*Amblygaster sirm*) while those in Welipatanwila landing centre are white sardinella (*Sardinella albella*), Indian scad (*Decapterus ruselli*), skate/ray (*Raja djiddensis*) fish and spotted sardinella (*Amblygaster sirm*). Annual fish landings in Kalametiya are bigger (estimated 340 MT in 2006) than those in Welipatanwila (estimated 23 MT).

### **Institutions in small-scale fishing**

Table 1 presents an overview of the institutions identified in the research sites, divided into two categories according to their origin (community or state), and then again as to their institutional type (norms and working rules). We do not pretend to be comprehensive – rather, our intention is to highlight variety. In addition, we have not been able to identify changes over time. A few observations are in order. First, some institutions are internal to the working unit, while others structure relations between working units or have a more general bearing (also affecting other kinds of

**Table 1** Institutions in small-scale fisheries

	Institutions (Community) <i>Norms</i>	Enforcement <i>Self-enforcement</i>	Scope	Identified purpose
1c	Land-based and sea-based conflicts are kept separate - fishers at sea don't avenge issues that happened on shore and vice versa.	Yes	Within/between working units	Reduction of risk of conflict in fishing and increased harmony of the fishing community
2c	Crew members participate in repairing the gear used on their fishing craft.	Yes	Within working units	Reduction of cost of fishing and increase of trust between craft owner and crew members.
3c	Reciprocity of assistance at the landing site for launching or landing craft and preparing gear for next voyage.	Yes	General	Fishers and helpers enjoy mutual benefits. Fishers do not face labor shortages and helpers obtain some fish in return.
4c	Respect for private property: fishers don't steal or damage others' fishing gear left unattended at sea or at the landing center.	Yes	General	This behavior reduces the risk of losing gear thereby reducing the cost of fishing.
5c	Non-fishing on the weekly Buddhist holiday ( <i>pooya</i> day) identified through a lunar calendar.	Yes	General	Though this rule has a religious base, its social and economic impacts include the maintenance of social relations, opportunities to participate in village meetings, but also the loss of fishing income.
6c	Prohibition on catching or landing turtles.	Yes	General	Catching or even touching turtles is believed to bring bad luck. Compare rule 17 s. This norm supports the state rule prohibiting the catching of turtles.
	<i>Working rules</i>	<i>Community Enforcement</i>		
7c	Share arrangements of catch that vary according to the ownership of fishing gears, the type of fishing, and the type of gears and craft	Yes	Within working units	These 'contracts' define shares and generate trust between owner and crew members. They also dispense with uncertainty of the division of returns to their assets.
8c	Restricting access to the landing site to villagers: only the fishers belonging to a particular landing center are to fish in adjacent waters.	Yes	General	This rule protects the fishing rights of local users and helps prevent possible conflict with outsiders.

**Table 1** Institutions in small-scale fisheries (*Continued*)

9c	Fixed landing spots for craft: every craft occupies a particular space at a landing center.	Yes	General	Every fisher of a particular landing center knows that he has a particular space at the landing center for leaving his craft and gears. This confirms a fisher's right to fish and minimizes possible conflicts.
10c	First come, first serve on the fishing ground.	Yes	Between working units	This rule prevents possible conflicts and disputes between fishers at sea.
11c	Maintaining a minimum distance (approx. 200 m) between working units using gillnets at sea.	Yes	Between working units	Assuring equal chances of obtaining catches and minimizing conflict.
12c	Prohibition of catching lobster with scuba diving equipment	Yes	General	Fishers prohibit equipment that is not generally affordable and provides some with more opportunities than others.
13c	Prohibition of targeting chank ( <i>Turbinella pyrum</i> )	Yes	General	Chank fishing is practiced with scuba diving gear and is therefore doubly prohibited (see working rule 12c).
14c	Ban of gillnets to catch <i>Koramburu</i> ( <i>Herklotsichthys quadrimaculatus</i> ).	Mixed	General	<i>Koramburu</i> is said to be a timid schooling species that is targeted by specialized hook-and-line fishers. If this species is confronted with standing nets, it flees an area. This working rule protects one fishing practice against another.
	<i>Institutions (state) – Codified Working rules</i>	<i>State Enforcement</i>		
15 s	Licensing of fishing operations, codified in the Fisheries and Aquatic Resources Act, No. 2 of 1996, Article-6.	Not in the post-tsunami period.	General	This rule in principle provides officers with an instrument to regulate the volume and type of fishing operations carried out in an area.
16 s	Registration of craft, codified in the Fisheries and Aquatic Resources Act, No. 2 of 1996, Article-15.	Not in the post-tsunami period.	General	Similar to rule 15 s.
17 s	Prohibition of catching marine mammals and turtles, codified in the Fisheries and Aquatic Resources Act, No. 2 of 1996, Gazette No-948/25.	Yes. Coincides partially with rule 6c.	General	This rule is enforced by the Department of Wildlife. Compare rule 6c.



**Table 1** Institutions in small-scale fisheries (*Continued*)

18 s	Prohibition of using bottom-set nets on reefs, codified in the Fisheries and Aquatic Resources Act, No. 2 of 1996, Gazette No-948/25.	Most fishers violate this rule and there is no state enforcement.	General	This regulation is to prevent destruction of the benthic environment (corals).
19 s	Prohibition of explosives or poison, codified in the Fisheries and Aquatic Resources Act, No. 2 of 1996, Article-27.	Yes. No fishers in the two villages uses explosives or poisons for fishing, because this rule is strictly enforced by officers of the Fisheries Department and the police.	General	Explosives or poison are destructive fishing methods,
20s	Prohibition of collection/mining of corals, codified in the Fisheries and Aquatic Resources Act, No. 2 of 1996, Article-37.	Yes. Some poor fisher families in the research area were previously mining corals. This rule is being strictly enforced.	General	This is considered a destructive of the marine environment.
21 s.1*	Need for permit to catch, possess, exhibit for sale, sell or transport spiny lobster and slipper lobster.	No. Fishers do not take permission for catching or selling these lobster species.	General	Safeguarding sustainability of lobster stock.
21 s.2*	Banning of lobster fishing in the months of February and September.	Yes. This is enforced by closing the lobster market.	General	Safeguarding sustainability of lobster stock.
21 s.3*	Banning the catching of under-sized lobsters (carapace < 6 cm or tail length < 10 cm).	No. Fishers do not follow this rule and it is not implemented.	General	Safeguarding sustainability of lobster stock.
21 s.4*	Banning the catching of berried females	No. Fishers catch and remove eggs before selling.	General	Safeguarding sustainability of lobster stock.
21 s.5*	Requirement of a permit for possession, exhibiting for sale, selling or transport of lobsters	Yes. This rule is for buyers and traders. Buyers and traders in the two landing centers do have these permits.	General	Safeguarding sustainability of lobster stock.

\*Codified in the Fisheries and Aquatic Resources Act, No. 2 of 1996, Gazette 2000-03-13

fisheries, or community life in general). This is discussed in Table 1 under the heading of 'scope'. Second, it is clear that state and community institutions have different ambits. State institutions generally focus on conservation issues. Sometimes the purpose of conservation appears to be the sustainability of the fisheries themselves (thereby tying into a livelihood function), but there are other motives as well (support for other sectors such as coastal tourism, conservation of biodiversity for the country or humanity as a whole). Community institutions are concerned with allocation and sustainability, but also with maximizing the economic performance of fisheries and reducing the fishers' physical risks.

Third, there are important discrepancies in the enforcement of various institutions, with transaction costs being a major factor. Community norms are generally self-enforcing, whereas community working rules are implemented by the collective of fishers through social pressure on the beach or at sea. Penalization of transgressions takes place through exclusion from community activities. Transaction costs in these cases are generally limited because community members monitor others' activities while they engage in fishing themselves. Therefore, there is no need to incur additional time or material costs. State institutions are less effective. Some institutions are not enforced at all because the transaction costs for doing so are prohibitive. Others – such as the prohibition for the use of poisons and explosives – are enforced because of their interface with other government concerns, such as security. The interaction between state and community institutions is also a factor influencing enforcement, as will be explained below.

The aggregate of 21 norms and working rules presented in Table 1 allow for four conclusions:

1. Out of the 14 community institutions, 13 (more than 92 %) are fully enforced and only one (14c) has a mixed record of enforcement.
2. Out of seven state institutions, three (17 s, 19 s and 20s) were enforced and a similar number (15 s, 16 s, 18 s) were not enforced at the time of research. Non-enforcement was partially related to the period of chaos that followed the 2004 tsunami (rules 15 s and 16 s). In other cases, it was due to a lack of enforcement capacity (rule 18 s and 21 s.1, 3–5).
3. Out of the set of community institutions, five are applicable within or between working units while others are applicable to the collective of fishers.
4. All state institutions are applicable to the collective of fishers.

We now organize the various institutions according to their function and their beneficiaries (see Table 2). The following two observations are in order: (a) although an institution often possesses a direct function, there are indirect functions too; (b) therefore, beneficiaries of a particular institution may be identified as direct or indirect beneficiaries.

Eight functions are distinguished. It is interesting to note that community institutions monopolize the function of preventing conflict, and dominate the function of achieving an increase of fishing income. State institutions aimed at environmental protection are, on the other hand, more numerous. However, their effectiveness is very limited.

**Table 2** Institutions according to function and beneficiaries

<i>Function</i>	<i>Institution*</i>	<i>Identified beneficiaries</i>
Providing access to the fishery and to fishing space	Restricting access to the landing site to villagers (8c)	Fishers belonging to the landing centre
	Fixed landing sites for crafts (9c)	Fishers of the respective landing centre
	Licensing of fishing operations (15 s)	Government officers in charge of regulating fisheries, and – in principle – the population of marine fishers in the country. Local fishers do not consider this rule to be legitimate.
	Registration of craft (16 s)	Government officers in charge of regulating fisheries, and – in principle – the population of marine fishers in the country. Local fishers do not consider this rule to be legitimate.
Structuring fishing operations	Crew members participate in repairing gear (2c)	Both crew members and owners of fishing gears.
	Non-fishing on weekly <i>poya</i> day (5c)	Fishers who abide by this rule (avoiding religious sanction), and the general population of fishers (as non-fishing contributes to resource conservation).
	No catching or landing of marine turtles (6c)	Fishers who want to avoid bad luck.
	Maintaining a minimum distance between working units (11c)	Fishers who engage in fishing with nets.
	Licensing of fishing operations (15 s)	Government officers in charge of regulating fisheries, and – in principle – the population of marine fishers in the country. Local fishers do not consider this rule to be legitimate.
	Registration of craft (16 s)	Government officers in charge of regulating fisheries, and – in principle – the population of marine fishers in the country. Local fishers do not consider this rule to be legitimate.
Reducing (likelihood of) conflict	Conflicts on the land are not to be taken to the sea and vice versa (1c)	All Fishers of a landing centre
	Restricting access to the landing site to villagers (8c)	Fishers belong to a particular landing centre
	Fixed landing sites for crafts (9c)	Fishers of a landing centre
	First come, first serve on the fishing ground (10c)	Fishers who come first to a fishing ground.
	Maintaining a minimum distance between working units (11c)	Fisher who set their nets first.
Reducing risk	Respect for private property (4c)	All fishers of a landing centre
	Share arrangements of catch (7c)	Both crew members and owners of craft
	Licensing of fishing operations (15 s)	Owners of fishing gears because in a future disaster, fishers can claim for any damage to their gears. (The government has taken a decision to provide new gears for only licensed gears damaged by a disaster).
	No bottom-set nets on reefs (18 s)	All fishers as this rule contribute to reduction of fish habitat destruction and conservation of fish resource
Raising income	No explosives or poison (19 s)	All fishers
	Crew members participate in repairing gear (2c)	Both crew members and owner of fishing gear
	Reciprocity of assistance at landing site (3c)	Fishers and helpers
	Respect for private property (4c)	All fishers
	First come, first serve on the fishing ground (10c)	Fishers who come first to a fishing ground

**Table 2** Institutions according to function and beneficiaries (*Continued*)

	Maintaining a minimum distance between working units (11c)	Fisher who set their nets first.
	Prohibition of catching lobster with scuba diving equipment (12c)	Fishers who cannot afford to engage in scuba fishing
	Prohibition of targeting chank (13c)	All fishers generally and especially those who engage in lobster fishing (as persons engage in chank fishing with scuba diving equipment also catch lobsters).
	No use of nets to catch <i>Koramburu</i> fish (14c)	Oru fishers who depend on hook and line fishing.
	No bottom-set nets on reefs (18 s)	Fishers who engage in fishing with long lines.
Stabilizing income over time	Prohibition of catching lobster with scuba diving equipment (12c)	Fishers who cannot afford to engage in scuba fishing
	Prohibition of targeting chank (13c)	All fishers generally and especially those who engage in lobster fishing (as persons engage in chank fishing with scuba diving equipment also catch lobsters).
	Licensing of fishing operations (15 s)	Owners of fishing gears because in a future disaster, fishers can claim for any damage to their gears. (The government has taken a decision to provide new gears for only licensed gears damaged by a disaster).
	No bottom-set nets on reefs (18 s)	All fishers as this rule contributes to reduction of fish habitat destruction and conservation of fish resource.
	No explosives or poison (19 s)	All fishers
Benefits human life/wider community	Reciprocity of assistance at landing site (3c)	Fishers and helpers
Protecting species/the environment	Non-fishing on weekly <i>poya</i> day (5c)	Fishers who comply with this rule.
	Prohibition of catching lobster with scuba diving equipment (12c)	All lobster fishers not using scuba equipment
	Prohibition of targeting chank (13c)	All fishers generally and especially those who engage in lobster fishing as persons who engage in chank fishing with scuba diving equipment also catch lobsters.
	No use of nets to catch <i>Koramburu</i> fish (14c)	Traditional craft fishers
	Licensing of fishing operations (15 s)	All fishers benefit in principle from a healthy ecosystem.
	Registration of craft (16 s)	All fishers benefit in principle from a healthy ecosystem.
	Prohibition of catching marine mammals and turtles (17 s)	General public concerned with the conservation of marine mammals and turtles
	No bottom-set nets on reefs (18 s)	All fishers due to reduction of threat to the benthic environment
	No explosives or poison (19 s)	All fishers due to reduction of threat to the fish resource
	No collection/mining of corals [codified in the Fisheries and Aquatic Resources (20s)]	All fishers as this supports to protect habitats of marine fish resources
	Various lobster fishing regulations (21 s)	All lobster fishers as this supports sustainability of lobster resource base

\*These codes refer to the norms and rules in Table 1

**Interactions between state and community institutions**

Bavinck et al. (2013) present a typology for the relationships between multiple legal systems operating in a social field (see Table 3). These authors identify four ideal-typical relational forms, moving from indifference (type 1), through competition or conflict (type 2), to accommodation (type 3) and mutual support (type 4). Many of the community institutions identified in Table 1 are located in Type 1 (indifference): the state has no interest in these aspects of fisheries regulation and, if it is aware of the existence of these community institutions at all, leaves them up to the community to regulate. A small range of state institutions in Table 1 is included in Type 3 (accommodation): here there is evidence of relatively effective state institutions to which fishers have adjusted themselves. Thus fishers have generally adapted to state rules of registration and licensing, perhaps also because the consequences are still limited (government does not yet employ these instruments for the purpose of limiting fishing effort). Mutual support (type 4) is found in some cases, such as the ban on turtle fishing. Here we have a state ruling with a background in conservation ethics, coinciding with a local taboo. Finally there is the type 2 group of state and community institutions that conflict with one another. These are discussed in the next section.

**Conflicting institutions**

Table 3 indicates where state and community institutions in the small-scale fisheries of Hambantota District contradict each other, at least in their intentions. A first set (12) of these are foundational in that they define the right holder – the category of persons that is allowed to partake in the act of fishing or landing of the catch. The state limits this right to those who are registered and licensed by government law, while communities link it to community membership. Not only is it imaginable that the government could provide fishing and landing rights to those not recognized by the communities in question; the communities too will not necessarily accept those given access rights the by government. In practice, however, such foundational disagreements do not come into play because the government – at the time of research – was not strictly implementing its rules, nor attaching consequences to the possession or non-possession of a registration or license. The government is currently not interfering in communities’ definitions of right holders. In future, if these foundational differences are expressed more firmly, a compromise will have to be found.

State and non-state institutions are more seriously at loggerheads where they prescribe rulings for specific fishing practices. Community institutions thus deny

**Table 3** Typology of relationships between legal systems

<i>Quality/Intensity</i>	<i>Weak relations</i>	<i>Strong relations</i>
<i>Negative</i>	Type 1: Indifference (rules 1c, 2c, 3c, 4c, 5c, 7c, 9c, 10c, 11c, 12c, 13c, 14c)	Type 2: Competition/conflict (rules 12c, 13c, 18 s, 21 s)
<i>Positive</i>	Type 3: Accommodation (rules 6c, 8c, 15 s, 16 s)	Type 4: Mutual support (rules 17 s, 19 s, 20s)

Source: adapted from Bavinck et al. 2013

the possibility of targeting chank (13c), and also proscribe the use of scuba-diving gear for catching lobster (12c). State institutions on the other hand allow both of these fishing practices, and implement other kinds of restrictions (time-zoning and size restrictions) for lobster (21 s.2). These differences are anchored partly in different ecological reasonings. Community fishers believe that chanks play an important ecological role and can be removed only at the cost of environmental degradation (and a future decline of fishing). In their view, lobster stocks – if collected only as they entangle themselves in a bottom-set net – are not at risk. If scuba diving were to be allowed, however, this would result in a complete depletion of the lobster population. State representatives argue, on the other hand, that scuba diving would allow for a careful selection of mature and un-berried specimens and a more sustainable long-term policy. Community fishers counter that the use of diving equipment would reserve lobster (and chank) fishing for the rich, and cause an unwanted concentration of wealth.

The status quo is that fishers do not land lobster during the state-sanctioned closed seasons, as the government exercises relatively effective control of the marketing chain. Fishers, however, do not allow for scuba-diving in what they see as their fishing zone and continue to use bottom-set nets in areas known to support lobster populations. Behind this arrangement lie fundamental disagreements about fishing practice, conflicts over which could emerge in the future.

### **Improving relations**

We noted in sections 6 and 7 above that the relations between community and state legal systems can be divided into four types that vary substantially (see Table 3). In all types, relations suffer from rule incoherence, with conflicts being most pronounced in type 2. Gupta and Bavinck (2014) argue that rule incoherence is a substantial problem for policymakers, and requires different responses. In a similar vein, Jentoft et al. (2009) argue for the implementation of co-management partnerships that harmonize legal disparities “in a way that is relevant to the management task at hand and is socially just from the perspective of participant stakeholders” (2009:35).

Co-management thinking has been very influential in fisheries, particularly with regard to developing countries (Wilson et al. 2003). One of its objectives has been to bridge the gap between community and state institutions. In terms of the typology presented above, the goal would then be to move from types 1 and 2 to type 3 and preferably to type 4. This process would be lengthy, and would rely heavily on institutional bricolage (Cleverly 2012).

### **Concluding remarks**

In this paper, we have tried to fill part of the knowledge-gap with regard to institutions relevant to small-scale fisheries (Kolding et al. 2014), focusing particularly on southern Sri Lanka. For analytical reasons, we have applied a legal pluralism approach, distinguishing state from community institutions. In contrast to India, where non-governmental caste councils often play an important role in fisheries governance, predating the involvement of the state, these are not present in

Hambantota District. Instead, “the plural legal pattern of Hambantota is a patina of beach-level norms and rules intersecting with a relatively more dominant, though inconsistently effective, national Department of Fisheries” (Bavinck et al. 2013:628). Our analysis confirms and builds upon this assessment.

We have investigated 21 of the institutions that are of most relevance to small-scale fisher livelihoods in Hambantota District. These institutions affect the livelihoods of fishers through a variety of mechanisms that reduce conflict and risk, enhance income and social capital, protect physical and natural assets (the ecosystem and the benthic environment), and define access to natural assets (fishing grounds and landing centers). They also affect resource conservation through controlling extraction of fish resources directly and indirectly.

The most effective institutions derive from the communities of fishers themselves, with state regulations frequently proving to be ineffective, mainly for reasons of lack of state capacity. Community institutions have important social and economic functions, whereas state institutions concentrate on environmental goals. This contrast in emphasis has important implications for fisheries policy in the country. An understanding of the quality and effectiveness of community institutions may prepare the ground for increased collaboration between state and community actors.

We also noted, however, relational types between state and community that vary from indifference to conflict and mutual support. We argued that the type of relationship that prevails in any specific instance determines institutional effectiveness with regard to social, economic and environmental goals. The most problematic are those instances where state and community institutions contradict each other, for example with regard to the use of scuba gear. Conversely, where state and community institutions are in agreement, such as with regard to the prohibition of capture of turtles and marine mammals, effectiveness is greatest.

Our analysis does not provide evidence for the extent to which social, economic and environmental goals are actually attained. In fact, as Andrew et al. (2007) point out, small-scale fisheries are often “adversely affected by the broader political, institutional and economic drivers of global and national economies” (Andrew et al. 2007:228). Competition with external resource users and biophysical influences also play a significant role. Our analysis does underline the need to view state and community regulation in conjunction.

## Endnotes

<sup>1</sup>This definition of institutions varies from the one preferred by the second author in his writings in that it ignores the role of ‘a staff of people’ in formulating and implementing norms and working rules. We have chosen in this paper to abide by the regular Northian definition, but make reference to institutions’ organizational base where appropriate.

<sup>2</sup>The skipper is the unit’s decision-maker, in charge of daily operations. In some cases, such as in non-motorized outrigger fishing, the skipper may be fishing on his own. Generally he is, however, accompanied by a small crew.

**Appendix**

**Table 4** Informal contracts for sharing of revenue after reduction of operational costs\*

Informal contracts in Kalametiya (n = 64)			
Type of gear	Type of craft	Informal contracts	Percentage of respondents
Gill nets	FRP boat (crew - 2)	1. After deducting the operational costs of fishing, 50 % of the value of the catch is allocated to the craft and gear owner and the other 50 % is for the crew. (But, if the net return is less than SLR 5000, 1/3 of the net return will be allocated to the owner). Any damage to gear is borne by owner.	52 %
		2. After deducting the operational costs of fishing, 15 % of the value of the catch is allocated to the net owner, 33 % of the rest is allocated to the owner of the craft and engine (for the owner) and the remaining 66 % is for the crew. Any damage to gears is borne by owner.	6 %
		3. After deducting all the cost incurred in fishing, 10 % of the net revenue is allocated for the net (gear depreciation) and then 33 % of the rest is allocated for the craft and engine (for the owner) and the remaining 66 % for the crew. Any damage to gears is borne by owner.	16 %
	Traditional craft (crew - 2)	1. 33 % of the value of the catch is for the craft owner and 66 % is for the crew.	3 %
Lobster nets	FRP boat and traditional craft (crew- 2 or more)	2. After deducting operational costs, 33 % of the value of fish catch is reserved for the craft owner and 66 % is for the crew.	2 %
		1. Fishers keep the catches from their own nets, sharing fuel costs. (no share for the craft)	28 %
Long lines and other gear	FRP boat (crew- 2 or 3)	2. After deducting operational costs of fishing, the value of the catch is divided equally among crew members. Every crew member uses his own nets. (no share for the craft)	14 %
		1. After deducting all costs for fishing, 33 % of the value of the catch is for the owner of craft and gears and 66 % for the crew; any damage to gear is included in the cost of fishing or should be borne by the crew.	75 %
	Traditional craft (crew-2)	1. After deducting operational costs of fishing, the value of the catch is divided equally among crew members. The owner is part of the crew (no share for the craft).	3 %
Informal contracts in Welipatanwila (n = 21)			
Type of gear	Type of craft	Informal contracts of fishers	Percentage of respondents
		1. After deducting the operational costs* of fishing, 50 % of the value of the fish catch is allocated to the craft and gear owner and the remaining 50 % is for the crew. Costs of damage to gear are borne by the owner.	5 %
		2. After deducting the operational costs of fishing, 15 % of the value of the catch is allocated to the net owner; 33 % of the remainder is allocated for the craft and engine owner. The remaining 66 % is for the crew. Costs of damage to gears is borne by the owner.	5 %



**Table 4** Informal contracts for sharing of revenue after reduction of operational costs\* (Continued)

Type of gear	Type of craft	Informal contracts of fishers	Percentage of respondents
Gill nets	FRP boat (crew-2 or 3)	3. When an owner lends fishers his boat and engine, the fishers use their nets separately and share fuel costs, each paying 15 % of the value of their catch separately to the boat owner.	5 %
		4. When an owner lends a boat and nets (17) to a fisher who owns an engine and nets (12), the fisher gives the boat owner the catch of his 17 nets. Then, after deducting all operational costs from the value of the catch from his 12 nets, 33 % of the value of the fish catch is allocated to the owner of the engine and nets while the remaining 66 % is shared with the crew members.	5 %
	5. After deducting operational costs, 33 % of the value of the catch is reserved for craft, engine and nets and 66 % for crew members if the value of the catch is more than SLR 1000 (if it is less than SLR 1000 the catch value is equally divided among the crew members).	10 %	
	1. After deducting operational costs, 15 % of the value of the catch is for the craft owner and the rest is divided equally among crew members. (requirement: all crew members use the same number of nets)	5 %	
	2. Craft owner uses more nets (10) than crew member (5). They keep their own catches and share fuel costs.	5 %	
Traditional craft (crew-2)	3. After deduction of operational costs, 33 % of the value of the catch is reserved for craft, engine and nets and 66 % for crew members if the value of the catch is more than SLR 1000 (if it is less than SLR 1000 the catch value is equally divided among the crew members).	14 %	
	4. Crew members use nets separately and share all operational costs. Each crew member allocates 33 % of the value of his fish catch to the owner of the craft and the engine.	19 %	
	5. Fisher (owner of the craft and engine) uses 8 nets and crew member uses 5 nets. Fuel costs are shared but catches are kept separate. The value of the fish catch from the surplus 3 nets of the owner is used for maintaining the engine.	5 %	
	Informal contracts of fishers		
	Percentage of respondents		
Shark net	Traditional rowboats (crew- 2 or 3)	1. After deducting operational costs, 50 % of the value of the catch is reserved for the craft and net (rowing craft) and 50 % is allocated to the crew.	5 %
Lobster net and trammel net	Traditional motorized craft (crew – 2 or 3)	1. Crew members (including owner of the craft) use separate nets and keep their own catches, sharing fuel costs.	67 %
		2. Craft owner uses 5 trammel nets (1 piece for the engine) and crew members use 4 trammel nets. Crew share fuel costs.	5 %
		1. After deducting the operational costs, 33 % of the catch value is for the owner of the craft and gear and 66 % for the crew. Any damage to gear is included in the cost of fishing.	29 %

**Table 4** Informal contracts for sharing of revenue after reduction of operational costs\* (Continued)

Long lines and other gears	FRP boat and traditional craft (crew – 2 or 3)	2. After deducting the operational costs, 25 % of the catch value is reserved for the boat and engine. Then, of the balance, 33 % is for the gear owner and 66 % is for the crew.	5 %
		3. After deducting operational costs, 20 % of the value of the catch is reserved for craft and engine, 80 % is for the crew.	5 %
		4. After deducting operational costs, the net value of the catch is divided equally among the crew members (rowboats and other gears).	14 %

\*All costs include expenditure for fuel, food at the beach or tea, anything consumed while at sea, any payment for helpers and bait when used

#### Competing interests

The authors declare that they have no competing interests.

#### Authors' contribution

RW carried out data collection, data analysis, writing under the supervision of MB. MB contributed to the paper in improving its content with more information and structure of the language. Both authors read and approved the final manuscript.

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