



# Conditions for sustainability of small-scale fisheries in developing countries



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## ABSTRACT

Institutions that manage small-scale fisheries across the globe can be locally based, state controlled or of a mixed, cross-scale nature. The latter arrangement, widely known as co-management, is generally believed to be the preferred approach for sustainability. This paper employs a crisp-set qualitative comparative analysis (csQCA) to examine 17 cases of small-scale fisheries in developing countries, in order to assess the degree of state involvement which may be most effective in realizing sustainable small-scale fisheries. These degrees vary between: (a) strong top-down regulation irrespective of fishing community wishes, (b) a co-management mode of negotiation with fishing communities, (c) a merely supportive role of the state, or absence from the fishing scene. It was revealed that contrary to expectations, the sustainability of small-scale fisheries depended solely on the strength of collective social capital of the local communities at the resource scale. With weak local social capital, degrees of government involvement did not make any difference; the fisheries were unsustainable in all cases. The prime role for governments in small-scale fisheries in developing countries therefore seems to be as intelligently absent as possible, by way of respecting, protecting, and supporting local institutions.

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## 1. Introduction

The management of small-scale fisheries (SSF) has received considerable attention in recent years (Evans and Andrew, 2011; Hauzer et al., 2013), despite the assertion of Isaacs (2013) and Alfaro-Shigueto et al. (2010) that the management of SSF has generally been overlooked. Out of rich literature, the present paper uses case studies from developing countries notably Chile, Comoros, Ivory Coast, Malawi, India, Laos, Mexico, South Africa, Zambia, Zimbabwe, Senegal, and Nigeria to investigate which degree of state involvement may be most effective in realizing sustainable SSF. While some of the cases studies examined are success stories, others are not.

The key factors that lead to either success or failure of these fisheries may be unique to a particular system and therefore not necessarily applicable elsewhere (World Bank, 2004). However, recent experiences and scholarship reveal some of the major conditions that are crucial in making SSF sustainable. Evans and Andrew (2011), for example, highlight that development of social networks

that empower local resource users and foster resilience is crucial for the sustainability of SSF in developing countries. The effectiveness of such management responses can only succeed if there are modifications in power relations between the state and the local institutions (Berkes and Seixas, 2005). In their general assessment of global fisheries management (with no particular focus on SSF), Gutiérrez et al. (2011) identified strong community leadership and a robust collective social capital as the most important attributes for success. Collective social capital is defined in this regard as the social capacity of groups, in terms of trust and institutions, to take collective action (Lankhorst and de Groot, 2012). Nevertheless, co-management still remains the main adage in SSF management, implying that in addition to community strength there is a need to have strong governments to safeguard the sustainability of fisheries.

Through an analysis of 17 cases studies from twelve developing countries the present paper aims to determine which level of institutions (local, state controlled or mixed) is most decisive in the sustainability of most SSF in developing countries. Mention has to be made here that the cases are examined as they are reported in literature and therefore some deviation from the latest developments regarding a particular fishery may be expected.

The next section reviews literature on SSF management in developing countries, thus providing the basis for the variables used in the analysis. The third section provides the methods used, an

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overview of the cases and how the scores for each variable were generated. The fourth section gives results and discussion. The paper ends with some implications for future policy direction and fisheries management practice in developing countries.

## 2. Small-scale fisheries management in developing countries

Being a form of resource extraction, capture fisheries usually do not continuously require high inputs after making the initial investment in the acquisition of the extraction equipment. Thus, the economics of extraction may easily outweigh the operational costs and lead to over-exploitation of the resource. Moreover, capture fisheries usually start out as an open access situation and even if access is later closed to a restricted group, full privatization is usually impossible and the fisheries remain a common pool resource, hence subject to the risk of [Hardin's \(1968\)](#) 'tragedy of the commons' that leads to resource exhaustion. [Hardin \(1968\)](#) concluded that communal natural resources can only be sustained if a coercive central authority oversees the exploitation. In the same vein, [Béné et al. \(2010\)](#) stated that "over-exploitation of a resource which is owned by many and not effectively managed by anyone, leads to reduction in catch and eventual poverty of users and others who would otherwise benefit from the harvests".

Capture fisheries are sometimes protected against over-exploitation by natural circumstances such as sheer size, inaccessibility or cold, as shown for instance in [Brox \(1990\)](#) and [Planque et al. \(2010\)](#). In most cases however, small-scale capture fisheries, consisting for instance of inland water or tropical seas are seldom protected by such circumstances, thereby requiring strong institutions that can regulate extraction by humans and achieve sustainability of the resource. Such regulatory institutions can be locally based, state controlled or a crossbreed of the two in what is widely known as co-management.

The concept of 'tragedy of the commons' has indeed become deeply entrenched in fisheries management, as shown for instance by [Ward and Weeks \(1994\)](#) who found that in spite of all evidence to the contrary, U.S. government officials hang on to the idea that fishing communities without government control can only deplete the resource. As discussed by [Carswell \(2003\)](#), governments often need such narratives to justify their regulatory existence. [Ostrom \(1990\)](#) was the first to dispute this management paradigm, not by denying the logic itself as faulty or untrue, but by studying how communities can counteract the 'tragedy' mechanism in the institutionalization of successful common property management regimes. She postulated eight conditions for the success of managing common pool resources which have been included in the present study as highlighted in [Table 1](#).

These conditions were emphasized by [Cox et al. \(2010\)](#) using both empirical and abstract cases, and are a good basis for designing management systems for SSF. For example, "minimal recognition of rights to organize" necessitates legitimacy and non-interference by central states of the locally constructed institutions, while "nested enterprises" underscores the need to nest the local rules into rules that exist at a larger scale. The nesting is important for support (e.g. information sharing) as well as completeness and endurance of a system so that issues of cross-scale cooperation and resource users at a larger scale can best be addressed.

[Wilson et al. \(2006\)](#) state that local SSF management cannot be effective if it is not considered legitimate by local resource users especially when central states are too weak to enforce formal rules as is often the case in developing countries. When central states are weak, the activities of intruders are not controlled and compliance becomes a voluntary action ([Sowman et al., 2013](#); [Chabwela and Haller, 2010](#)). When central states fail to devolve power to

local communities in co-management or community-respecting arrangements and consistently take a position of commanding, imposing and enforcing alien rules and regulations, the negotiated fulcrum is lost, illegal activities may emerge and the management system is likely to fail ([Béné et al., 2009](#); [Isaacs, 2012](#)).

From a broader view of [Ostrom's \(1990\)](#) theory as highlighted in [Table 1](#), it can be deduced that central states and resource users are the two crucial parties in making the eight conditions of SSF management to either work well or not. The presence of a central state in SSF management might be supportive (recognizing, helping, educating, informing), seeking a co-management arrangement (power and responsibility sharing), or conflictive (imposing external regulations). Most efforts in SSF management in developing countries have put considerable emphasis on setting up co-management arrangements. The approach in Africa, for example, has generally been hasty, ceremonial top-down devolution of some aspects of management from central states to local communities resulting in an imbalance of power and interests.

From the critical perspective of [Ward and Weeks \(1994\)](#) and [Carswell \(2003\)](#), it may be noted that the co-management discourse still justifies the 'raison d'être' of state regulators. Thus, the critical perspective leads to a research platform that can reveal instances where purely community-based fisheries management can be conceptualized along with the other management types. Hints that such research might be fertile are given for instance by [Hara and Nielsen \(2003\)](#) who point out that co-management in Africa appears to be more of an illusion than an empowerment of local fishing communities and there is need to find some bold answers to its ability in achieving the objectives of all players. Even years after [Ostrom' \(1990\)](#) work, [Jentoft et al. \(2003\)](#) also found it difficult to conceptualize the necessity of the state in the management of fisheries. They mention that "an alternative agent like the state is not always needed and community level institutions play a greater role in fisheries management if they are allowed and equipped to do so". In some cases, however, informal institutional building can get support from centralized formal law like in the V-notch lobster programme as reported by [Acheson \(1989\)](#) as well as [Acheson and Gardner \(2011\)](#).

In her book "Understanding Institutional Diversity", [Ostrom \(2005\)](#) defines institutions as rules, norms and shared strategies that mediate human behaviour. From this perspective, it is clear that the sustainability of SSF depends on a continuum of attributes that positively shape human actions towards a negotiated consensus on powers and responsibilities in relation to the fisheries resource at either supra-local level (e.g. existence of guiding legislation and policies from central government) or local level (e.g. leadership, power relations, benefit sharing). Several scholars ([Sowman et al., 2013](#); [Béné et al., 2009](#); [Wilson et al., 2006](#); [Castello et al., 2011](#); [Pomeroy, 1991](#)) have decried the lack of recognition and involvement of small-scale local fishers in fisheries management, especially in developing countries. To achieve a balanced representation in decision making, there is more shift to arrangements in which local communities and governments share responsibilities over a resource. Although the basic idea of such arrangements is to achieve equal power sharing (strong government interacting with strong communities), the application of the notion has varied widely especially in SSF management where the socio-ecological context is quite complex and diverse ([Allison and Ellis, 2001](#); [Evans et al., 2011](#)). Whatever the case, these partnerships require high levels of compliance from local communities and significant support, information sharing, consultation, advice and cooperation from government ([Sen and Nielsen, 1996](#)) in order to sustainably manage common pool resources.

From the literature reviewed this study analyses 17 SSFs in developing countries which were chosen on the basis of availability, sufficiency and clarity of data on fish catch trends, the role of

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