ADDRESSING CONFLICT THROUGH COLLECTIVE ACTION IN NATURAL RESOURCE MANAGEMENT

A Synthesis of Experience

Blake D. Ratner, WorldFish and International Food Policy Research Institute

Ruth Meinzen-Dick, International Food Policy Research Institute

Jon Hellin, International Maize and Wheat Research Institute (CIMMYT)

Everisto Mapedza, International Water Management Institute

Jon Unruh, McGill University

Wouter Veening, Institute for Environmental Security

Eric Haglund, International Food Policy Research Institute

Candace May, Colorado State University

Carl Bruch, Environmental Law Institute

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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 whether and 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 present several propositions about the dynamics of conflict and collective action in natural resource management, and a series of recommendations for action. These propositions are: that collective action in natural resources management is influenced by the social-ecological and governance context, that natural resource management institutions affect the incentives for conflict or cooperation, and that 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.

ACKNOWLEDGMENTS

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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 facilitate the work of postconflict reconciliation and rebuilding (UNEP 2009; Bruch et al. 2013).

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 and mitigate conflict. Focusing on this latter theme, this review synthesizes empirical evidence from cases in Africa, Asia, and Latin America, drawing on published literature as well as cases presented at an international workshop addressing this topic.[2] In particular, we aim to draw lessons for practice by showing how understanding the factors that influence collective action can yield insights about policies and strategies to promote cooperative and equitable outcomes. To do this, we build on an analytical framework (Ratner et al. 2013) designed to enable such comparative analysis.

Drawing on recent research, we present three propositions about the dynamics of conflict and collective action in natural resource management, followed by recommendations for action. These propositions focus on renewable resources essential to rural livelihoods in a range of agricultural production systems and address how the scope for collective action in natural resource 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

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[1] Corresponding Author: (b.ratner@cgiar.org)

[2] The International Workshop on Collective Action, Property Rights, and Conflict in Natural Resources Management was held in Siem Reap, Cambodia from June 30 to July 1, 2010.

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 and refine in different contexts.

Our main argument is that interventions can shift the incentives towards cooperative and equitable management of resource competition and reduce the likelihood of an escalation of social conflict and violence. Our key objective is to underpin this argument with evidence and theoretical reasoning and to suggest the major areas where such interventions may be effectively made. We pursue this objective by analyzing recent experiences and cases within an analytical framework designed to assess the role of collective action in natural resource conflict and cooperation (Ratner et al. 2013).

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 factors that affect the incentives for cooperative and equitable management of resource competition and which can be addressed to reduce the likelihood of broader social conflict and violence or its escalation (section 2). Next we survey four drivers—climate change, market integration, governance reforms, and civil society engagement—that are increasingly important in determining trends in resource conflict and prospects for collective action (section 3). The subsequent sections outline recommendations for action by national and local governments, international and domestic civil society organizations, 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 disputes are played out. Section 7 concludes by highlighting needs for further research, 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

In this section we provide an overview of the role of collective action in conflict and cooperation over natural resources, summarized in three propositions and a framework that helps to explore these. As the framework is introduced and explained in more detail elsewhere (Ratner et al. 2013), our focus here is on the implications for action. In other words, how does such a framework help in identifying factors that affect the incentives for cooperation in natural resource management? And how does it help elucidate pathways for engagement by diverse social actors to reduce the likelihood that resource competition contributes to broader social conflict and violence?

First, some definitions are in order. Collective action comprises concerted group effort to achieve a shared goal. This can be done directly by group members or on their behalf by an organization (Marshall 1998).[3] Collective action is pervasive

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[3] Collective action is often considered to fall in a normative-voluntary "third sector," distinct from

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 and refine in different contexts.

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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. Van Laerhoven and Andersson (2013) counter intuitively document how better-performing collective action institutions may actually be characterized by higher levels of intragroup conflict. Collective action institutions can themselves be highly inegalitarian; 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.

We use the term "conflict" to cover 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. Interstate conflict or war, by contrast, is not the focus of our analysis. Nor do we focus on the kind of dispute and acrimony that often happens *within* groups in our definition of conflict, as we consider it part of the normal, even salutary, functioning of collective action institutions (Van Laerhoven and Andersson 2013). 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; De Jong, Donovan, and Abe 2007; Giordano, Giordano, and Wolf 2005; Le Billon 2001, 2005; Lujala 2010; Ross 2004; Rustad et al. 2008; Welsch 2008). While acknowledging that subnational conflict and instability can contribute to interstate conflict, particularly in border zones or where transboundary 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. By referring to dynamics we accentuate the temporal dimension, recognizing that over time peaceful situations can become conflictive, conflicts can be resolved and transformed into more cooperative forms of interaction, and postconflict environments can return to being "hot" ones.

"Resilience" refers to the capacity of a social-ecological system to absorb disturbances and reorganize while undergoing change to retain essentially the same function, structure, identity, and feedbacks (Walker et al. 2004). In our terms, this means sustaining the productivity of the resource systems at hand and the livelihood benefits these generate, but also the adaptive capacity of social institutions to manage or cope with change in ways that do not lead to social breakdown and violence.

While a good deal of research is available to explore the links between collective action, conflict, and resilience in the domain of developing country natural resource management, it is not often articulated in these terms. By way of introduction to this field, we offer the following three propositions:

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coordinated wage labor (part of the private sector) or coerced action such as corvée labor (public sector, where coercion falls under realm of the state). However, as Oakerson (1992) notes, not all collective action is strictly voluntary—groups vary in the extent to which they can make a collective decision binding on all, thereby requiring people to participate.

1. *Collective action is necessary for many types of natural resource management.* As illustrated in Figure 1, investments and resource management activities that take place at the farm level (like sowing 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 cost 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, Motimore and Gichuki 1994).

Figure 1. Framework for recognizing importance of collective action in natural resource management (Meinzen-Dick, Markelova, and Moore 2010)
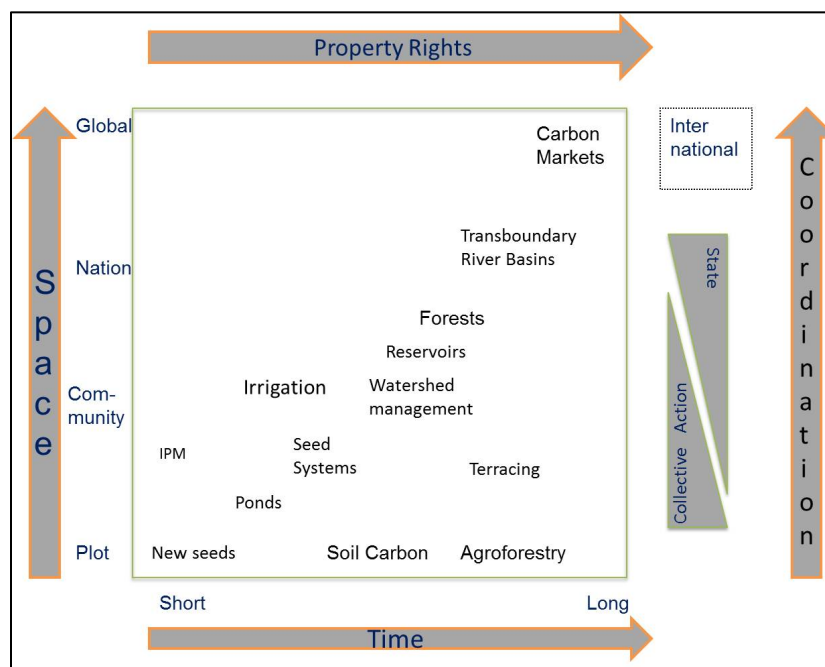

2. *The character of existing natural resource management institutions affects the scope for collective action and conflict management.* Figure 1 also illustrates that resource management with a long time horizon is unlikely to be successful unless those who are expected to invest also have appropriate secure property rights that give them authorization to manage the resource and assurance that if they work together to manage the resource they will also reap the rewards. Thus, many successful

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examples of natural resource management also have some form of common property, and these institutions help reinforce collective action. 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 conflict resolution through the judicial system may be necessary.

3. *Understanding the factors that influence collective action is key for any purposive effort to promote cooperative natural resource management, conflict transformation, and resilience.* 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) have also shaped such institutions and may 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. The existence of an organization does not necessarily mean that collective action will occur, since it may not be able to motivate people to work together. Violent conflict may undermine natural resources management institutions and other valuable forms of collective action (Lautze and Raven-Roberts 2006; Korf and Funfgeld 2006; Weingart and Kirk 2008). An increasing body of research nevertheless demonstrates the potential for natural resource management to contribute to postconflict peacebuilding (Bruch et al 2013; Bruch, Muffett, and Nichols 2013; Young and Goldman 2013).

Building on these propositions, the primary focus of this paper is to understand how interventions that promote collective action can help shift the incentives towards cooperative and equitable management of resource competition, reducing the likelihood of broader social conflict and violence, and strengthening the foundations for social-ecological resilience. To aid in this task, we apply an analytical framework designed to assess the role of collective action in natural resource conflict and cooperation (Ratner et al. 2013). 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 organizations such as water user groups, community forestry organizations, and farmer cooperatives provide rules and norms to guide behavior of their members regarding resource access, use, and benefits. To the extent that other actors respect these institutions, they may direct and constrain their actions accordingly.

Figure 2. Conceptual framework on resource conflict, collective action, and social-ecological resilience
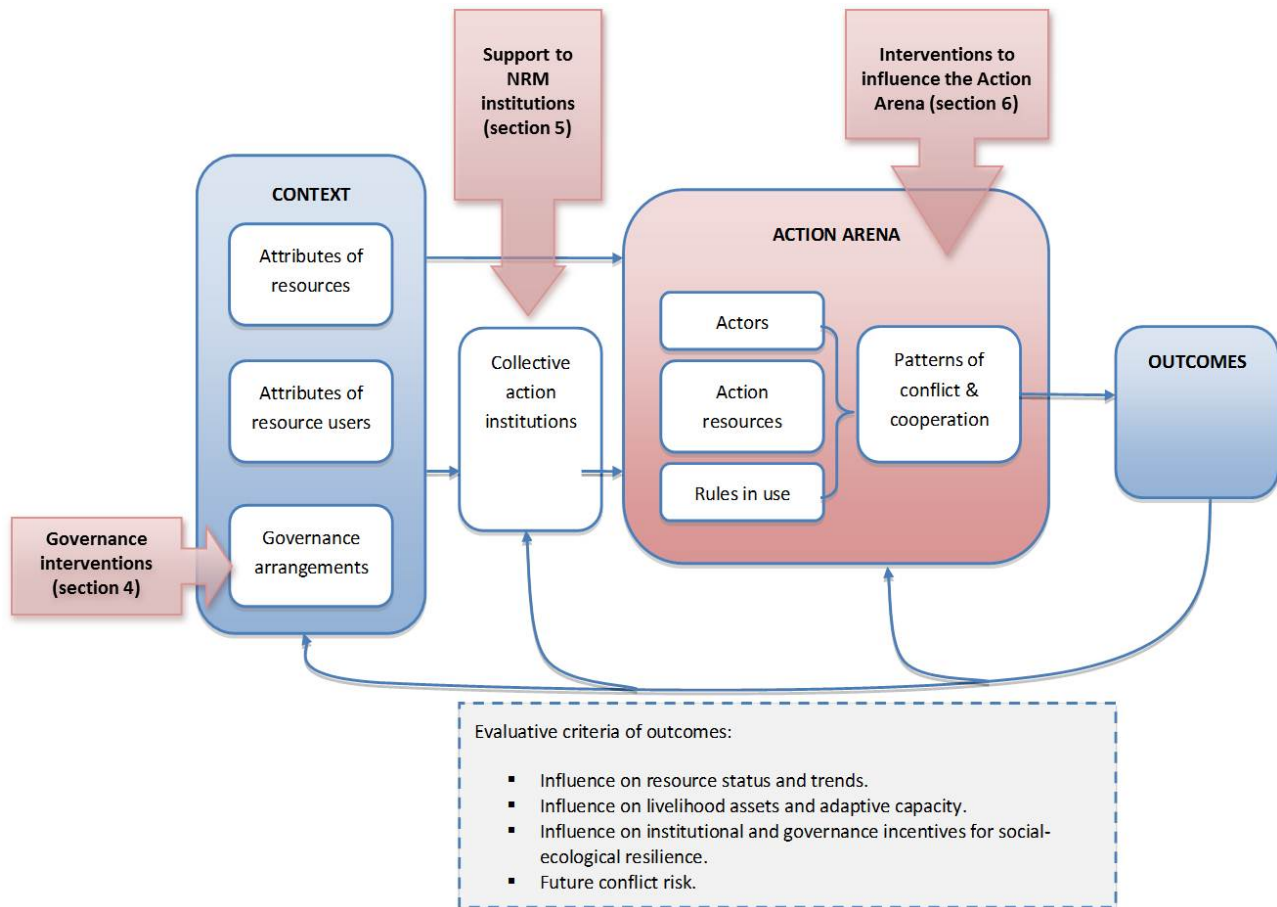
Source: Adapted from Ostrom (2005) and Di Gregorio et al. (2008)

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 transboundary 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. 2013 for a more thorough explanation of the framework).

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. In subsequent sections of the paper, we explore each of these three windows in turn, and elaborate corresponding action recommendations:

- Governance and policy interventions that promote collective action in natural resource management (section 4).
- Support to natural resource management institutions to increase their capacity for collective action to respond to resource competition (section 5).
- Measures to affect the action arena to (i) shift incentives in favor of cooperative and equitable resolution of resource conflict and (ii) to enhance conflict resolution processes (section 6).

3. CONTEXTUAL FACTORS THAT INFLUENCE NATURAL RESOURCE COMPETITION AND OPPORTUNITIES FOR COLLECTIVE ACTION

Before turning to these windows for intervention, however, it is useful to consider how assessing trends in the biophysical, human, and institutional context can help anticipate patterns of resource competition as well as the corresponding needs for collective action addressing natural resource conflict. A number of trends including population growth, evolving patterns of consumption, ecosystem change, and technological innovation influence natural resource competition. The trends we outline below are intended as an illustrative list, by no means comprehensive, that show the types of factors which can be considered in examining shifts in the context, as identified in section 2. Drawing on a range of cases, we assess the role of three trends that have broad relevance for agroecosystems 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 and other reforms that affect local capacities to secure resource tenure and manage competition, combined with the growing importance of civil society organizations and networks at national and international levels.

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 value chains, and market processed and branded products to mainly urban consumers. With modernizing agrifood 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 (Robertson and Pinstrup-Anderson 2010).

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 (Anseeuw et al. 2012; White et al. 2012). "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 may also bring opportunities for smallholder producers to improve local livelihoods. Although the financial and knowledge resources required often preclude individual smallholder farmers from tapping into high value markets (Pingali, Khwaja, and Meijer 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, Lundy, and Meijer 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 chains 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

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. 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). Research has linked an increased risk of conflict both to the direct effects of climate change on livelihoods in ecologically marginal environments (Barnett and Adger 2007), as well as the indirect effects on state capacity in response to stresses on food production

systems, increased resource competition, and migration, among other factors (Nordås and Gleditsch 2007; Fraser 2008; Dalby 2010).

Collective action is required 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, contributing to stresses on food production and food security (Lobell et al. 2008; Brown and Funk 2008) and potentially increasing competition over access to renewable resources (Hendrix and Glaser 2007). Many countries with lower water availability today also have high rates of population growth and, hence, water availability may decline especially for those 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 may 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 2011).

Research on the complex relationships among climate change, environmental vulnerability, human security, and social stability is also recognizing that social, policy, and institutional dimensions of climate change mitigation and adaptation pose additional risks and opportunities (Scheffran et al. 2012). 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, Arcenas, and Platais 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 and civil society advocacy

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 2013). 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 authorities 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 that 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 rules that govern resource allocation and use, there is greater scope for adapting these to local conditions, therefore minimizing local 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 postcolonial 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 (Banana et al. 2007).

In parallel with—and often contributing to—the push for democratic decentralization is a rapid expansion of civil society networks. This is opening new lines of support to collective action at the local level and enabling cross-scale linkages in parallel to official government channels. Growth of the NGO sector can be especially marked in postconflict countries benefiting from a surge in international aid for reconstruction, as seen for example in East Timor (Patrick 2001) and Cambodia (ADB 2005).

In some 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 assisted indigenous communities represent their interests before the Federal Supreme Court of Brazil in advocating for land rights, demarcation and mapping of their territories, and defending against land grabs inside the demarcated areas.[4] Similarly in Cambodia, environment, rural

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[4] See the December 10, 2008, and March 19, 2009, rulings of the Court, upholding the rights of the communities to a continuous territory and ordering the eviction of rice farmers who had encroached on these lands, at http://www.stf.jus.br/arquivo.

development, and human rights NGOs have converged in defense of local rights to agricultural and forest lands (Ratner and Parnell 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). Nevertheless, civil society organizations can also suffer from poor downward accountability (Scholte 2004), and may be discriminatory in the promotion of the rights or interests of particular social groups at the expense of other disadvantaged groups. Analysis of the trends in decentralization and civil society development, therefore, needs to consider implications in terms of opportunities for collective action to address the sources of resource competition, as well as risks in exposing or aggravating other social divides.

4. IMPROVING GOVERNANCE TO PROMOTE COLLECTIVE ACTION THAT REDUCES OR PREVENTS CONFLICT

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 strategies that enable collective action to address the roots of resource conflict. In this section, we synthesize research findings that support recommendations for governance reform, the first of the three strategic entry points we highlight.

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 priorities for policy and legal reforms: (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 in natural resource access and management authority.

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 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 and Al Moumin 2013). National

policies to promote agricultural development have deprived herders of their traditional pastoral land, resulting in local farmer-herder conflicts in Mali and Tanzania (Benjaminsen and Ba 2009; Benjaminsen, Maganga, and Abdallah 2009). In 2005 the government in Rwanda introduced legal reforms and a major campaign to formalize land tenure with the objective of increasing productivity but failed to develop processes that could accommodate the complexity of small, dispersed land holdings and traditional norms for intergenerational transmission of land ownership (Bruce 2009; Pritchard 2010). As research in Nepal has shown, the process of codifying water rights can also stimulate conflicts where customary arrangements had previously functioned relatively harmoniously (Pradhan and Pradhan 2000).

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 2013). The work of the Barza Intercommunautaire (intercommunity 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). In Zambia, collective agreements governing animal grazing and bush fires have been shown to reduce conflict over land rights, including protecting the interests of poorer community members (Ajayi et al. 2012).

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. A 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 93percent lower compared to communities that maintained the group ranches (Grimm and Lesorogol 2011).

Enable collective action among small-scale producers

Governments in many countries have come to recognize that local bodies are often able to manage natural resources more effectively, efficiently, and democratically than central governments, and have accordingly implemented policy reforms to transfer the management authority of such resources to local governments and resource users. Devolution of rights and responsibilities to local-level groups is an important step in establishing a legal framework to foster collective action, but provides no guarantee that successful collective action will in fact emerge. Rather than simply withdrawing from the local arena, governments must continue to play a role by offering policies that support local rules and authority, sanction local organizing, support the property rights of local users, and ensure the enforcement of such rights (Meinzen-Dick, Knox and Di Gregorio 2001).

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 2013). An increasing number of fragile and conflict-affected states, including Liberia, Mozambique, and Cameroon have adopted legislation supporting community forestry (Harwell 2010). States can also foster collective action by investing in capacity strengthening of local communities and ensuring that financial support is provided in a way that stimulates rather than undermines collective action (Bruns and Bruns 2004; Meinzen-Dick, Knox and Di Gregorio 2001).

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. Farmers displaced by large-scale, capital-intensive farms or plantations will struggle to recover from economic losses associated with the acquisition of their land (Robertson and Pinstrup-Anderson 2010) unless there are safeguards in place to prevent this.

Policies that support small-scale producers to tap into organic and fair trade niche markets can provide incentives for collective action to boost local incomes and livelihoods. 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 (Raynolds 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 provide incentives for sustainable resource management through certification and higher prices, and 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 institutions for conflict resolution

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, Kamugisha, and Martin 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 postcolonial 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 statutory 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 nonlocal and foreign actors, customary conflict resolution mechanisms offer distinct advantages as well (Van Koppen et al. 2007; Meinzen-Dick and Pradhan 2002; Pradhan 2005). 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 and Funder (2010) found that people preferred to use locally controlled institutions over externally controlled ones 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 power relations, national policies and 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 and Funder 2010).

- 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 et al. 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 (2008) defines as inequalities between social groups (contrasted with vertical inequality by income strata across a whole society). Such groups may be defined by region, ethnicity, class, or religion, among other factors. 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 not assured simply by the implementation of democratic processes such as elections, and is more difficult to achieve (Stewart 2008). 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 polices. 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. Likewise, reforms in Zimbabwe to devolve authority and benefits from wildlife management aimed in part to respond to conflicts between communities and the state by providing economic opportunities in ecologically marginal areas with very little infrastructure (Murphree 1991; Mapedza 2007).

5. STRENGTHENING COLLECTIVE ACTION INSTITUTIONS FOR NATURAL RESOURCE 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 resource 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

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). Civil war can profoundly disrupt rural livelihoods, as demonstrated in the case of agricultural livelihoods in Darfur (Buchanan-Smith and Jaspars 2007) and fisheries in Sierra Leone (Thorpe et al. 2009).

Investing in natural resource management institutions that enable collective action to sustain local livelihoods can serve both to prevent the escalation of rural resource conflicts (Ratner 2013) as well as to aid recovery in postconflict settings (Bruch et al. 2013). 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 decisionmaking 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

Chapagain 2013).

While conflict may spur collective action on the part of groups at risk, such as farmers and forest residents faced with large-scale agro-industrial or mining investments, particular capacities, legal protections and support from state and external civil society institutions are typically required to help channel such mobilization towards equitable outcomes (Yasmi, Kelley, and Enters 2011). In some cases, traditional resource management or conflict resolution institutions may be effective at the very local level but prove incapable of addressing disputes at broader geographic scales, such as large watersheds whose ecosystem services depend on the actions of upstream forest communities and downstream agricultural or industrial users (Piñon et al. 2012). In such instances, investing in capacity for dialogue and collective action at these broader scales becomes essential. Third parties that provide this kind of capacity support are, however, themselves often understaffed and under-resourced (Gomez and Ravnborg 2011), so investing in such groups with a proven track record can be one of the most cost-effective routes to strengthening local institutions.

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 postconflict 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. Most peace parks established since are located between countries without active violence. In addition

to their symbolic value, a key benefit is the process of collaboration and negotiation among government authorities, scientists and communities in the development of these joint conservation zones. Mediation services to aid in the establishment of a joint wildlife corridor between Tanzania and Mozambique, for example, helped improve cross-border ties, while dialogue to create a conservation zone in the border region of Thailand, Cambodia and Laos helped reduce political tension while improving livelihood opportunities and buttressing regional stability through ecotourism (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 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 decisionmaking, with particular attention to benefit sharing and security (Ali 2007).

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

A range of emerging natural resource management efforts now 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 experienced persistent local-level conflict between Christians, Muslims, and indigenous groups, much of it rooted in historical grievances over resource access and tenure. By purposively including marginalized groups in community-based institutions for joint forest and coastal zone management in the region, a natural resources governance initiative has succeeded in reducing the level of intergroup violence, helping avert a return to civil war (Brady 2013).

Governments can also promote collective action institutions through policy and legislation to give them greater standing. In East Timor, the 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 2013). In the Philippines, while rights defined in the national Water Code sometimes contradict the customary rights protected by the Indigenous Peoples Rights Act, the legal framework nevertheless provides local actors a means to navigate this ambiguity and negotiate informal rights-sharing between competing claimants (Piñon et al. 2012).

By contrast, government policies can also frustrate and impede collective action in natural resource management, even if aimed at improving 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-based resources virtually impossible (Pritchard 2010). In northern 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 managed under traditional tenure 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 shape actors' narratives of conflict 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.

Shape 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) (Malkki 1995). Collective narratives have a particular salience in the context of natural resource conflict, as rural group identities are often intricately interwoven with the resources on which a group depends for its livelihoods (Derman, Odgaard, and Sjaastad 2007; Green 2010). 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 long described 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, 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 counter-narratives highlighting historical cooperation and mutual dependence have also helped to mute conflicts (Suliman 1999). International actions can powerfully influence the local dynamics of resource conflict. The International Criminal Court indictment of President Bashir of Sudan, for example, motivated local Arab and nomadic secondary occupants to negotiate land disputes

with sedentary agriculturalists displaced by the war, anticipating the potential repercussions or 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 labor, prompting questioning of the chiefs actions and new expectations for accountability towards their constituencies (Unruh 2008).

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. 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.[5] 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

Reflecting power relations in society, many institutions involved in natural resource allocation and management exclude marginalized groups from decisionmaking based on ethnicity, caste or social class, gender and so on. Even where there are no formal barriers to participation, many people may be excluded by distance, illiteracy, or lack of information about how to participate effectively. At the same time, stakeholders are typically faced with multiple channels for presenting their grievances or managing conflict (Sanginga, Kamugisha, and Martin 2007; Nkonya and Markelova 2009). These include both statutory bodies such as local government or sector-specific agencies, customary institutions, and informal networks among neighbors, kin, or friends.

While such institutional 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 multicountry study of local 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 sequencing in the type of third party called upon to address water-related problems, starting with the closest and then moving gradually—if need be—further away from the community.

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[5] See, for example, the convenio between UNDP/Colombia and the association of traditional chiefs of the Matavén area in Colombia, ACATISEMA, at www.guianashield.org.

When external agencies were called in, they tended to be those 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 restrains their choice of alternate courses of action. To begin with, people cannot appeal to institutions 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 agents identify existing forums that people may resort to in disputes (Pradhan 2005). Where marginalized groups gain access to decisionmaking 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 have strengthened their decisionmaking 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 know their rights and to speak in public (Sharma and Sudarshan 2010).

Promote dialogue and negotiation to resolve resource conflicts

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 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 an unassuming veterinary

project the necessary space for negotiation about mitigating conflict and cooperating in land resources. This is because it provided a neutral, nonpolitical forum in which the different parties were able to engage each other, together with the prospect of the departure of the veterinary vaccination service if instability continued (Muhereza 2001; Waithaka 2001).

For development practitioners and civil society leaders working with communities in conflict-sensitive environments, identifying such openings to assist dialogue and negotiation within existing decisionmaking forums is key. In Zambia, for example, women widowed by AIDS have worked in concert with an opening created by statutory law and the chiefs to build a case for retaining land ownership—challenging customary law as practiced by the relatives of the deceased male head of household (Frank and Unruh 2008). Postconflict situations may create opportunities for women 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 (Hunt and Posa 2001; Powley 2003). Where scientists have information on resource status, uses, and the implications of different management options, making this available in a form that can aid dialogue and negotiation among local stakeholders is essential, as opposed to advocating fixed solutions (Giller et al. 2008).

7. CONCLUSION

What role can collective action play in transforming competition over renewable natural resources to strengthen social-ecological resilience and mitigate or prevent conflict? And what opportunities exist to promote such positive outcomes? In this review we have surveyed empirical evidence from cases in Africa, Asia, and Latin America that help to answer these questions, structuring our discussion around an analytical framework (Ratner et al. 2013) designed to enable such comparative analysis.

We have framed our argument as a set of research propositions and emerging action recommendations rather than policy prescriptions. This reflects the broad scope of this review, as well as an appreciation for the need to adapt such recommendations in diverse social, institutional, and ecological settings. More important than fixed guidelines, we believe, is a practical awareness and sensitivity to the potential for positive influence on many fronts, and the range of contextual factors and institutional relationships that must be taken into account in making choices about how best to intervene.

The options for engaging on these issues differ by actors, from local communities and private firms to national governments, international development agencies, regional organizations, domestic and international civil society networks. By distinguishing among three levels of intervention—from policies, to collective action institutions, to the more particular 'arenas' for negotiation and dispute resolution—we have tried to highlight opportunities for all of these actors, and at different stages of conflict intensity.

As a synthesis review rather than a program of original field research in multiple sites, this study has grappled with a great diversity in the underlying research cited, in terms of the focus of analysis, the level of detail given to conflict

and collective action, and research methodology. By organizing this significant body of research through the lens of a single analytical framework, we have aimed to provide a structured basis for comparison and accumulating knowledge, one which we hope will also serve for future, more focused analyses in specific resource systems and subregions, or for specific areas of intervention.

Advancing this domain of research and practice, however, requires more than a shared framework for comparison. Much more emphasis needs to be placed on evaluation efforts. This means probing the linkages between discrete interventions and outcomes including reductions in livelihood vulnerability and conflict risk, as well as increases in adaptive capacity and social-ecological resilience. Comparing these outcomes across a range of cases with different governance characteristics is essential to build our shared understanding of what specific strategies work under what circumstances, which can in turn strengthen the rationale for policies and practices that view natural resource management as an essential investment in conflict prevention.

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