Multi-level Participation for Building Adaptive Capacity: Formal Agency-Community Interactions in Northern Kenya

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Abstract

Multi-level, networked participation is a vital component in building social-ecological resilience and the capacity to adapt to environmental change. This paper outlines the ways in which multi-level participation contributes to adaptive capacity and, in so doing, takes a step toward articulating a theory of participation based on resilience thinking. We use a case study of Gabra pastoralist communities of northern Kenya to illustrate how multi-level participation may lead to increasing adaptive capacity, above and beyond existing pastoralist adaptations. The findings suggest that adaptive capacity is systemic—that is to say, it is a property of the social-ecological system, including especially the network of institutional linkages that characterizes that system, as much as it is a property of particular actors within the system. We argue that there are three key elements of meaningful multi-level participation: an institutional environment in which the various levels of institutions are linked, inclusivity in decision-making at these various levels, and deliberation. These three features can work together to create meaningful multi-level participation to facilitate the co-production of knowledge and to build adaptive capacity.

Keywords: adaptive capacity; governance; institutional linkages; institutions; participation; pastoralists; resilience

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1. Introduction

In a world of rapid transformations—transformations that include global climate change, political upheavals, changing demographics, and globalization—building the capacity of social-ecological systems to adapt to change will be a prerequisite for sustainability (Gunderson and Holling, 2002; Raskin et al., 2002). Of central importance to this capacity are the systems of collective decision-making by which human societies govern themselves. It is not enough for these governance systems to be in tune with the dynamics of the social-ecological systems being managed; they must also have capacity to deal with surprises (Folke et al., 2005). The urgency of building adaptive capacity is particularly acute for developing countries (Engle and Lemos, 2010), and some major initiatives are beginning to address this need (Biermann et al., 2009). This paper contributes to developing a theory of participation based on resilience thinking to explore how to structure processes of participation in a way that increases adaptive capacity.

A particularly instructive setting in which to consider adaptive capacity is pastoralist communities. Much of the literature on pastoralists extols their flexibility, coping capacity, and ability to adapt to stresses and shocks (e.g., Behnke et al., 1993; Scoones, 1995), and rightly so. Over many generations, pastoralist societies have developed adaptations that can confer resilience and play a crucial role in the ability to deal with environmental variation (Niamir-Fuller, 1998). These adaptations include a variety of mechanisms and practices, such as management of reserve pastures and other key resource sites, reciprocity among herders, and diversity of movement patterns

including different forms of seasonal migration of herds (macro-mobility) and rotation of grazing areas (micro-mobility) (Niamir-Fuller, 1998).

In the same vein, our own research among Gabra pastoralists of Kenya has detailed ways in which traditional institutions for governing commons are adapted to the unique biophysical realities of their environment (Robinson, 2009a), and has described their social-ecological system in terms of components, relationships, sources of innovation and sources of continuity that characterize the system and its resilience (Robinson and Berkes, 2010). For the Gabra, a variety of forms of collective action and mutual help constitute an important set of adaptations to the particular social and ecological exigencies they face: collective action to dig wells; traditional stock sharing and restocking mechanisms; collective enforcement of rules relating to use of pastures, sacred sites, water points, and vegetation near water points; organizing security against livestock theft and so on (Robinson and Berkes, 2010).

However, having adaptations is not the same as having adaptive capacity. A species or an ecosystem or a social-ecological system may be highly adapted to a particular environment and a specific range of changes within that environment, and yet have little capacity to adapt to new kinds of changes, shocks and stresses, or surprises (Folke et al., 2005; Armitage and Plummer, 2010). Adaptive capacity is broadly defined as the ability of a social-ecological system (or the components of that system) to be robust to disturbance and capable of responding to change (Armitage and Plummer, 2010). Resilience as a related concept refers to the capacity of a social-ecological system to tolerate disturbance without shifting into a qualitatively different state that is controlled by a different set of processes (Gunderson and Holling 2002; Walker et al. 2004;

Resilience Alliance 2011). One way to conceive of the relationship between resilience and adaptive capacity is to understand adaptive capacity as that component of resilience that reflects the learning aspect of system behavior (Carpenter et al., 2001).

Management in the context of complex social-ecological systems requires knowledge in order to monitor resource availability, make decisions about allocation, and respond to feedback from the system at multiple levels (Berkes et al., 2003). Because of the complexity of these systems, no one organization or group is likely to have the full range of knowledge needed; this requires the development of partnerships and cooperation among those groups (Berkes, 2009). Not surprisingly, therefore, the relationship between adaptive capacity and social learning has become the focus of many recent efforts, and social learning has emerged as a policy issue for adaptation to environmental change (Pahl-Wostl, 2009; Cundill, 2010; Lebel et al., 2010).

The core of social learning models is a process of collective and communicative learning that may lead to a number of social outcomes, new skills and knowledge (Muro and Jeffrey, 2008). Where adaptation is needed to a new kind of environmental change, no one group or agency is likely to have all the necessary information and hence there may be a need for the co-production of knowledge, defined as 'the collaborative process of bringing a plurality of knowledge sources and types together to address a defined problem and build an integrated or systems-oriented understanding of that problem' (Armitage et al., 2011, 996). Social learning, co-production of knowledge, and deliberation have been identified as vital aspects of adaptive co-management, with non-governmental organizations (NGOs) often playing important roles as bridging organizations in such processes (Berkes, 2009). Nevertheless, there remains a need to

better understand the mechanisms that link learning and knowledge production with adaptation outcomes (Pahl-Wostl, 2009).

Learning through multi-level networks is an idea that has received attention with regard to resilience (Folke et al., 2005; Galaz et al., 2010), adaptive co-management (Armitage et al., 2007; Cundhill, 2010), conservation and development (Berkes, 2007; Seixas and Berkes, 2010), and regional and global environmental governance (Biermann and Pattberg, 2008; Brondozio et al., 2009; Pahl-Wostl, 2009). Here we follow the terminology of Cash et al. (2006) that scale can be defined as the spatial, temporal, quantitative, or analytical dimensions used to measure and study any phenomenon, and level as the unit of analysis that is located at different positions on a scale. There is increasing consensus that no single spatial or temporal level of analysis is appropriate for governing social-ecological systems, and that the multi-level nature of such problems needs to be recognized (Brondozio et al., 2009). Interplay and linkages among organizations and institutions, both vertically across levels and horizontally within the same level, have been identified as critical factors in resilient social-ecological systems (Gunderson et al., 2006) and environmental governance systems (Cash et al., 2006; Lebel et al., 2006; Gehring and Oberthür, 2008). In this paper, we use the term institutional linkages to refer to connections between and among both organizations and institutions. The emergence of new types of agency and of actors necessitates a multi-level approach, consistent with the emergence of new mechanisms and institutions of environmental governance (Biermann and Pattberg, 2008).

Governance is about who decides and how, and questions of participation and inclusivity are therefore important. Participation in the context of multiple levels of

governance is of major interest in the field of international development. Mainstream, populist participatory development has been criticized for being overly focused on the local and on community (Mohan and Stokke, 2000; Hickey and Mohan, 2004; Williams, 2004). It has been suggested that community-based approached to climate change adaptation often have the same shortcomings, paying too little attention to questions of politics and power, and being overly focused on the local (Dodman and Mitlin, 2011).

Mainstream approaches to participation often link participation to the building of community capacity. Participatory approaches in this mode, when they go beyond instrumentalism, aim at enabling people, and especially enabling communities, to have greater control over their lives and resources. It is this way of thinking that typically lies behind what some have called "institutional models of participation" (Cleaver, 1999; Robinson et al., 2010). Agencies adopting this approach will typically try to ensure that the relevant local organization or organizations are at least minimally inclusive of the groups within the community. Participation, in other words, is measured by participation in committees and other organizations (Cleaver, 1999; Cleaver, 2005). This community focus usually includes an emphasis on physical boundaries, which reflects the need for clear administrative arrangements and often has more to do with the delivery of material benefits than with any real social arrangements on the ground (Cleaver, 1999; Cleaver, 2001). As an alternative, it has been suggested that the notion of participation should be reframed as the practice of citizenship at multiple levels (Hickey and Mohan, 2004; Williams, 2004).

Research into adaptation has found that meaningful participation is a key component of adaptive capacity (Armitage and Plummer, 2010), and here we argue that

participation or participatory learning is the key to building adaptive capacity. But not any kind of participation. The kind of participation that is crucially important here is captured by the term deliberation, a process in which people "confer, ponder, exchange views, consider evidence, reflect on matters of mutual interest, negotiate, and attempt to persuade each other" (NRC, 1996: 73). While the concepts of deliberation and participation cover some of the same ground, they are clearly distinct. A participatory process may or may not have deliberation processes within it, and may or may not conform to the deliberative ideals of "democratic self-restraint", willingness to listen to reason, and willingness to accept the possibility that through reasoned discussion one's own opinion might be changed (Miller, 1992; Cunningham, 2002; Smith, 2003). Participation without deliberation is more likely to treat knowledge, interests, and identities as given—as inputs to decision-making processes—rather than as phenomena that can sometimes be created or transformed through the exchange of ideas. Deliberation makes participation more conducive to learning.

While researchers have begun to identify and understand the elements that comprise adaptive capacity, it is sometimes difficult to extract practical policy and programmatic implications from the findings. In this paper we examine adaptive capacity in relation to one particular aspect of policy, programming, and project design: how to structure processes of participation in a way that increases adaptive capacity. We aim to show that effective multi-level participation has three key elements: deliberation, inclusivity at multiple levels, and development of a network of institutional arrangements connecting the various levels of governance. When these elements are in place, participation helps to build social-ecological resilience and increase adaptive capacity.

This understanding of multi-level participation is based in part on, and illustrated by, a case study of the Gabra of northern Kenya where, in the face of new challenges of environmental change, innovations are increasing adaptive capacity above and beyond existing pastoralist adaptations. The Gabra case is appropriate for the study of multi-level processes, as the capacity-building and other roles played by NGOs with the Gabra, and the nature of linkages and processes at various levels, have already been documented in the context of United Nations Development Program (UNDP) Equator Initiative cases (Berkes, 2007; Seixas and Berkes, 2010). In examining how resilience is built in the Gabra case, we also endeavor to study the mechanisms by which multi-level participation may lead to increased adaptive capacity, and we take modest steps towards articulating a theory of participation based on resilience thinking.

2. Study Methods and Area

The research focused on a single case study in north-central Kenya. The delineation of that case study had two components: the Kenyan NGO—Pastoralist Integrated Support Programme (PISP)—and the Gabra communities that PISP primarily works with. PISP's focus has been on facilitating community-based water supply and management among pastoralist populations, especially among the Gabra ethnic group, but it has become involved in education and micro-enterprise development as well. PISP's activities include many of the functions that characterize bridging organizations (Berkes 2009): a forum for the interaction of different kinds of knowledge, coordination of tasks that enable co-operation, such as accessing resources, bringing together different actors, building trust, and networking. Based on its successful approach to working with

traditional institutions for the promotion of the pastoralist way of life and of community-based approaches to providing water to pastoralist communities, it was nominated for the UNDP's Equator Prize and became a finalist for that prize in 2004.

The research was conducted in 2007 and 2008 at various places throughout Gabraland, with in-depth research being conducted in three sub-case localities, each of which included a permanent settlement, various nomadic camps around, and the camp of one of the traditional Yaa councils representing one of the Gabra's phratries. (The Gabra have five phratries each made up of between nine and nineteen clans.) The three settlements were Balesa, Kalacha, and Hurri Hills. Interviews and meetings with elders were also conducted in the small settlement of Forole where PISP has been active.

At the community-level, 114 semi-structured interviews were conducted with respondents throughout Gabraland. Sixty-two interviews were conducted with personnel of formal sector agencies (NGOs, government agencies, and others), including seventeen formal interviews with PISP personnel. The research also included participant observation with Gabra pastoralists, and observation of/participation in PISP activities. More details on the methods are described in Robinson (2009b).

The region where the Gabra live is extremely dry and has no permanent rivers. Throughout most of the area, precipitation is under 300 mm per year and is highly variable across time and space. In the past two decades, many Gabra have established homes in permanent settlements, but a significant percentage are still nomadic, and livestock is still the foundation of the Gabra economy. Movement of herds and households is a key part of survival in this arid region, and institutions such as those governing the use of shallow wells reflect the need for flexibility and access by a mobile

population (Robinson, 2009a). As with many pastoralists, livestock are divided into various types of herds, including a dry foora herd and a milk herd from which a household gets its daily needs, with distinct rules and practices applying to each. Even those households which have established a permanent residence still rely primarily on livestock for their survival, and send some household members and their livestock long distances in search of water and pasture. It is also important to note that within the past fifteen years or so, NGOs such as PISP and humanitarian relief agencies have become more prominent in the area, and more conspicuous in the lives of its people.

3. Development of New Adaptations—Gabra Communities

The findings are organized into four sections. First, we examine the evidence for the development of new adaptations from within Gabra society. Second, we focus on adaptations that are initiated and/or facilitated by NGOs. Third, we analyze the institutional linkages and networks that help NGOs bring forth such adaptations. Finally, we focus on participation approaches that provide a key mechanism for social learning and adaptive capacity development.

While the traditional institutions and practices of the Gabra include many important adaptations to their environment, our research suggests that there are very few examples of collective action by Gabra communities that go beyond the level of maintaining the existing system. One approach that we took to exploring adaptations and adaptive capacity was to look at responses to growing environmental problems. For example, a critical problem is overgrazing and the loss of trees in the vicinity of settlements. Thus far, the responses to these problems have been relatively modest.

Communities are developing new rules and strengthening existing rules related to the cutting of trees and requiring foora herds to be taken far from settlements and from key water sources.

Another approach was to consider adaptations in relation to the components, relationships, sources of innovation, and sources of continuity that together describe the identity of that system and make it what it is (Robinson and Berkes, 2010). This part of the research involved searching, for example, for conscious, collective efforts to expand the diversity of the livestock species mix, to enhance traditional stock friendships and restocking mechanisms, to influence pasture regeneration processes, to improve groundwater recharge processes, and so on. It also involved searching for efforts at introducing new elements into the system. For this line of inquiry, the question was not simply whether there are social sources of innovation—there are (Robinson and Berkes, 2010); rather, our aim was to also identify ways in which stakeholders are taking deliberate action to influence the system and its resilience, including identifying conscious, collective attempts to introduce innovation.

Such deliberate, collective action on the part of Gabra communities appears to be quite minimal. There is some level of dynamic self-organization in the system: people continue to establish new stock friendships, to dig new wells, and, for those who are able to remain mobile, to adjust their migrations according to where rain has fallen and take their herds to new locations that they personally have not tried before. However, these practices can hardly be considered new; rather, they represent aspects of the standard package of practices that the traditional pastoral system has been built upon. They are adaptations that contribute to the resilience of that system (Robinson and Berkes, 2010),

but they do not represent examples of attempting to change the way the system functions or of enhancing its resilience. One exception, however, can be found in responses to increasing concentration of people and livestock around settlements and reliable water sources. Some permanent settlements are adopting rules for the surrounding territory requiring that during the dry season people only keep the minimum number of livestock needed to satisfy basic milk needs.

Yet another approach taken for investigating endogenous attempts at adaptation involved searching for forms of collective action and of community-led development that are new, that go beyond what Gabra communities have traditionally done. Here again, we found that new forms of collective action or of community-led development seem to be few and tend to be on a relatively small scale. In some of the permanent settlements, community-based organizations—women's groups in particular—have raised some modest funds to construct simple buildings or rainwater harvesting tanks. In a small number of other cases, the community as a whole has organized the building of school classroom blocks or some other structure. But typically, this kind of community-initiated, community-driven development tends to take place on a very small scale and to be confined to permanent settlements.

On the whole, therefore, it seems that endogenous attempts to develop new adaptations in the face of stresses and drivers such as population growth and sedentarization are few and are quite limited. There are pockets of innovation (for example, some of the dynamic women's groups in settlements such as Kalacha that are raising funds for their own activities, running simple micro-credit schemes, and so on), there are examples of community-initiated, community-driven development (for example,

collective action in settlements to construct a school block or some other kind of social infrastructure), and there are some examples of Gabra communities taking action to deal with new stresses (for example, the development of rules requiring foora herds to move far from some settlements and key water sources). Generally, however, in Gabra communities the capacity for developing new adaptations seems to be low.

4. Development of New Adaptations—Formal Sector Agencies

Whereas the capacity to develop new adaptations seems to be low within Gabra communities, some formal sector agencies—NGOs and to a lesser extent some government agencies—are introducing adaptations, and in the process having profound impacts on the social-ecological system. Interventions have included the introduction of new institutions, new practices and new technology. The National Environment Management Authority, together with the German development agency GTZ (Gesellschaft für Technische Zusammenarbeit), has been facilitating the creation of Environmental Management Committees at the Sub-Location level. (Local government in Kenya includes, from largest to smallest, Districts, Divisions, Locations, and Sub-Locations.) Various agencies have been augmenting traditional restocking mechanisms with their own restocking programs. PISP, for example, has been engaged in restocking and in a variety of water-related activities that are having some impact on the way that the social-ecological system functions. In this section, some of PISP's interventions and their impacts are discussed.

PISP's water-related interventions are summarized in Table 1. Among these interventions is institution building, which includes working with local stakeholders to

form water users associations or some other kind of water committee, a fairly common practice for organizations working in the water sector in Kenya. But PISP, more so than some development agencies, also puts a great deal of emphasis on working with and through traditional organizations and institutions (Robinson et al., 2010). However, the greater impact on social-ecological resilience has probably come from the new types of water-related infrastructure and technology that PISP has introduced and from work on water points in pasture locations that are water-scarce and therefore underutilized. We have described elsewhere (Robinson and Berkes, 2010) the key role that water points, institutions governing access to water, and the ability to access pasture and water during

Table 1 Water-related interventions of the Pastoralist Integrated Support Programme

Intervention	Explanation
Institution building	• Forming water users associations, committees, etc. • Working with and through traditional institutions (Robinson et al., 2010)
Emergency interventions	• Water tankering • Maintenance and provision of fuel for boreholes • Can help to reduce livestock losses • Can relieve pressure on degraded pastures
Time-saving technologies	• Improvements to traditional wells • Labor for desilting reduced by more than ⅔.
New types of water points	• Underground rainwater harvesting tanks • Sub-surface dams • Small dams across ravines • Siphon pumps
Strategically located water points	• Emergency water tankering • Water points in new locations • Improvements to seasonal water points • Locations chosen to increase access to underused pastures.

the dry season and droughts play in resilience. PISP, by introducing a number of new types of water-related infrastructure that were previously unknown in Gabra communities, has an impact on all these aspects of resilience. It has also endeavored to ensure that the new technical knowledge becomes embedded in Gabra communities: taking elders on tours to other parts of Kenya to see these technologies firsthand, training local artisans, and ensuring that it is the communities themselves that make decisions regarding siting new structures and targeting beneficiaries.

In the late 1990s, PISP began working with Gabra communities to construct subsurface dams, commonly known as sand dams, across seasonal riverbeds. Wells nearby on the edge of the river benefit from the improved groundwater levels, resulting in improved recharge rates, thereby saving time for those fetching water, and an increase in the length of time that wells remain productive, with wells yielding water for four months or more after the rains, sometimes lasting until the next rains, instead of only for a month or two after the rains. The benefits of the sand dams were extolled by men and women alike:

> We are now able to get water from those wells because of the sand dams. Prior to the sand dams and other things we used to face big, big problems. Animals would not stay around. Vehicles would be sent to North Horr for water. There was a shortage of water. All the livestock would be sent far but the household and the people would stay…. Livestock stay around now for longer. When they stay around we are able to get milk, sometimes we even slaughter. That helps.
>
> - A man, formerly nomadic, who had settled in Balesa approximately ten years earlier

> Especially the sand dams have helped us. Previously, when it rains, the river just flows and the water goes away…. In the past we had a lot of trouble getting water…. Because of the sand dams we are saved so much time! Before, even at night like hyenas, you go and spend the whole night there [at the well], even leaving your children alone for the night.
>
> - A woman resident in Balesa

PISP's activities have been carried out through a large number of distinct projects with funding from various donors, and because many of these projects did not involve rigorous baseline studies or elaborate monitoring and evaluation plans, it is difficult to provide a clear, quantified expression of the impact of these activities. However, the overwhelming positive assessment of PISP that our respondents gave made it clear to us that PISP is having a significant impact. The two main constraints to livestock raising in north-central Kenya are lack of water and lack of good pasture. As many informants told us, "The problem is that a place either has water and no pasture or pasture and no water". All of these water-related activities help in some way to overcome this problem, both improving ongoing livestock productivity and reducing loses during droughts.

More settlements now have water sources that can support the human population through a drought, and for many Gabra households a drought is now less of a stress than it once was. As the new water sources often also provide water for livestock, the improvement in water sources also means that in locations which have reasonable pasture resources mobility is less crucial than it once was. Previously, it was devastating for a household to lose all its camels, especially when this coincided with a drought—without camels, the family cannot move in search of water and pasture. Now, if a household's camels are stolen or die from drought or disease, the household may have to drop out of the mobile economy but at least they may still have the option of settling and keeping sheep and goats because of improved availability of water in places such as Balesa. In this research we encountered several respondents who had settled in or near a town after the 2005-2006 drought but who nevertheless hoped to rebuild their herds of sheep and goats and eventually replace their camels and return to the nomadic life.

The new water sources that PISP is facilitating have helped reduce human suffering during that drought, and generally, people's ability to cope with droughts has been enhanced. The small settlement of Forole, where PISP has been particularly successful, is a good example. In the 2005-2006 drought, which was particularly severe, Forole required almost no emergency water tankering, unlike most other Gabra settlements. In Balesa and other locations, respondents reported that the work that PISP has facilitated at various water points reduced their need during the last drought to trek livestock extraordinary distances moving from water point to water point. Some respondents pointed out that these interventions provide more options for movement of livestock by opening up underused pastures as well as also reducing the imperative to risk one's life and herd by moving into "enemy territory" in search of pasture. Overall, people's ability to cope with droughts has been enhanced simply by making water more available.

Not all of the interventions undertaken by PISP and other formal sector agencies are wholly positive. Emergency interventions in particular may be only delaying problems rather than truly eliminating them, and the impacts of sedentarization deserve careful attention. Rather, what the above discussion is meant to emphasize is that formal sector agencies like PISP are influencing the way that the social-ecological system functions and enhancing some aspects of the resilience of that system. While they are working with local communities in doing so, it is the external agencies that have the capacity and that are the driving force. The next section examines what features allow formal sector agencies to have this impact, in a sense from outside of Gabra

communities—that is to say, what characteristics give them the capacity to develop new adaptations, a capacity that seems to be much weaker within Gabra communities.

5. Institutional Linkages

A key contributor to the capacity of organizations such as PISP is the array of linkages that they have to other institutions. As can be seen from Table 2, PISP has had relationships with numerous donor agencies of various types. At levels of social organization below PISP, stakeholders include a wide array of community-based organizations, traditional institutions, and government agencies. At intermediate levels of social organization, especially district level, the most important stakeholders for PISP are the multistakeholder bodies the District Steering Group (DSG) and the Water and Environmental Sanitation Coordination Group (WESCOORD), as well as the government agencies that coordinate these two groups, the Arid Lands Resource Management Project (ALRMP) and the Water Services Board (WSB) respectively.

For comparison purposes, Figures 1 and 2, respectively, summarize some of the most important institutional linkages for PISP in the region as a whole, and for one of the communities in which it works, Balesa. Selection of organizations, institutions and linkages for inclusion in these diagrams is based on an overall assessment of interviews and observations in the field. The institutions and linkages shown are restricted to those that are most important for activities related to water.

PISP has numerous upward vertical linkages (only three shown in Figure 1), almost all of them being relationships with funders. It has few significant upward linkages with government institutions except through government departments at the

Table 2: Past and present stakeholders that have been most important to PISP and its water-related activities

Organization/Institution	Type of Organization/ Institution	Level of Social Organization				
		Community	Location, Sub-Loc'n, Ward, & Traditional Home Range	District/ Constituency	National	International
Bunting family	Private donor					X
World Alliance of Mobile Indigenous Peoples (WAMIP)	Network					X
UNDP	International/multilateral org.				X	X
DFID	Bilateral donor agency				X	X
SNV	Bilateral donor agency/NGO				X	X
Water Aid	NGO				X	X
CORDAID	NGO				X	X
Caritas	NGO				X	X
Red Cross	International/multilateral org.			X	X	X
ITDG	NGO			X	X	X
Maji na Ufanisi	NGO				X	
Members of Parliament	Government institution			X	X	
Arid Lands Resource Management Project (ALRMP)	Government institution			X	X	
District Steering Group (DSG)	Multi-stakeholder consultative body			X		
Water and Environmental Sanitation Coordination Group	Multi-stakeholder consultative body			X		
Water Services Board (WSB)	Government institution			X		
Constituency Development Fund (CDF)	Government institution/ community-based org.			X		
Korra meetings	Traditional institution	X	X	X		
Yaa Councils	Traditional institution		X			
Chiefs and Assistant Chiefs	Government institution		X			
Councillors	Government institution		X			
SMCs	Community-based org.	X				
Abba elas and abba heregas	Traditional institution	X				
Project implementation cttees	Community-based org.	X				
Water users associations	Community-based org.	X				

X — Level at which organization/institution is/was based

Shaded — Level at which organization/institution is/was actively linked to PISP

Note: The term institution in this table includes corporate institutions, institutionalized processes, and individuals serving in institutionalized roles.

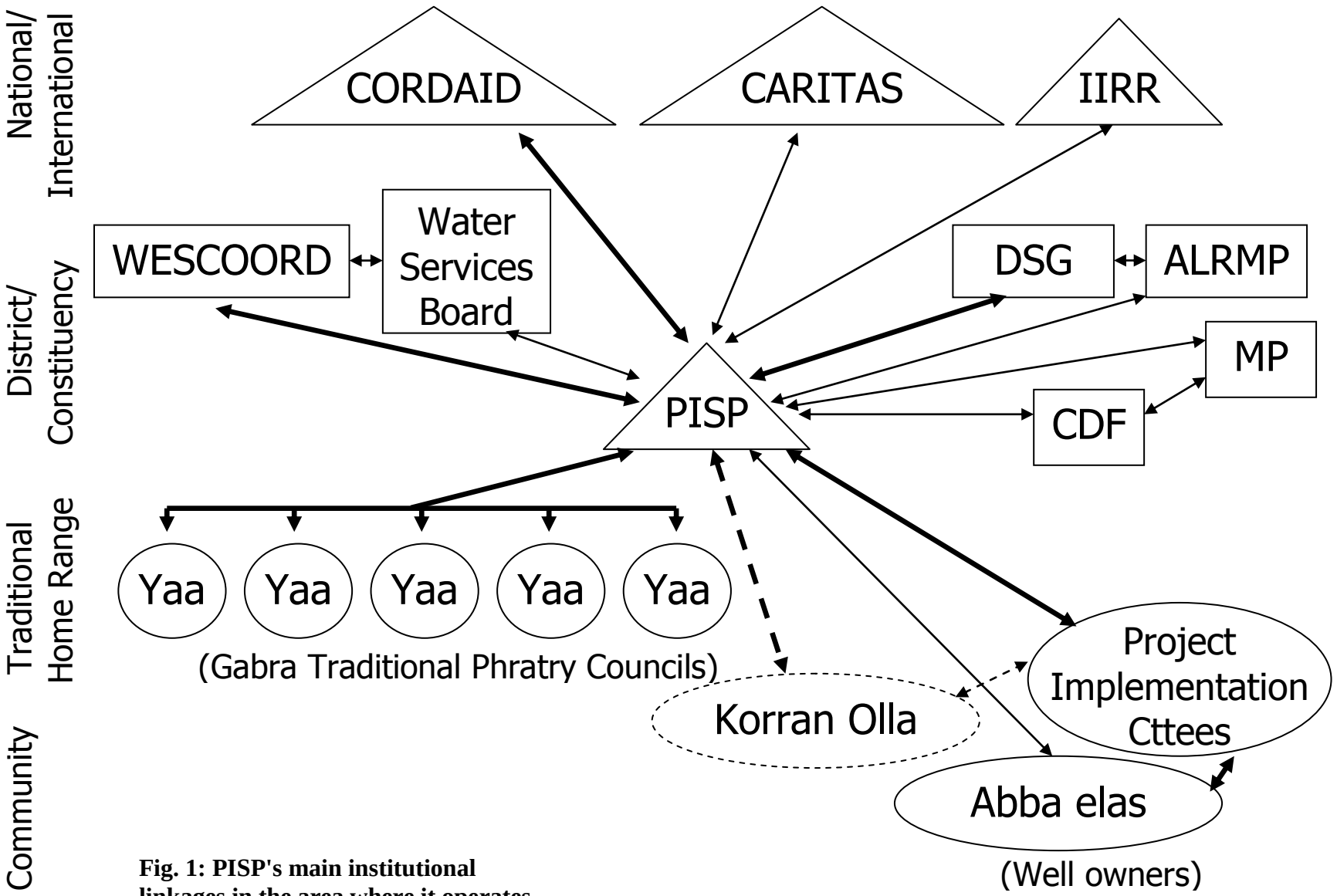


Fig. 1: PISP's main institutional linkages in the area where it operates

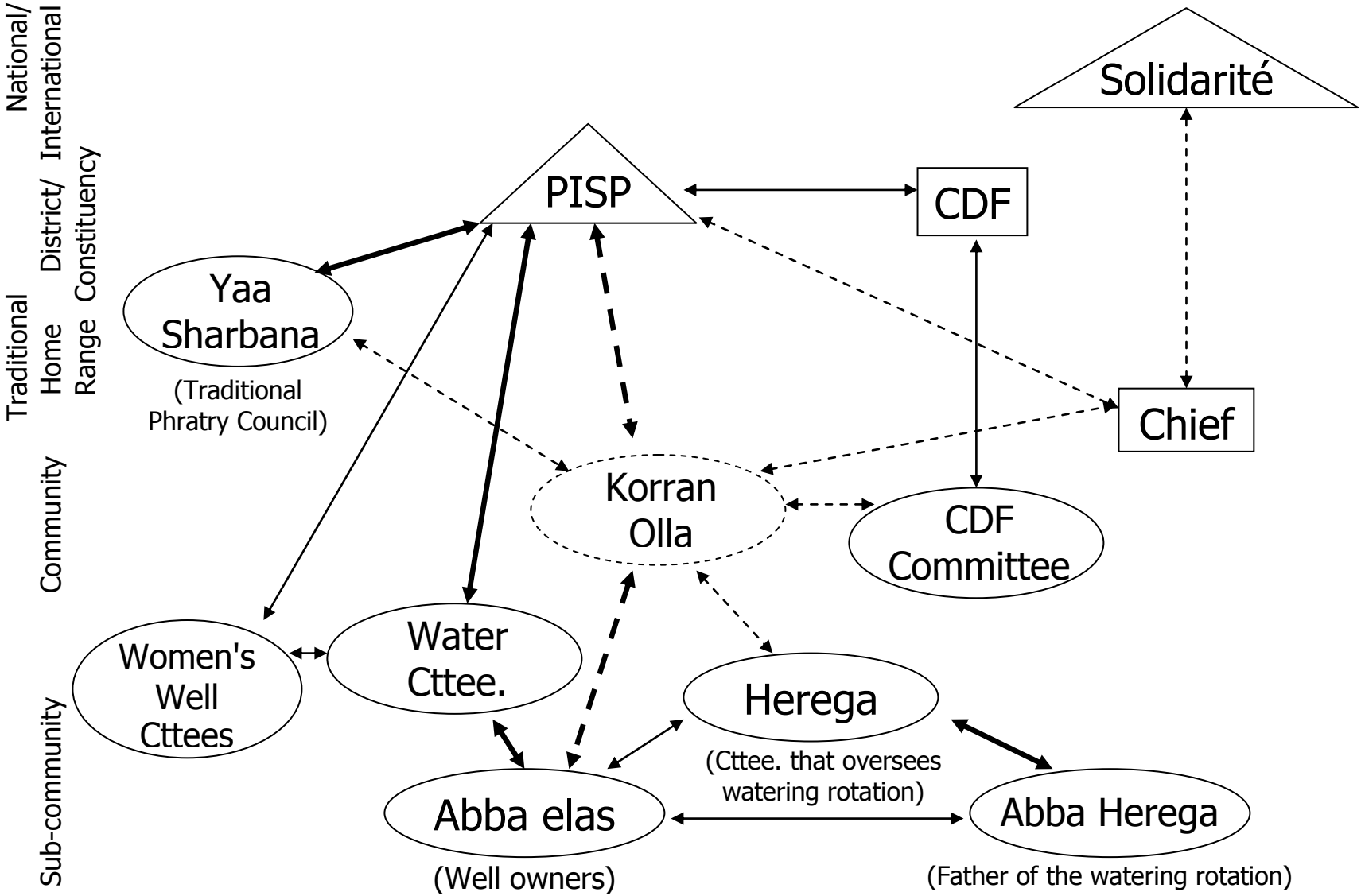


Fig. 2: Linkages of key institutions for the settlement of Balesa

Acronyms Used in Table 2 and Figures 1 and 2

ALRMP	Arid Lands Resource Management Project
CDF	Constituency Development Fund
CORDAID	Catholic Organization for Relief and Development Aid
DSG	District Steering Group
IIRR	International Institute for Rural Reconstruction
ITDG	Intermediate Technology Development Group
MP	Member of Parliament
SMC	School Management Committee
WESCOORD	Water and Environmental Sanitation Coordination Group

district level and through the MP. This reflects the nature of the work of PISP, being focused on local level development—PISP has not tried to seriously involve itself in advocacy, policy issues, or pastoral issues at the national level.

Downward vertical linkages are many, including to government institutions such as chiefs, assistant-chiefs and councilors; to community-based organizations and local committees such as water users associations and project implementation committees overseeing the construction of new water infrastructure; and to traditional institutions such as abba elas (well owners) and as the five Yaa councils for the Gabra's five phratries.

One might expect that traditional and community-level organizations and institutions, being embedded within their own social-ecological systems, would be best placed to develop adaptations for that system. Yet we found few examples of new adaptations being spearheaded by Gabra communities and their organizations. Instead, our research made it clear that the capacity of PISP and some other formal sector agencies to introduce adaptations into the Gabra social-ecological system is much greater than Gabra communities themselves have. A partial explanation lies in differing levels of

key forms of human capital: the levels of literacy and formal education in Gabra communities are very low, as they are in most of rural sub-Saharan Africa, and the skills needed to attract outside funding are also lacking; PISP, on the other hand, has much better access to funds than any community-level actors.

However, while literacy, basic education, and fundraising skills certainly play a role in the capacity of some NGOs and government agencies to introduce adaptations, we found that another key factor is institutional linkages. In comparing Figures 1 and 2, one important point to note is the difference in upward vertical linkages. Gabra communities tend to have few vertical linkages that reach to the district level and beyond. In the case of Balesa (Fig. 2), the only upward linkages reaching as high as district level that the community has are to two NGOs: PISP and Solidarité, and the relationship with Solidarité is relatively insignificant, existing only by virtue of a new project for the construction of pit latrines. Another upward linkage is to Gabra clans (not shown in Fig. 2) and to Yaa Sharbana, but neither the clan institutions nor the Yaa councils have any significant upward institutional linkages except to PISP. Although the community does have other upward linkages, such as through the elected District Assemblyman, most of these linkages are either weak or very narrow in their mandate. PISP, on the other hand, has numerous linkages to higher levels of social organization, both directly (e.g., to funders such as CORDAID) and indirectly (through district level government agencies such as the Water Services Board). PISP's ability to secure funding and attract capital into the social-ecological system, for instance, is a result not only of the skills of its staff and board members, but also of its strong network of linkages to other organizations.

6. Approaches to Participation

For the most part, NGO and government agency approaches to participation in their work with pastoralists in north-central Kenya involve participation as taking place at the community-level and in and through local organizations—either small membership-based organizations (self-help groups, CBOs, water users associations, etc.) or committees that represent the entire community (Environmental Management Committees, Location Development Committees, etc.). Where these bodies already exist, government agencies and NGOs work through them; where they do not exist, the agencies help communities to form them. Few of the organizations that we encountered during this research emphasized any kind of participation by beneficiaries in decision-making processes at levels higher than the village or cluster of villages:

> Q: [After discussing the approach to community-level participation of a particular project…] In this project, is there any form of consultation or planning with beneficiaries that takes place at larger scales?
> A: No. There is nothing.
>
> - Staff member of an NGO working in the water sector in north-central Kenya

> Q: Are there institutions planning for management of water resources at the District level?
> A: I think the short answer is 'no'.
>
> - Director of an NGO working in the water sector in north-central Kenya

> Q: [After discussing community-based management of water points…] What about planning for water resources at the next scale up?
> A: There is no institution that is doing it. But it is a concern for all.
>
> - Staff member of an NGO working in the water sector in north-central Kenya

Furthermore, while some of the participation processes initiated and facilitated by formal sector agencies take place at the Location level, the majority takes place only at the level of individual settlements or, when the settlements are very small, at the level of a cluster

of communities or a Sub-Location. The aim, as expressed by the personnel of NGOs and government agencies, often involves empowerment or capacity building for the community as a whole. This aim is pursued, for example, by establishing the organization(s) through which the community can manage local natural resources. On the whole, the approaches to participation that we observed being applied in Gabra communities tended to conform to "institutional models" of participation (Cleaver, 1999; Robinson et al., 2010).

In some ways, these observations apply also to the approach to participation adopted by PISP. Depending upon the particular project or program, they assist communities to form bodies such as water users associations and project implementation committees. These bodies and others such as School Management Committees are some of their main contact points for the communities that they work in. However, PISP personnel also interact with a variety of traditional organizations and institutions, regularly consulting with the Yaa councils that exist for each of the Gabra's five phratries. At the community level, participation in decision-making related to PISP projects also takes place through the institution of the korra, a traditional meeting institutionalized in the Gabra culture (Robinson et al., 2010). The korra is a deliberative forum in which persuasion and respectful interaction are guiding principles, and we directly observed situations of participants changing their opinions in response to arguments from others and working together to reach consensus (Robinson et al., 2010).

As we observed on many occasions, PISP staff, as a matter of their normal practice, consult with local community members through korra on all matters from assessing community needs, to setting priorities, and, most commonly, to check in on the

progress of various projects, and it is primarily through korra that deliberative participation takes place. Korra held at the level of a single nomadic camp or a cluster of camps, whether PISP personnel are participating or not, tend to be relatively informal. For large-scale korra involving participants from many camps and settlements, PISP personnel are often be represented. In this way PISP supports existing mechanisms for deliberation at levels beyond the community level, by participating in large scale korra as one of many stakeholders, rather than by initiating a process of its own. Occasionally, such korra are planned for all Gabra, as occurred in 2002 in Kalacha. Elders from throughout Gabraland and from all five phratries participated. Personnel associated with PISP also participated and supported the meeting, but without assuming any special role. PISP field staff, most of them being Gabra themselves, are easily accepted in korra, and readily relate to them. Their discussions in these meetings are not restricted to PISP project activities. As would any Gabra visiting another nomadic camp, PISP staff sitting in on a korra meeting will share news and discuss everyday issues of concern such as rainfall, livestock movements, and security and livestock theft.

What transpired at a workshop organized in October 2007 by PISP after the construction of two new water points near the settlement of Hurri Hills is instructive. The way that the resource persons (recruited for the workshop by PISP from various government agencies) facilitated the workshop left little opportunity for discussing how the new water points would be managed, what rules might be needed, and so on. PISP's approach in this situation was to subsequently organize an informal meeting of a few people who had been at the meeting, some elders from Yaa Gara and a few other local stakeholders, to discuss the way forward for the new water points. It was mutually

decided to hold a large korra for all people living in the area. The Yaa was to organize the korra meeting at an appropriate time in the coming year when maximum participation from nomads could be assured, and it was agreed that they would inform PISP so that it could also participate.

These vertical linkages between PISP and local level organizations and institutions are a key aspect of PISP's capacity to develop adaptations. Indeed our observations suggest that PISP is better than most organizations we know at working with and through traditional organizations and institutions. While PISP, like other formal sector agencies, is doing little to facilitate grassroots participation in political decision-making processes at the District level and above, PISP's approach to participation does create linkages that build knowledge and that are critical to integrating new technologies and other adaptations into the Gabra social-ecological system. Their approach involves discussion and deliberation with elders and other community members through traditional organizations and institutions to explore technology options, whether these options are appropriate, and how they might be adapted to local circumstances.

7. Discussion and Conclusion

The Gabra case neatly illustrates the dilemma of adaptive capacity for many social groups from around the world. The Gabra social-ecological system is highly adapted to its particular environment and is resilient to normal variation within that environment (Robinson and Berkes, 2010), as many pastoralist groups are (Niamir-Fuller, 1998). Yet, it has little internal capacity to adapt to new kinds of global environmental changes, stresses, or surprises (Folke et al., 2005). Rather, most new adaptations to the system seem to be introduced at the initiation of certain formal sector

agencies. However, as noted earlier, having adaptations is not the same as having adaptive capacity. Similarly, for NGOs and other agencies delivering adaptations is not the same as building adaptive capacity. New types of organizations such water users associations and new technologies such as sand dams may represent genuine adaptations that increase social-ecological resilience. Our concern here, however, is with the capacity that enables organizations such as PISP to spearhead such adaptations. That capacity does not reside wholly within in these organizations themselves, but rather depends on an array of institutional linkages and on the type of engagement that they have with other actors in the system, especially their approach to participation.

The argument here is that there are three key elements in the kind of meaningful multi-level participation and learning which can lead to resilience-building responses to new kinds of change, such as those linked to global environmental change: an institutional environment in which the various levels of institutions are linked, deliberation, and inclusivity in decision-making at these various levels. The first and second of these three elements are demonstrated very well by the Gabra-PISP case.

The first element—a network of vertical and horizontal institutional linkages—is a key aspect of capacity. PISP as a small organization can only do so much by itself. But its network of upward, horizontal, and downward linkages (Figure 1) enable it to influence the social-ecological system in ways that Gabra community organizations cannot. Upward linkages can be conduits for inflows of funds, in-kind resources, and new ideas. Downward linkages to various community organizations and institutions are how PISP and other formal sector organizations actually achieve changes on the ground. Without these kinds of connections, formal sector actors such as PISP and ALRMP

would not be able to achieve what they do. When we say that PISP and other formal sector actors are introducing adaptations into the system, what we actually mean is that they are the central nodes in a network that is introducing adaptations. The particular NGO or government agency may often be indispensible for originating, spearheading, championing and/or sustaining these adaptations, but they are not acting alone. This suggests that adaptive capacity is systemic—that is to say, it is a property of the social-ecological system, including especially the network of institutional linkages that characterizes that system, as much as it is a property of particular actors within the system.

It should not be assumed that it is preferable to have even more linkages. Complex systems thinking suggests that a social-ecological system should have linkages to the larger system of which it is a part, but that too much connectivity can come at the price of making a system "brittle", resulting in loss of resilience (Gunderson and Holling 2002). A system that is too thoroughly linked to levels above is more susceptible to disturbance from that level cascading downwards (Young et al. 2006). In practical terms, vertical institutional linkages make it possible for funds to flow into the system from above; but this can also lead to dependence and vulnerability if the funds dry up. And if vertical flow of information increases to the extent that it overwhelms the flow of information within a system, then local knowledge and social memory can be lost. This is probably a concern wherever traditional societies are grappling with modernization. In the case of PISP, however, the approach seems balanced. While bringing new knowledge into the Gabra environment, it also respects and draws on traditional customs and

knowledge.[1]

The second element of meaningful multi-level participation is deliberation at various levels of organization. In our research we observed numerous situations of Gabra community members engaging in deliberation on important decisions, among themselves and with personnel from PISP, and witnessed how the deliberation that takes place in traditional korra meetings helps to shape opinions and create consensus. Deliberation is important because without it participation proceeds as if interests, positions, and knowledge are fixed (Miller, 1992; Smith, 2003), functioning only as inputs to decision-making with no possibility for mutual learning.

While the work of PISP and the way in which it engages with local communities is impressive, particularly when compared to the way that many NGOs operate, we do not suggest that the current level of engagement of Gabra communities with decision-making processes at higher levels is ideal or even sufficient. For example, although Gabra communities have had some opportunities to influence the strategic direction of PISP, their participation in state decision-making processes is thin, even at the District level.

The third element of meaningful multi-level participation is inclusivity. Here, the Gabra case does not seem to say much beyond what is already known in the literature. Hence, our identification of inclusivity in decision making at multiple levels, is based on previous scholarship on participation, and the Gabra case does not contradict these findings. Inclusion in decision-making processes at higher levels is a matter of equity and justice (Hickey and Mohan, 2004; Williams, 2004). Further, without inclusivity,

[1] This begs the question of why it is that Gabra communities tend to not have institutional linkages to higher levels of social organization. It may well be that the existence of PISP in a sense "relieves" them of the need to establish such linkages. Whether this is in fact the case was beyond the scope of this research.

important local knowledge only reaches higher levels through gatekeepers, if at all, affecting the quality of decisions. Without inclusivity, institutional linkages are less effective and are susceptible to manipulation. Conversely, without institutional linkages, inclusion of people from the grassroots in decision-making processes at higher levels remains ad hoc. From this perspective, the development of particular local organizations, so important in institutional models of participation, is insufficient. Meaningful participation goes beyond the local level and beyond individual, discrete organizations and institutions, to also promote the development of the institutional environment through the establishment of appropriate vertical and horizontal linkages and through enhanced inclusion of voices from the grassroots in decision-making at all levels.

Our conclusion that these three features—linkages and networks, deliberation, and inclusivity—can work together to create meaningful multi-level participation will need to be tested in other social-ecological systems, including in situations where inclusivity is stronger and in situations where there is not a strong bridging organization like PISP. We hypothesize that these three features are all critical to multi-level participation in three important ways.

First, they help to constitute effective feedback and decision-making mechanisms. The dynamics which influence the resilience of social-ecological systems occur at various levels and across levels, and resilient systems require the flow of information through feedback mechanisms. The human decisions which have an impact on social-ecological systems, furthermore, are taken at various levels of social organization. Wise decision-making requires information, and if people who are typically marginalized from

"higher" levels of decision-making are enabled to participate at these levels, it can facilitate the inclusion of their knowledge in the decision-making process.

Second, these three features of multi-level participation contribute to the co-production of knowledge. Knowledge was a critical factor in the innovations that PISP has helped to introduce into Gabra communities. Gabra are the experts of their own environment. But PISP and other agencies help bring new ideas and technology tested in other places. This knowledge and technology transfer, where it makes sense to the Gabra, results in the co-production of new knowledge through deliberative processes involving local people, PISP personnel, PISP's donors and others. This is followed by training, to ensure that the technical and artisanal knowledge needed to carry these innovations forward is in place. Many conservation-development projects deemed to be “successful” among the UNDP Equator Initiative cases seem to follow a similar course (Berkes 2007).

Third, these features of multi-level participation can help to empower people by ensuring that their voices are heard within spaces of decision-making from which they are often excluded. This way of conceiving of multi-level participation, and the contribution that it can make to adaptive capacity, has implications for the ways that development and natural resource management projects, programs and policy are carried out. Development agencies that have been able to introduce useful adaptations into a social-ecological system would do well to understand what gives them the capacity to do so. In practical terms, organizations interested in promoting meaningful multi-level participation and building adaptive capacity might adopt strategies and approaches to participation that may include the following:

- Mobilizing marginalized groups to participate in, and claim a voice in, decision-making processes at various levels;
- Ensuring that grassroots voices have access to forums of deliberation and decision-making which already exist at higher levels;
- Strengthening existing processes and creating new ones for people, as citizens and as members of communities and stakeholder groups, to engage in deliberation at various levels;
- Creating networks of nested organizations and institutions, and nested deliberation processes.

Examples to draw upon include various approaches to participatory watershed management, strategies of linking grassroots organizations in federations, and community-based regional development. These kinds of strategies help to broaden and strengthen the network of institutional linkages for actors at the grassroots level, increasing their capacity for social learning (Pahl-Wostl, 2009; Cundill, 2010; Lebel et al., 2010) to develop adaptations and strengthen the overall adaptive capacity.

The literature on adaptive capacity calls for a participatory approach (Armitage and Plummer, 2010). In this paper, we have taken a small step toward articulating a resilience-based theory of participation and providing a theoretical foundation regarding why multi-level, networked participation is important for learning and resilience-building (Folke et al. 2005; Cundill 2010). Adaptive capacity is not only an attribute of particular organizations but also resides within interconnected systems of organizations and institutions that facilitate social learning and co-production of knowledge (Armitage et al., 2011). This paper addresses the need for a deeper understanding of the relationship

between learning and adaptation (Pahl-Wostl, 2009) by showing how institutional linkages, participation and deliberation can work together to promote knowledge co-production for adaptive capacity.

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