

Supporting collective action to address natural resource conflict: A synthesis of experience

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Abstract

The food security crisis, international “land grabs,” and new markets for environmental services have drawn renewed attention to the role of natural resource competition in the livelihoods of the rural poor. While significant empirical research has focused on diagnosing the links between natural resource competition and (violent) conflict, much less has focused on the dynamics of how resource competition can be transformed to strengthen social-ecological resilience and mitigate conflict. Focusing on this latter theme, this review synthesizes evidence from a wide range of cases in Africa, Asia, and Latin America. Building on an analytical framework designed to enable such comparative analysis, we identify emerging lessons as propositions about the dynamics of conflict and collective action in natural resource management, and as recommendations for action. These propositions address how the scope for collective action in natural resources management is influenced by the social-ecological and governance context, how the character of natural resource management institutions affect the incentives in favor of conflict or cooperation, and how the outcomes of these interactions influence future conflict risk, livelihoods, and resource sustainability. Action recommendations concern policies addressing resource tenure, conflict resolution mechanisms, and social inequalities, as well as strategies to strengthen collective action institutions in the natural resource sectors and to enable more equitable engagement by marginalized groups in dialogue and negotiation over resource access and use.

1. Introduction

The food security crisis, international “land grabs,” and the emergence of new markets for environmental services have compelled the international development community to pay renewed attention to the role of natural resource competition in the livelihoods of the rural poor. Combined with this is a heightened attention to the disruptive role of civil conflict in undermining development progress. Local disputes over land, water, forests, and fisheries can contribute to broader social conflicts. Management of natural resources, however, can

also be a focus of cooperation, helping to build resilient institutions that can moderate and reduce the disruptive impacts of conflict, and/or aid in the work of post-conflict reconciliation and rebuilding (UNEP 2009).

While significant empirical research has focused on diagnosing the links between natural resource competition and violent conflict, much less analysis has focused on the dynamics of how resource competition can be transformed to strengthen social-ecological resilience. Focusing on this latter theme, this review synthesizes empirical evidence from cases in Africa, Asia, and Latin America. In particular, the authors aim to draw lessons for practice: not just how to understand what is happening, but also *what to do* to make more cooperative and equitable outcomes more likely.

To do this, we build on an analytical framework (Ratner et al. 2010) designed to enable such comparative analysis. The intent is to yield lessons on the factors that influence collective action so as to refine our understanding of strategies that work in policy reform and development practice across a range of conflict-sensitive environments. We codify these emerging lessons as propositions about the dynamics of conflict and collective action in natural resource management, and as recommendations for action. The propositions address how the scope for collective action in natural resources management is influenced by the social-ecological and governance context, how the character of natural resource management institutions affect the incentives in favor of conflict or cooperation, and how the outcomes of these interactions influence future conflict risk, livelihoods, and resource sustainability. Action recommendations concern policies addressing resource tenure, conflict resolution mechanisms, and social inequalities, as well as strategies to strengthen collective action institutions in the natural resource sector and to facilitate a more equitable engagement by marginalized groups in dialogue and negotiation over resource access and use. Given the early state of this field, we consider these findings preliminary—supported by a range of empirical evidence but meriting additional research to validate, refine, and adapt in different contexts.

The paper is organized as follows. We begin with an overview of the role of collective action in conflict and cooperation over natural resources, using the aforementioned analytical framework to identify points for support by diverse actors that can help shift the incentives towards cooperative and equitable management of resource competition, reducing the likelihood of broader social conflict and violence (section 2). Next we survey four drivers—climate change, market integration, governance reforms, and civil society engagement—that are exercising increasing influence on resource conflict trends (section 3). The subsequent sections outline recommendations for action by national and local governments, international and domestic NGOs and civil society networks, international development agencies, and regional organizations. Section 4 focuses on governance and policy-level interventions. Section 5 focuses on the role of natural resource management institutions in promoting or constraining collective action, and strategies to support such institutions. Section 6 focuses on influencing the action arenas in which specific disputes are played out. Section 7 concludes by highlighting research frontiers, including work to

assess the outcomes of conflict and cooperation as they affect local livelihoods, resilience, and future conflict risk.

2. The role of collective action in conflict and cooperation over natural resources

Collective action comprises concerted group effort to achieve a shared goal. This can be done directly by group members, or on their behalf through an organization (Marshall 1998). Collective action is pervasive in societies, although the strength and forms of collective action vary greatly, from sporadic events with little formal organization, to highly structured organizations.

Although collective action is often discussed as a good thing, associated with harmony and mutual benefit, it is not necessarily advantageous to everyone or benign. Collective action institutions can themselves be highly inequalitarian; groups can act collectively to exclude others; and the outcome of their action can be negative (criminal gangs also engage in collective action). Indeed, many forms of violent conflict can be seen as the clash between groups who are acting collectively within the group.

Understanding the existing bases of cooperation, and the factors that facilitate new efforts at collective action, is key for any purposive use of collective action for natural resource management and conflict management. Many effective forms of collective action are based on customary institutions that have evolved over time, but internal actors (such as community leaders or youth) as well as external organizations (such as governments and NGOs) also attempt to organize and/or facilitate new forms of collective action. However, achieving this is not straightforward: collective action cannot be simply ordered into existence. (Wage labor, corvée labor, or group efforts organized by military coercion or other force are not considered collective action). The existence of a formal organization does not necessarily mean that collective action will occur. Many organizations exist only “on paper” and do not lead to effective collective action. People need to be motivated to work together.

Natural resources management, collective action, and conflict management are interlinked. Collective action is necessary for many types of natural resources management. As illustrated in Figure 1, investments and resource management activities that take place at the farm level (like planting new seeds) can be efficiently carried out by individuals, but management activities such as integrated pest management and watershed management require action on the part of many individuals and, hence, require some form of coordination. Coordination may be provided by the state, market, or collective action within civil society; resource systems that span national boundaries may require international institutions to coordinate. For most resource management activities at the local level, the costs of state or market agents to monitor behavior and enforce rules is high,

whereas collective action can draw on mutual monitoring efforts of people who are already in contact with the resources. Some degree of resource scarcity, and therefore the need to manage competition, is a classic precondition for the emergence of collective action institutions for natural resource management (Ostrom 1990; Tiffen et al. 1994).

The character of existing natural resource management institutions, in turn, affects the scope for collective action. Figure 1 also illustrates that resource management with a long-time horizon is unlikely to be successful unless those who are expected to invest also have appropriate property rights that provide them authorization to manage the resource, and tenure security assuring that if they work together to manage the resource they will also reap the rewards. Thus, many successful examples of natural resource management also have some form of common property, and these institutions help reinforce collective action.

The character of collective action likewise influences the scope for conflict management. Strong collective action *within* a social group (also known as ‘bonding’) can intensify conflict with opposing groups, but collective action that spans opposing groups (also known as ‘bridging’) can reduce conflict (Sanginga, Kamugisha and Martin 2007). In some cases, conflicts cannot be managed by collective action alone, so mediation by state agencies or other external actors, or formal dispute resolution through the judicial system may be necessary.

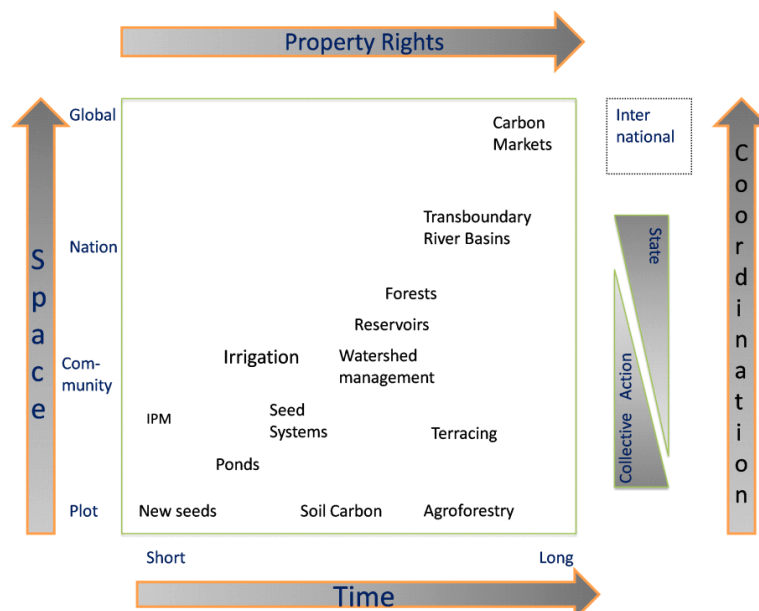


Figure . Framework for recognizing importance of collective action in natural resource management. Source: Meinzen-Dick et al. (2010).

Natural resources management plays an important contributing role in influencing the likelihood, intensity, and duration of conflict. {CB: cite key points from new peacebuilding synthesis volume.}

The broader context of social conflict, likewise, influences natural resources management prospects and outcomes. {CB: cite key points from forthcoming peacebuilding synthesis volume.}

As we use the term in this paper, “conflict” covers a continuum of patterns of interaction among stakeholder groups. This extends from short-term confrontations among competing resource users where violence is avoided, to sustained, violent confrontations involving diverse political factions, ethnic groups, or state actors. Inter-state conflict or war, by contrast, is not the focus of our analysis. Research on the role of natural resources in contributing to the risk of conflict and the potential for cooperation among states has been more thoroughly reviewed elsewhere (Carius and Lietzmann 1999; Giordano et al. 2005; Homer-Dixon 1999; Le Billon 2001, 2005; Le Billon and Springer 2007; Rustad et al. 2008; Welsch 2008). While acknowledging that sub-national conflict and instability can contribute to inter-state conflict, particularly in border zones or where trans-boundary resources are concerned, our focus instead is on the role of natural resources in local livelihoods, and how this is manifested in the dynamics of conflict and cooperation. In referring to dynamics, we mean to accentuate the temporal dimension, recognizing that over time peaceable situations can become conflictive, conflicts can be resolved and transformed into more cooperative forms of interaction, and post-conflict environments can return to being “hot” conflicts.

To understand how interventions can help shift the incentives towards cooperative and equitable management of resource competition, reducing the likelihood of broader social conflict and violence, we build on an analytical framework designed to assess the role of collective action in natural resource conflict and cooperation (Ratner et al 2010). The framework, which builds on the Institutional Analysis and Development (IAD) framework that Ostrom (1990; 2005) and others have used as the basis for analysis of the commons, has four main elements: context, collective action institutions, action arena, and outcomes (see Figure 2). The context comprises characteristics of the resources and resource users (including livelihood assets and vulnerabilities), as well as governance arrangements (understood as distribution of power, representation, and mechanisms of accountability). Each of these can be “unpacked” through reference to the literature that generates and/or tests hypotheses about how specific contextual features will influence collective action for natural resource management (see Agrawal 2001; Baland and Platteau 1996). Collective action institutions are organizations such as water user groups, community forestry organizations, and farmer cooperatives that provide rules and norms to guide behavior of their members regarding resource access, use, and benefits. To the extent that these institutions are respected and seen as legitimate by other actors, they may constrain or influence their actions as well.

Any particular dispute takes place within a socially-defined “action arena,” the forum in which different stakeholders interact. Arenas exist at multiple scales, and may be both

formal and informal: a traditional village council, a mediated conflict resolution process, a private sector investment review, formal proceedings in national courts or parliamentary bodies, or a trans-boundary policy dialogue, to name just a few. While the broader context and relevant collective action institutions affect actors' choices within such an arena, these choices also depend on the "action resources" that each enjoy, and the rules that govern their use. The patterns of conflict and cooperation that emerge have outcomes that in turn may influence the context, collective action institutions, and characteristics of the action arena in future rounds. (See Ratner et al. 2010 for a more thorough explanation of the framework.)

Assessing trends in the biophysical, human, and institutional context can help anticipate demands for collective action addressing natural resource conflict. In section 3, below, we elaborate this proposition by illustrating how it applies to four drivers of natural resource competition and collaboration.

Figure . Framework for analysis of conflict and cooperation in natural resources management (Ratner et al 2010), showing 3 windows for engagement elaborated in this paper.

When approached from this perspective, recognizing the agency of diverse actors linked across multiple scales, it becomes apparent that *there are multiple potential windows of intervention in any given case of resource competition*. Broadly speaking, we identify three such windows for positive engagement, as illustrated in Figure 2, and elaborated in subsequent sections of this paper:

- Governance and policy interventions that address the changing context for collective action and natural resource management (section 4).
- Support to natural resource management institutions that enable positive expressions of collective action to manage resource competition equitably (section 5).
- More immediate influences on the action arena to help shift the incentives of actors' choices in favor of cooperative and equitable resolution of resource conflict (section 6).

3. Understanding contextual factors influencing natural resource competition and opportunities for collective action

A wide range of underlying trends including population growth, evolving patterns of consumption, degradation of ecosystem services, and technological innovation influence

the emergence of resource competition. Here we illustrate how the analytical framework introduced in section 2 can be used to assess the influence of context on the dynamics of competition over natural resources in developing countries, the risk of conflict, and the demands on collective action to promote cooperation. Drawing on a range of cases, we assess the role of four trends that have broad relevance in Asia, Africa, and Latin America: (a) increasing commercialization and vertical integration of agricultural value chains, associated with a rise in international competition for agricultural land and primary resources; (b) international recognition of climate change risks, associated with the emergence of carbon markets and financing for climate change mitigation and adaptation; (c) decentralization reforms transforming local opportunities to secure resource tenure and manage competition; and (d) growing importance of civil society organizations and networks at national and international levels, frequently referencing emergent international law and norms.

Globalization of agricultural markets increasing competition for land and primary resources

Changes in the global agricultural economy are providing rural producers with new challenges and opportunities. A feature of 'globalization' has been the development of global markets for products based on integrated supply chains (Kydd 2002). Producers now often supply long and sophisticated market chains, and market processed and branded products to mainly urban consumers. With modernizing agri-food chains, the tendency is to move away from the spot market to forms of vertical coordination (Boehlje 1999). Local shifts in production patterns to supply these international markets can also be profound, including transitions from subsistence crops to high value exports such as fruits and vegetables, large-scale landscape change such as the conversion of natural forests to palm oil plantations, and biofuel production replacing food crops.

One important dimension of globalization in agricultural markets is land acquisition by governments and private corporations aiming to secure a supply of food and other agricultural products for their home markets and to take advantage of market opportunities as productive assets become more scarce. Although the pressures are greatest near cities and areas with good infrastructure, rising land values are creating pressures even in more remote hinterlands. Land acquisitions have the potential to inject much needed investment into agriculture and rural areas and proponents cite benefits such as the creation of on-farm and off-farm jobs, development of rural infrastructure, and the construction of schools and health posts. Unequal power relations in land acquisition deals and inadequate safeguards for social equity and environmental management, however, can put the livelihoods of the poor at risk (von Braun and Meinzen-Dick, 2009). "Land grabs" and the growth of export agriculture have often led to tension and conflict with local populations. Strong collective action institutions such as farmer organizations and advocacy groups offer the potential to give smallholders increased clout to effectively voice

their concerns, negotiate on more favorable terms with outside investors, and retain access to resources essential for their livelihoods.

While these market trends risk increasing social inequalities and resource conflict, there are also opportunities for smallholder producers that can improve local livelihoods. Although the financial and knowledge resources required often preclude individual smallholder farmers from tapping into high value markets (Pingali et al. 2005), collective action can help overcome these constraints. Challenges include establishing collectively-agreed rules, securing members' commitments to abide by the rules, and monitoring and enforcing compliance (Hellin et al. 2009). Often, however, outside agents such as government and NGOs encourage the formation of marketing cooperatives or other collective action institutions without a clear understanding of the costs and margins along the value chain that determine the economic viability of such efforts. When signs emerge of weakening collective action, there may be a tendency to provide further assistance, thus further externalizing the costs and potentially undermining medium- and long-term sustainability. Efforts to support collective action among smallholder producers in accessing high value markets, therefore, need to give attention to both equity and economic viability.

Climate change, carbon markets, and resource conflict

Recent research has probed the potential direct effects of climate change on livelihoods in ecologically marginal environments and the indirect effects on state capacity in response to stresses on food production systems, increased resource competition, and migration, among other factors (Nordas and Gleditsch 2007; Fraser 2008; Dalby 2010). While the current attention to global climate change and concern over its potentially destabilizing social impacts is relatively new, the historical record provides many examples of societal collapse linked to local environmental change and resource degradation, and inability to cope with a changing climate figured prominently in many of these (Diamond 2005). Such examples demonstrate that the risk of climate change to social systems has as much to do with characteristics of those systems—particularly capacity for adaptation, innovation, and conflict management—as with trends in the biophysical environment (Kevane and Gray 2008).

The demands on collective action include capacity to identify and promote technological innovations that enable adaptation to changing climatic conditions, to manage increasingly scarce water resources effectively, and to negotiate resource access arrangements as populations migrate. Water scarcity is projected to become a more important determinant of food production than land scarcity, and a decline in global per capita food production threatens future food security (Lobell et al. 2008; Brown and Funk 2008) and is likely to heighten competition over access to renewable resources (Hendrix et al. 2007). Many countries with lower water availability today, also have high rates of population growth and, hence, water availability may decline especially for those for who are already water-

poor (Gleditsch et al. 2006). The areas expected to be hardest hit, such as the arid countries of sub-Saharan Africa and parts of South Asia, are already prone to malnutrition and poverty (Funk et al. 2008). Climate-induced migration will not only increase demand for agricultural food and livelihoods in receiving areas, but can spur competition for resources such as cropland and freshwater (Raleigh and Urdal 2007) and stress or undermine existing social institutions, particularly when environmental migrants and residents belong to competing ethnic groups (Reuveny 2007; Richards 2010; Fearon and Laitin 2010).

Social, policy, and institutional dimensions of climate change mitigation and adaptation pose additional risks and opportunities. Progress towards adoption of an international scheme to finance reducing emissions from deforestation and degradation (REDD), for example, bring important opportunities to support local livelihoods and resilience if plans are developed with the full participation of local communities, recognizing their rights, knowledge and skills in managing local resources such as forests, mangroves, and wetlands. But when governance arrangements are inadequate to protect local resource rights, the creation of markets for ecosystem services such as carbon sequestration can bring a scramble for resource tenure and competing claims on the associated revenue streams, as recently seen in the case of forests in Liberia and elsewhere (RRI 2010). In the extreme, it can increase pressures for companies or governments to evict local residents (Landell-Mills and Porras 2002; Eraker 2000). A review of payment for environmental services schemes in Latin America (Pagiola et al 2005) identified examples of both positive (Costa Rica) and negative (Colombia) impacts on the tenure security of the poor. A key variable is the extent to which affected communities are able to organize a collective stance to advocate for maintaining resource access and deriving equitable benefits, as well as to develop linkages with state agencies and, sometimes, international organizations in support of these goals.

Decentralization reforms

Transformations in governance labeled “decentralization” are very diverse in practice, as are their potential implications for collective action. Sifting among this diversity, it is helpful to distinguish and characterize the governance context using three criteria—representation, distribution of authority, and accountability (Agrawal and Ribot 1999; Ratner 2011). That is, to what extent are marginalized groups represented in decentralized institutions? What specific powers are assigned to local authorities? And what mechanisms exist to keep rights-holders accountable to constituents they are intended to serve and represent?

Democratic decentralization which results in locally empowered tiers of governance is more likely to result in institutions which can resolve conflict and promote collective action in the natural resource arena (Ribot 1999, 2002). In particular, where local government institutions or community organizations such as fishery or forest user groups have the power to amend operational rules governing resource allocation and use, there is greater

scope for adapting these to local conditions, therefore minimizing conflict. Delegation of conflict resolution authority, or official recognition of the legitimacy of local institutions in this regard can similarly enable positive collective action at the local level to seek out negotiated solutions to resource conflicts.

When decentralization reforms come with inadequate measures for local representation, downward accountability, or resources for implementation, however, they may constrain or undermine local collective action to secure resource tenure and manage resource competition. In Africa, many traditional institutions led by local chiefs have been co-opted as part of nominal decentralization reforms to serve the interests of the colonial and post-colonial governments, with the effect of undermining their legitimacy in the eyes of local residents (Mamdani 1996). Decentralization reformers have also sought to cut government costs by shifting responsibilities for resource management without complementary rights and authority (Meinzen-Dick, Knox and Di Gregorio 2001). In Indonesia, an ambitious decentralization program initiated in 2001 had the effect of spurring corruption, including a rapid expansion of large-scale formal and informal land deals between local authorities and private actors in the palm oil and plywood sectors, accelerating deforestation and undermining local land rights (Barr et al. 2006). More recently, in Uganda, the formerly well-funded forest department lost budget resources and staff capacity after decentralization, hampering the monitoring of forest condition and undermining support for community-based management (Andersson et al. forthcoming).

Civil society networks, advocacy and international law

The rapid expansion of civil society networks is opening new lines of support to collective action at the local level and enabling cross-scale linkages in parallel to official government channels. After tabulating data on civil society organizations from a wide range of country and sectoral databases, Hawken (2007) estimated that over one million such organizations around the world are now working toward ecological sustainability and social justice. Growth of the NGO sector can be especially marked in post-conflict countries benefiting from a surge in international aid for reconstruction. In Cambodia, for example, some 25 international NGOs were present in the early 1980s, in 1991 the first domestic NGO was formed, and by 2005 the combined total of international and domestic NGOs in the country surpassed one thousand (ADB 2005).

In many instances civil society networks serve as a conduit for collective action to defend local resource rights and livelihoods in the face of competing resource claims from the commercial sector. In northeast Brazil, for example, Cultural Survival has indigenous communities in advocating for land rights, demarcation and mapping of their territories and defending against land grabs inside the demarcated areas by local rice growers in the Federal Supreme Court of Brazil. Similarly in Cambodia, environment, rural development, and human rights NGOs have converged in defense of local rights to agricultural and forest lands (Ratner 2011). In Indonesia, an alliance of domestic and international NGOs and

foundations played a key role in forestry policy reforms that established the legal basis for community forestry (Ribot, Agrawal, and Larson 2006).

Civil society networks have also played a prominent role in promoting sustainability, human rights, and indigenous people's rights as touchstones of international development policy (Bruyninckx 2006; Dryzek 2005), buttressed by a growing body of international law. The UN Declaration on the Rights of Indigenous Peoples, adopted in September 2007, for example, recognizes the rights of indigenous peoples to their lands, territories and resources, and asserts that respect for indigenous knowledge, culture and practices contributes to sustainable and equitable management of the environment. The Convention on Biological Diversity, furthermore requires parties to respect and protect local and indigenous communities in the sustainable use and conservation of biological diversity. Such international commitments often serve as external reference points to legitimize local efforts at collective action in defining resource rights, defending them, and fulfilling the responsibilities for stewardship and sustainable use that attend such rights.

4. Improving the governance context for collective action to address resource competition

Analyzing trends as described above is important to build awareness of the evolving context in which natural resource competition plays out. This awareness is an essential precondition for the design of effective strategies that enable positive collective action addressing the roots of resource conflict. In this section, we synthesize research findings as action recommendations addressing governance reform, the first of three strategic entry points.

A wide range of actors have a role in governance reform. National government may reform policies addressing resource management and allocation specifically, or mechanisms for public participation and public sector accountability more generally. Development cooperation agencies may finance or provide technical assistance to such reform efforts. Civil society actors, both domestic and international, may advocate for policy and institutional change, including through broad-based social movements. International bodies such as the World Trade Organization and private sector initiatives such as the Forest Stewardship Council also shape resource governance.

For all such actors there are opportunities to improve the governance context in ways that promote collective action for equitable resource management. Below we summarize four priority recommendations: (a) engage community institutions to establish clarity in resource tenure, (b) enable collective action among small-scale producers, (c) strengthen both statutory and traditional conflict resolution mechanisms, and (d) proactively address inequalities through natural resource policies.

Engage community institutions to establish clarity in resource tenure

Many failures of tenure reform result from a rush to impose new tenure regimes without sufficient understanding of local realities and existing customary tenure arrangements. A 2006 forestry decree banning illegal logging in Afghanistan was issued in relative haste, failing to address the interests of key stakeholders or the on-the-ground needs; as such, it lacked legitimacy, was inappropriate, unenforceable, and reinforced a view of the government as out of touch, ineffectual, and corrupt (with officials trying to capture forestry resources for their own use)—all of which undermined governmental legitimacy (Nichols & Al Moumin 2011). The post-genocide government in Rwanda introduced legal reforms and a major campaign to formalize land tenure with a view towards increasing productivity but failed to develop processes that could accommodate the complexity of small, dispersed land holdings and traditional norms for inter-generational transmission of land ownership (Bruce 2009; Pritchard 2010). Pradhan and Pradhan (2000) show similarly how the process of codifying water rights can bring out conflicts where customary arrangements had previously functioned relatively harmoniously.

The experience of developing forestry regulations in Liberia demonstrates the benefits of an inclusive, locally adapted, and deliberative process for reforming management of natural resources essential to livelihoods and the national economy (Brottem and Unruh 2009; Altman, Nichols, and Woods 2011). The work of the *Barza Intercommunautaire* (inter-community meeting or discussion), which successfully mediated interethnic land disputes between 1998 and early 2004 in the North Kivu region of the Democratic Republic of the Congo similarly illustrates the ability of community level institutions to diffuse potential resource conflicts before they break out (Clark 2008).

Where population movement is very rapid, as is the case with internally displaced persons or international refugees in the wake of conflict, or with returnees being resettled after years of dislocation, it may be desirable to introduce provisional resource tenure and access arrangements in advance of any confirmation of statutory rights. It is also useful to keep in mind how shifts in tenure may affect the dynamics of cooperation in other domains. A recent study from Samburu pastoral communities in Kenya, for example, found that communities where group ranches with collective land holdings had been dissolved and people held individual title to their land, the odds of cooperating in communal farm labor are 93.0% lower compared to communities that maintained the group ranches (Grimm and Lesorogol 2011).

Enable collective action among small-scale producers

{A paragraph on establishing/ strengthening legal framework that enables local-level collective action (water user groups, forest user groups, fisheries associations, etc).}

While collective action can proceed – and often is successful – when undertaken outside the ambit of statutory law, laws and regulations can create an enabling environment that formally recognizes, supports, and protects collective action among small-scale producers. In Nepal, for example, the 1993 forestry law allowed the establishment of community forest user groups that have the authority to manage community forests, collect revenues, and decide how to use the revenues (Sanio and Chapagain 2011). A number of other countries also have legislation allowing the establishment of community forests, including Liberia, Mozambique, and Cameroon (Harwell 2010; Djeumo 2001).

{note importance of legal recognition}

{Then focus on collective action among small-scale producers through collectives, farmer associations etc to access inputs & services, and tap market opportunities. Show how this can build resilience / reduce conflict risk especially as an alternative to ‘land grabs’ & evictions.}

A range of factors can enable partnerships and collective action at multiple scales to take advantage of market opportunities including foreign direct investment in agriculture and integrated, international value chains. A policy and regulatory framework that requires assessment of the social distribution of benefits from investment schemes, for example, can encourage alternatives to the archetypal ‘land-grab’ characterized by a fully integrated plantation-style operation where the company hires in labor to cultivate land controlled by the firm. These include contract farming arrangements, whereby agribusiness firms provide farmers with agricultural services such as inputs, extension advice and output marketing in exchange for commitment by farmers to supply them with some or all of their output (Key and Runsten 1999). Under contract farming, collective action can increase farmers’ collective bargaining power as well as reduce the contracting transaction costs faced by firms.

Policies that support small-scale producers to tap organic and fair trade niche markets can likewise provide incentives for collective action that boosts local incomes and livelihoods. Over the past two decades the organic agro-food system has been transformed from a loosely coordinated local network of producers and consumers into a globalized system of

formally regulated trade which links socially and spatially distant sites of production and consumption (Raynalds 2004). Certification schemes including the Forest Stewardship Council for forest products, and the Marine Stewardship Council for seafood fill a similar role by providing internationally recognized norms for sustainable production and trade. For small-scale producers, the barriers to certification can be high (King and Venturini, 2005), as well as the costs of ongoing monitoring (Mutersbaugh, 2005). But policies that assist small-scale producers to take advantage of such opportunities can ultimately increase profitability at the household level and reduce conflict, as producers focus on how to cooperate to achieve the collective goals of certification and monitoring rather than compete over individual shares of a scarce resource base.

Strengthen both statutory and traditional conflict resolution mechanisms

Efforts at legal and judicial reform and capacity strengthening for local institutions often focus separately on statutory versus customary mechanisms for conflict resolution and justice, sometimes ignoring one side of the spectrum altogether. In most cases, however, legal, customary, and informal mechanisms are highly complementary (Sanginga 2007, Nkonya and Markelova 2009). Failure to recognize and legitimize this legal pluralism is at the root of many resource tenure conflicts (Meinzen-Dick and Pradhan 2002). In post-colonial Africa, laws governing natural resource management were formalized based primarily on Western legal norms, and most countries emphasized formal conflict resolution mechanisms even in instances where these had little or no legitimacy in the eyes of local resource users (Mamdani 1996).

While formal law and the judicial institutions to back its application in practice have significant benefits that include the potential for bridging across widely disparate social groups within a society, including non-local and foreign actors, customary conflict resolution mechanisms offer distinct advantages as well (Van Koppen, Giordano and Butterworth 2007; Meinzen-Dick and Pradhan (2002); Pradhan, *forthcoming*). These include:

- *Accessibility.* In line with the subsidiarity principle, customary conflict resolution mechanisms are embedded within communities at the lowest appropriate level, making them in many instances the most accessible to resource users, in terms of both cost and time. By operating in local languages and without the bureaucratic language and procedures that the statutory legal system typically requires, the barriers to raising grievances are significantly reduced. This is one reason why Ravnborg et al. (forthcoming) found that people preferred to use local customary institutions over outside, formal bodies in resolving water disputes. The extent to which customary mechanisms provide improved access to marginalized groups including women and lower caste members in countries such as India and Nepal depends on local norms.

- *Social cohesion.* Customary conflict resolution typically gives priority to reestablishing harmony and social cohesion as distinct from the adversarial approach in many formal legal systems focused on establishing fault and assigning punishment. Taking into account the influence of a conflict on the broader community and the need to maintain future interactions among the parties in other domains, traditional mechanisms often include significant social pressure on the parties to reach a compromise (Meinzen-Dick and Pradhan 2002; Ravnborg forthcoming).
- *Adaptation.* Rooted in locally-defined rules and norms, customary conflict resolution is also highly varied and adaptive, responding to changing resource demand. Local rules and norms have been used over the years successfully to resolve natural resource disputes on water, land, grazing, fisheries and forestry resources. For example, the *gadaa* system among the Oromo in Borena, Ethiopia, has adapted to the increased demand of land and grazing resources and has continued to resolve conflicts despite attempts by the government to undermine them (Edosa *et al.* 2007).

The challenge in legitimizing and strengthening customary conflict resolution mechanisms is to preserve such benefits while ensuring complementarity with the formal legal and judicial system, including foundation principles of human rights. For example, this means mandating equity in access to local natural resource conflict resolution mechanisms with regards to ethnicity, caste, and gender (Van Koppen, Giordano and Butterworth 2007). It also means monitoring and mitigating the risk that customary institutions legitimize resource capture by local elite, a problem that contributed to the emergence of broad social conflict, and ultimately the brutal civil war, in Sierra Leone (Unruh and Turray 2006; Fanthorpe 2001). In addition to legal and regulatory reforms, capacity building efforts can help to improve the effectiveness and equity of traditional institutions.

Address horizontal inequalities through natural resource policies

Many conflicts occur along lines of horizontal inequalities, which Stewart (2000) defines as inequalities between social groups (contrasted with vertical inequality by income strata across a whole society). These groups may be defined by region, ethnicity, class, and religion among other factors, according to the most salient reference points for group identification in a given society. While horizontal inequality alone is insufficient to explain violent group mobilization, it can be an important motivating factor when an economically marginalized group is also politically excluded, alongside factors that include the availability of financial resources to support a conflict, and private calculus of costs and benefit. For example, Suliman's (1999) study of conflict in Sudan argues that a combination of drought, Baggara expansion into Nuba territories, and state allocation of best lands to absentee landlords for mechanized crop monoculture severely undermined the Nuba's

customary land and water rights, and contributed to the outbreak of violence between these groups during the civil war.

Horizontal inequality can be reduced through targeted measures aimed at political, economic and social inclusion. Political inclusivity is distinct from the implementation of democratic processes, and more difficult to achieve (Stewart and O'Sullivan 1999). Stewart (2000) notes that every observed case of conflict lacks political inclusivity, whereas well-known peace-making regimes, such as post-Pinochet Chilean government, Uganda under Museveni, and South Africa under Mandela have all adopted inclusive policies. Economic and social inclusivity can be achieved by ensuring balance in group access to benefits from government expenditures and access to education, health services, water and sanitation, housing and consumer subsidies. Equality in education is especially important as it can help bridge income gaps among social groups. Ghana is a case in point, where targeted policies to reduce the developmental gap between northern and southern regions, and the commitment of consecutive political leaders to maintain a culturally and religiously inclusive state has deflated motivations toward violent conflict (Langer 2009).

Because international aid agencies have tended to focus on vertical rather than horizontal inequality, little explicit experimentation has taken place to test and refine policy measures that aim for inclusivity as a feature of natural resources management. By contrast, social movements for land rights and community-based management of forests and fisheries frequently cite group identity and social exclusion as prime motivating factors. When governments recognize and respond to these intergroup grievances before they lead to widespread violence, the resulting policy shifts can reinforce equity in resource access as well as social stability. Government reforms to expand community fisheries in Cambodia (Ratner 2006) exemplify such responsiveness to civil society mobilization. Reforms in Zimbabwe to devolve authority and benefits from wildlife management aimed in part to provide economic opportunities in ecologically marginal areas with very little infrastructure (Murphree 1991; Mapedza 2006).

5. Strengthening collective action institutions for natural resources management

Actions to address the broad governance context influencing natural resource conflict and cooperation (previous section) represent the most systemic level of intervention, extending well beyond the domain of natural resources management. Efforts to address the action arena (section 6) represent the most immediate level of intervention, aimed at influencing the way that patterns of conflict and cooperation play out with regards to specific incidents of resource competition. This section focuses on the intermediate level, namely actions that reinforce and strengthen institutions that mediate collective action for natural resources management. Such institutions are not necessarily designed or initiated specifically to

address resource competition, though this is frequently an important motivation, alongside others that may include preserving social identity, sustaining a resource base valued for environmental, spiritual or cultural reasons, improving efficiencies in resource allocation and management to generate economic and livelihood benefits, or even reducing the fiscal burden on the state by transferring responsibilities to user groups (Ostrom 1990; Webb 2008).

Build capacity for collective action where state capacity is weak

A significant body of research has focused on how failed or failing states contribute to the emergence of violent struggles for high-value extractive resources, such as oil, gems, and timber and consequent revenues, as well as how such conflicts contribute in turn to state failure. Weakened state capacity, conceived as an undersupply of institutions necessary for managing social peace, is deemed a key explanatory factor linking resource wealth to civil war (Humphreys 2005; de Soysa 2002; Le Billon 2001). Similarly, weakened state capacity amidst conflict clearly contributes to declines in social welfare and household-level vulnerability (Lautze and Raven-Roberts 2006). By contrast, there is relatively little research addressing the effects of state collapse or weakness in state institutions on renewable natural resource management and associated rural livelihoods (Thorpe et al. 2009).

Nevertheless, existing studies provide evidence to support the principle that investing in natural resource management institutions that enable collective action to sustain local livelihoods should be a high priority (Ratner 2011; Bruch et al. 2011). This applies both in instances where state capacity is weak, such as post-conflict land tenure reform (Unruh 2008), as well as where trends in resource competition pose a risk of future conflict. Civil war can profoundly disrupt rural livelihoods, as demonstrated in the extreme by a case such as Darfur, where rural assets have been destroyed and many pre-conflict livelihoods have disappeared altogether (Buchanan-Smith and Jaspars 2007).

Where collective action institutions for natural resource management are functioning effectively before broader conflict emerges, they frequently serve to buffer the disruptive effects of conflict on rural livelihoods. They may also serve to limit the spread of conflict, as the norms of cooperation, collective decision-making and enforcement developed around the resource management problem may be applied to group interactions in other domains (Sanginga, Kamugisha and Martin 2007). In Nepal, for example, government began devolving forest management authority to local communities in the 1970s. The community forest user groups empowered by these policies continued to manage local forest resources, even amidst a decade-long Maoist insurgency that disrupted the functioning of the national Department of Forests among other government services (Adhikari and Adhikari 2010). Indeed, these forest user groups are credited with helping avert broader deprivation and social upheaval (Sanio and Chapaigan 2011).

Embed support to collective resource management institutions in broader reconciliation processes

Beyond its direct impact on rural livelihoods, violence also undermines the capacity for collective action that bridges competing social groups and enables social relations and networks to function (Lautze and Raven-Roberts 2006). When this 'bridging' social capital is undermined, the bonds of reciprocity, obligation and trust necessary to maintain intergroup relations supporting resource tenure, trade, and other dimensions of rural livelihoods are jeopardized as well. During Sri Lanka's civil war, for example, Tamil and Muslim communities that had previously maintained cooperative institutions regulating natural resource access were pitted against each other, destabilizing these institutions and altering natural resource entitlements (Korf and Funfgeld 2006).

For these reasons, efforts at post-conflict livelihood rehabilitation should consider how to leverage efforts at natural resources management to contribute to social reconciliation, in addition to helping secure the basics of food, water, and shelter for affected groups. For refugee groups in particular, the prospects for successful repatriation depend significantly on the extent to which they are provided access to resources, freedom of movement, and the ability to work alongside their hosts to pursue a livelihood (Jacobsen 2002). In some cases this may also provide an opportunity to improve relations between previously conflicting groups, though obviously this has risks as well, and may require focused efforts at mediation to avoid fostering renewed conflict.

The most high profile approach linking natural resource management and reconciliation is the establishment of international peace parks. These cross one or more international borders and are intended to have common management practices, often to conserve a single transnational ecosystem. The first international peace park meant to help resolve armed conflict between neighboring countries was set up in the Cordillera del Condor region of Ecuador and Peru in 1998, and the resultant peace treaty cited conservation measures explicitly. A review in 2007 identified 188 peace parks established to date, most between countries without active violence (Ali 2007).

In addition to their symbolic value, a key benefit of peace parks is often the process of collaboration and negotiation among government authorities, scientists and communities in the development of these joint conservation zones. To develop the Selous-Niassa Wildlife Corridor between Tanzania and Mozambique, for example, foreign donors provided mediation services through conservation programs that improved cross-border ties. Similarly, cross-border dialogue to create the Emerald Triangle conservation zone in the border region of Thailand, Cambodia and Laos reduced tension in a politically and socioeconomically fragmented area, improving livelihood opportunities through ecotourism and buttressing regional stability (Ali 2007).

Peace parks may also be politically contentious, however, as was the case with the Great Limpopo Transfrontier Park between South Africa, Mozambique and Zimbabwe. While South Africa and Mozambique were in agreement on the park, in Zimbabwe the scheme was perceived as an external imperialist agenda driven by foreign donors, NGOs and the South African Government (Duffy 2006). In this case, the vision of improved resource management helping to underpin local livelihood security was overtaken by efforts to control the lucrative wildlife trade in the region and its illicit networks of poachers and traders. Recognizing the risks with such efforts underscores the importance of transparency and authentic involvement of the diverse range of local stakeholders in decision-making, with particular attention to benefit sharing and security—including the role of the military (Ali 2007).

Promote collective action in natural resource management institutions as a means of conflict prevention

An emerging body of practice is demonstrating how natural resource management efforts can explicitly target conflict prevention. Following a peace agreement in 1996 between separatist rebel groups and the Philippines government, for example, the newly-established Autonomous Region in Muslim Mindanao remained rife with local-level conflict between Christians, Muslims, and non-Muslim indigenous groups, much of it rooted in historical grievances over resource access and ongoing struggles over tenure. By purposively engaging marginalized groups in more inclusive, community-based institutions for joint forest and coastal zone management in the region, a natural resources governance initiative financed by USAID has succeeded in reducing the level of intergroup violence, helping avert a return to civil war (Brady 2011).

Governments can also foster the emergence of collective action institutions simply by creating the policy and legal space to recognize such efforts as legitimate. In a separate case in the northern Mindanao province of Bukidnon, voluntary cooperative arrangements are helping manage conflicts over water scarcity. Although the statutory rights defined in the national Water Code sometimes contradict the customary rights protected by the Indigenous Peoples Rights Act, the policies serve as valuable points of reference and facilitate the process of negotiating informal rights-sharing between competing claimants (Duque-Piñon et al. 2010). In East Timor, the newly established government explicitly recognized traditional leaders and customary practices governing natural resource use, even paying for ceremonial expenses needed to witness and reinforce prohibitions on tree felling or other environmentally damaging practices, reinforcing both the new state and customary authorities (Miyazawa, forthcoming).

By contrast, government policies and interventions can frustrate and impede collective action in natural resource management, even if they are intended to improve local livelihoods. A national campaign to increase agricultural output through regional crop specialization in Rwanda, for example, has undermined local control of land, making

collective action for the management of land and land-based resources virtually impossible (Pritchard 2010). In northern Burma (Myanmar), the process of formalizing “community forests,” ostensibly to protect against the encroachment of agribusiness concessions, also extends state control over land and forests previously governed by traditional management practices (Woods 2010).

6. Influencing the action arena

The three entry points for engagement we outlined in section 2 above are interrelated. Effective support to natural resource management institutions that foster collective action often requires complementary work to advocate an enabling policy and legal framework. Interventions aimed at influencing the process of stakeholder interactions in specific domains of resource competition—the action arena—not only serve to reach equitable outcomes to the particular dispute at hand. They can also open up opportunities for longer-term institution building, shifts in power, and stakeholder relationships that influence prevailing governance arrangements over time.

This section focuses on three recommendations to influence the action arena: (a) seek opportunities to help shape the shifting narratives actors use to frame disputes in ways that promote equitable outcomes, reconciliation, and reduce future conflict risk; (b) support the rights of weaker groups to access justice through statutory, customary, and alternative dispute resolution channels; and (c) identify and cultivate space for dialogue.

Seek opportunities to reframe collective narratives to reduce conflict risk

Collective narratives are an important component in the formation of collective action—positive or negative. These ‘group stories’ regarding who is to blame and why for certain contemporary or historical wrongs also influence a group’s choice of action, whether aimed at cooperation, negotiation, or resistance (violent or nonviolent). Local politicians in conflict-sensitive environments are often adept at making and shaping narratives, in order to coax their constituencies into backing their aspirations. Ethiopian political discourse, for example, has branded pastoralists as “primitive” and wasteful of natural resources, motivating government efforts to convert them into sedentary farmers and legitimize policies that transfer resource control to the state or international investors (Hundie 2008). Pastoralists, or on the other hand, may appeal to their traditional networks or the international indigenous people’s movement to justify their claims to the resources.

Narratives are shaped by conflict, and can be purposefully changed. Nuba ethnic identity in Sudan was quite amorphous until Nuba people were pushed out of their lands by Baggara expansion, when these horizontal inequalities became a rallying point. But counternarratives highlighting historical cooperation and mutual dependence have also

helped to mute conflicts (Suliman 1999). International actions can also powerfully influence the local dynamics of resource conflict, as exemplified by the International Criminal Court indictment of President Bashir of Sudan. Bashir's indictment has motivated local Arab and nomadic secondary occupants to negotiate land disputes with sedentary agriculturalists displaced by the war, anticipating the punishment that might lay in store in future international decisions that could cast them as perpetrators of humanitarian crimes (Unruh 2010). In Sierra Leone, UN radio stations established around the countryside during the peace process allowed a 'voice' to those who accused certain chiefs of engaging in severe prewar exploitation and abuses involving land and labour that channeled youth from customary rural life into militias that fuelled the war. This led to a significant change in the narrative of customary groups with regard to how the chiefs were able to lead, and the expectations for accountability towards their constituencies.

Understanding the narratives into which different groups or parties organize their grievances is key to recognizing moments of opportunity to shift the dialogue towards cooperative solutions. Sometimes a shift in narrative can open up opportunities for practical (technical and financial) support to enable new resource management solutions. Indigenous communities occupying large areas of rainforest in Brazil, Colombia, and Venezuela have repositioned themselves as "ecosystem managers" of a global resource, and are now tapping financial support through the UNDP under the Guiana Shield Initiative (GSI), which strengthens their ability to fend off destructive local resource uses. Social movements in areas such as women's or indigenous people's rights can also link effectively with actors in local resource conflicts to help legitimize demands for equity, democratization and environmental accountability. In Ecuador, for example, protest and activism focused on mining, environment and social justice became the impetus for a new Constitution that placed significant limits on mineral expansion (Bebbington et al. 2008). Whether such social movements end up spurring further repression or democratic innovation, however, depends critically on the response of national government actors.

Support rights and capacities of weaker actors to access justice

Many institutions governing natural resource allocation and management, reflecting broader power relations in society, exclude marginalized groups from decision-making based on ethnicity, caste, gender, or social class. Even where there are not formal barriers to participation, many people may be excluded by distance, illiteracy, or lack of information about how to participate effectively. But stakeholders are typically faced with multiple channels for presenting their grievances or managing conflict (Sanginga 2007; Nkonya and Markelova 2009). These include both statutory bodies, customary institutions, and even informal relationships among neighbors, kin, or friends. Even within statutory bodies, appeals may be made to the local government or to a resource sector-specific agency.

While such legal pluralism can create uncertainty, it also provides the opportunity for "forum shopping"—taking disputes to different authorities depending on the parties'

knowledge of and (physical and social) access to the different institutions and which they feel will provide the best “hearing.” For example, in a multi-country study of local-level water conflicts, Ravnborg and Funder (2010) found that elite dominance of local organizations often precluded poor people from effective recourse when their water supplies were reduced by excessive withdrawals by powerful community members. They found a sequencing in the type of third party called upon if a water-related problem should occur, starting with the closest and then moving gradually—if need be—further away from the community. When external agencies were called in, they tended to be institutions with broader mandates such as the district administration, not specific water-related organizations.

The ability of different groups to access and navigate these multiple channels heavily influences their choice of alternate courses of action. To begin with, people cannot appeal to institutions that they do not know about. This is one reason for investing more in legal literacy about formal law and other institutional arrangements, including international agreements, as well as formal and informal alternative dispute resolution bodies. Providing such capacity building effectively requires that legal literacy agents identify existing forums that people may involve in disputes. Where marginalized groups attain access to decision-making and conflict resolution forums, they often need targeted support to use this access effectively. For example, India’s Panchayati Raj provisions for representation by women and low castes and tribes has proven influential in strengthening their decision-making authority over natural resources as well as public investment funds, but this did not happen automatically: many of the successful cases involved training women to be able to speak in public and educate them on their rights.

Cultivate space for dialogue and negotiation to resolve resource conflicts

Lastly, efforts to engage disputing parties directly in structured dialogue and negotiation over resource conflicts can help lay the groundwork for subsequent cooperation, or at least reduce the risk of broader social conflict. Likewise, where resource competition is less acute, working with local groups to catalyze collective action to manage common-pool resources can reduce conflict risk over the longer term.

A growing body of guidance is now available on tools and approaches that have proven successful in strengthening collective action by working directly with stakeholders in the resource system at hand. These include: facilitating processes of prioritization, planning, and action; engaging in participatory learning and action; redesigning institutions and incentives; and, harnessing social energy (Ramirez 1999; Bruns and Bruns 2004). Colfer (2007) offers detailed guidance in the form of 23 “rules” for catalyzing collective action in natural resource management, which incorporate capacity for conflict management. The rules begin with understanding the local setting, the connections between the various aspects of local people’s lives, and the contextual factors that influence their choices. This contextual awareness is important to jointly understand how conflicts emerge and the

source of the various parties' grievances. Subsequent rules offer guidance on engaging multiple sources of local knowledge, identifying shared goals, building in mechanisms for assessing the group's progress toward these goals. Other forms of guidance address how to establish links between various actors, how to foster leadership in both formal and informal roles, how to seek justice via mutual understanding, and how to build coalitions.

Many if not most conflicts have their own latent opportunities for fruitful negotiating space, whether these are visible to the outsider or not. In the Karamojong cluster in the border areas of Ethiopia, Sudan, Uganda and Kenya, governments and donors failed repeatedly to bring peace to the region and find a way for the cattle herders to stop violent cattle raiding and derive workable arrangements for grazing access and use. Yet the belligerents themselves found in a relatively unambitious veterinary project the necessary space for negotiation about mitigating conflict and cooperating in land resources.

Such opportunities can be difficult to spot. Post-conflict situations may create opportunities for women in particular to claim stronger rights, either where they have played a major role in peacemaking and rebuilding (as in Rwanda and Liberia) or because high widowhood rates make it more critical to provide women with control of resources. In Zambia, women widowed by AIDS have worked together to build a case for retaining land tenure. In the traditional system, the family of the deceased husband would typically gain control of the land, as well as responsibility for upkeep of the widow and her children. But using the prospect that they *might* also have AIDS as a deterrent for local chiefs wary of assuming this responsibility, these widows have negotiated to gain ownership of the land and property in a way that is significantly more empowered than wives of husbands who are still alive (Frank and Unruh 2008). For development practitioners and civil society leaders working with communities in the midst of conflict, identifying such openings for negotiation within traditional decision-making forums can be just as important as efforts to create new forums, which may struggle to attain social legitimacy.

7. Conclusion

We have referred to the synthesis of lessons presented in this paper as emerging principles rather than a detailed set of policy recommendations. This reflects the relatively undeveloped state of research linking resource conflict, collective action, and resilience—even if each of these fields is more mature in its own right. As research in this domain progresses, however, we suspect that there will remain few hard rules. More important, we believe, is a practical awareness and sensitivity to the potential for positive influence on many fronts.

The framework underlying this analysis aims to make more apparent for researchers and practitioners alike the connections across scales, connections among actors, and the dynamics of conflict and cooperation over time. Cross-scale and cross-sectoral linkages emerge by considering in turn the social, ecological, and governance context, the role of collective action institutions, and the more immediate action arena. We have also

emphasized the distinct and complementary roles of a range of actors, from local communities and private firms to national governments, international development agencies, regional organizations, domestic and international civil society networks. Lastly we've called attention to the dynamics of conflict and cooperation over time by probing the variable outcomes of stakeholder interactions and feedback loops that contribute to shifts in the context and in the character of collective action institutions that in turn affect how actors address future instances of resource competition.

This latter point brings us to a major gap in current research, and an important priority for the future: evaluating the outcomes of conflict and cooperation. Progress on this front requires several advances. It means confronting important ethical considerations, for example, to what extent is violent mobilization effective or justifiable as a route to social justice, especially when legitimate avenues of dialogue and conflict resolution have been removed? It requires attention to differential outcomes by gender, including the demographic balance and power balance after violent conflict, as well as the way certain patterns of conflict management may lead to more gender equitable societies. It requires weighing trade-offs between short-term and longer-term benefits, for example, the choice to compromise environmental protection by low-level poaching or intensive fishing to meet basic food security until more 'normal' conditions return. And it requires assessing the relationship between adaptive capacity, livelihood vulnerability, and conflict risk. Developing tools to monitor and evaluate the outcomes of conflict and cooperation and applying them consistently across a range of cases is essential to advance our collective understanding of what specific strategies work under what circumstances to nurture the potential of collective action in social-ecological resilience.

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