Spontaneously organized institutions of collective action and the institutional effects of exogenous development interventions are both known to have a profound effect on development outcomes.1 Despite an in-depth academic understanding of the institutional foundations of development and natural resource management (NRM), development interventions continue to have a strong technological bias. Development and conservation interventions continue to be carried out with an uncritical view to equity and the possible negative repercussions of interventions on certain social groups and environmental sustainability, while local institutions (rules and structures) remain largely invisible to outside actors.2 Yet the shortcomings lie not only with practitioners but also with research. Research on the institutional dimensions of development and NRM continues to emphasize the characteristics of existing institutions of collective action or institutional constraints on development rather than on ways to build stronger institutions where these are absent to address local development priorities.

1. Collective action may be defined as action taken by a group (either directly or on its behalf through an organization) in pursuit of members’ perceived shared interests (Marshall 1998, cited by Meinzen-Dick, Di Gregorio, and McCarthy 2004).

2. Although the definition provided by North (1990, 3) has become prominent in academic scholarship (“institutions are rules of the game in a society, or more formally, are the humanly devised constraints that shape human interaction”), our emphasis on collective action makes the definition by Ostrom (1994), which equates institutions with “decision structures,” equally appropriate. Thus, “institutions” are here taken to encompass both structural dimensions of collective organizing and collective choices that form the backbone of effective cooperation.
Background

The research reported in this chapter sought to address these shortcomings by integrating institutional analysis (for problem identification and targeting of interventions) with action research (for pilot testing of institutional innovations to address identified problems). The institutional analysis sought to understand forms and functions of existing institutions of collective action and patterns of benefit capture induced by local and external institutions and to identify the disconnects between local concerns and the institutions present to address these. Building on collective action theory, we then designed and tested institutional innovations in an action research mode to explore institutional arrangements for addressing the NRM concerns of local residents of four locations in the eastern African highlands (two in Ethiopia, two in Uganda). Our findings suggest that by bringing theory into the realm of development practice, action research may provide fertile ground for research in support of practical development challenges.

With regard to the conceptual framework presented in Chapter 2, this study illustrates the complexity of feedback relationships between different elements of the conceptual framework. Contextual factors such as the initial endowments of financial and physical assets limit the extent to which local actors can leverage social assets (such as groups and networks) to improve their well-being. Similarly, low levels of collective action due to classical free-rider problems and failures of supporting organizations undermine the ability of resource users to access, manage, and draw benefits from natural assets such as forests, soils, and agricultural lands. NRM comprises the action arena. Negotiation support facilitated by external actors (the action arena) provides a platform for direct engagement among resource users and between resource users and government agencies. This results in the joint creation of new institutions such as bylaws and organizational practices (that is, patterns of interaction) that curb free riding, provide mechanisms for cross-scale coordination among groups of spatially distinct though interconnected resource users, allow equitable access to benefits, strengthen access to natural resources, and foster political commitment for the enforcement of agreements sanctioned through bylaws. These patterns of interaction have favorable implications for the welfare of local resource users at the study sites.

This chapter highlights the institutional dimensions of natural resource governance. It also focuses on how asymmetric power relations undermine equitable outcomes in NRM. Resource governance and power relations are key themes identified in Chapter 1. By implementing actions and processes that lead to the emergence of new institutions and structures that enhance collective action and equitable resource access and management, our study makes an important contribution to the broad literature of collective action, which continues to

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3. Davis and North (1971, 6–7) define institutional arrangement as "an arrangement between economic units that governs the ways in which these units can co-operate and/or compete."
grapple with the problem of exclusion, especially that of marginal individuals and groups with low status and wealth.

**Literature Review**

*Collective Action in Natural Resource Management*

The role of collective action in agricultural development and NRM is by now well documented. Scholars have looked at the role of collective action in enhancing farmer participation and human capital (Coleman 1988; Heinrich 1993; Uphoff and Mijayaratna 2000; Woolock and Narayan 2000); determinants and operational principles of collective action (Ostrom 1990; Pandey and Yadama 1990; Wittayapak and Dearden 1999); and the conditions under which collective action can be a vehicle for enhancing equity in natural resource management (Kelly and Breinlinger 1995; Leach, Mearns, and Scoones 1999; Molyneux 2002). Yet the bulk of research on collective action has been in the context of common property resources (Ostrom 1990; Munk Ravnborg and Ashby 1996; Scott and Silva-Ochoa 2001; Gebremedhin, Pender, and Tesfay 2002).

Collective action is also a fundamental pillar of landscape- or watershed-level natural resource management. In addition to regulating rights and responsibilities to common property resources and public goods (Ostrom 1990; Gaspard et al. 1998), collective action has a role to play in managing biophysical processes that cut across farm boundaries (Munk Ravnborg et al. 2000). Collective action can also play a role in negotiating joint investments and technological innovations for enhanced productivity, regulating the distribution of exogenous resources within local communities (Meinzen-Dick et al. 2002), and negotiating solutions that optimize returns to diverse local interest groups (German, Charamila, and Tolera 2006; German et al. 2006a, 2006b). Given the sheer number of users in watersheds, the transaction costs of organizing, and the tendency for outside interventions to structure positions of privilege vis-à-vis any given resource (Schroeder 1993; Munk Ravnborg and Ashby 1996), representative structures and mechanisms for organizing the interface of outside actors with local communities are needed (German et al. 2006b). This is in recognition of the inherently political nature of NRM (Schroeder 1993; Rocheleau and Edmunds 1997), which requires that the outcomes and distribution of benefits of watershed management and related project interventions be transparently negotiated and monitored.

In addition to understanding what collective action can achieve, research has highlighted some of the conditions under which institutions of collective action for NRM emerge. These include the presence of clearly defined rules for resource management and access (including sanctions), clearly defined user groups and resource boundaries, adaptive management mechanisms (monitoring systems, the ability to modify rules as the need arises), conflict resolution mechanisms, and a user group and resource of manageable size (Ostrom 1990;
Pandey and Yadama 1990; Wittayapak and Dearden 1999). Each of these factors plays an important role in influencing levels of mutual trust as well as expectations of what may be gained through cooperation (Blau 1964; Burns, Baumgartner, and DeVille 1985). Yet there remain key gaps in our understanding of how to facilitate the evolution of institutions of collective action where these are absent. More research is needed to understand how equitable, meaningful (well-designed and enforceable), yet flexible rules can be generated and how to mobilize existing or new capacities for the participatory governance of natural resources (Carney 1998; Scoones and Thompson 2003).

**Collective Action, Institutions, and Equity**

Through their role in structuring access to other forms of capital (natural, financial, physical, human), local and external institutions alike play important roles in structuring opportunities and in benefits capture. Research has shown that collective action can contribute to asset accumulation or protect households from loss of assets through their ability to mitigate risks. These functions may play out directly, by improving people’s ability to work together to overcome limitations of wealth, farm size, and bargaining power (di Gregorio et al. 2008) and to access and control assets that could be difficult to access individually (de Haan 2001; Knox, Meinzen-Dick, and Hazell 2002). For example, joint input or output marketing can enhance market access or improve profits by minimizing transaction costs (Place and Swallow 2002). Collective action also plays an indirect role by facilitating access to credit and microfinancing, information, and technologies (Grootaert 2001; Grootaert and van Bastelear 2002; Knox, Meinzen-Dick, and Hazell 2002). Each of these functions has implications for asset creation. On the other hand, collective action can help to minimize loss of assets during times of hardship by distributing risk among households—for example, by mobilizing resources during times of illness or death (see the iddir and Philippines case studies in this volume), helping individuals to better cope with risk (de Haan 2001; Place et al. 2002).

In addition to contributing to financial capital, collective action has been shown to underpin service delivery for infrastructure and social services (Nitti and Jahiya 2004). Action research findings also point to the role of collective action and diverse forms of social capital in enhancing human capital and spreading the transaction costs of improved NRM (Coleman 1988; Heinrich 1993; Wallis 1998; Uphoff and Mijayaratna 2000; Woolock and Narayan 2000; Meinzen-Dick et al. 2002). Yet despite the potential of collective action for enhancing access to other important development resources, group composition, dynamics, and governance are fundamental for these potentials to be realized (Davis et al. 2004). This is especially true for managing the distribution of benefits from such interventions (Jassey 2000; Grootaert 2001; Molyneux 2002). Therefore, the relationship between collective action and equity depends in large part on the functions and capacities associated with these forms of social capital.
External institutions also have a fundamental role to play in agricultural development and sustainable NRM. Yet uncritical development interventions by government and nongovernmental organizations (NGOs) have led to a host of unanticipated negative outcomes due to failure to understand existing institutions. Failure to recognize self-organizing local institutions in the management of common property resources and the imposition of overly rigid property rights regimes on traditional systems have proven to constrain rather than enable equitable, adaptive, and sustainable management of natural resources (Davison 1988; McDonald 1991; Bloch 1993; Munk Ravnborg and Ashby 1996; Lastarria-Cornhiel 1997; Kevane and Gray 1999; Ostrom 1999; Nemarundwe and Kozanayi 2003). Other authors document how outside interventions can increase risk due to more delimited resource access (Turner 1999; Ngaido and Kirk 2001). Finally, some interventions have proven to further entrench existing inequities by creating the conditions for elite capture of program benefits or natural resources (Schroeder 1993; Rocheleau and Edmunds 1997).

Despite these deficiencies, if outside interventions can influence the distribution of power and voice, there is potential for realigning the distribution of technologies, resources, and benefits (Knox, Meinzen-Dick, and Hazell 2002). Such efforts could help to counter the tendency of extension benefits to go to wealthier farmers (Grabowski 1990; Knox, Meinzen-Dick, and Hazell 2002) or the causal role played by wealth in structuring resource access (Meinzen-Dick et al. 2002). Given the context of decentralization and the devolution of policy structures in Ethiopia, Uganda, and elsewhere (Raussen, Ebong, and Musiime 2001) and the evidence of “elite capture” from similar experiences at the local level (Bachrach and Baratz 1970; Munk Ravnborg and Ashby 1996; Olsen 2001), lessons on how to engage and empower more vulnerable groups are sorely needed. This is particularly true given the many, often discrete, ways in which elite dominance can be asserted (Bachrach and Baratz 1970). These cases point to the need for a better understanding of the ways in which external institutions facilitate wealth acquisition by different social groups and of strategies to foster more equitable outcomes from external interventions.

Program Context

Our research was conducted under the rubric of the African Highlands Initiative (AHI), an ecoregional program of the Consultative Group for International Agricultural Research and the Association for Strengthening Agricultural Research in East and Central Africa convened by the World Agroforestry Centre. Since 2002, AHI has worked to develop a participatory, integrated approach to NRM at the landscape or watershed scale. Different from many other watershed management programs focusing primarily on soil and water conservation, AHI is developing an approach to integrate all components of the production system (crop, livestock, tree, soil) and the landscape (encompassing resources such as water, communal grazing lands, and forests). This chapter reports on
findings from the institutional research associated with integrated social, biophysical, and institutional interventions. The primary objective of this research was to develop and document successful approaches to facilitating equitable collective action processes and negotiated NRM solutions.

**Research Questions and Hypotheses**

**Research Questions**

Research questions are inherently distinct for empirical and action research, and therefore they are presented independently.

Empirical research questions include the following:

- What is the role of existing institutions (groups, rules and norms, property rights, decentralization systems) in leveraging or constraining decision-making and resource access by diverse groups?
- What contextual factors (institutional, policy, historical, epistemological) hinder collective action and exacerbate poverty through inequitable decision-making and access to natural resources at each site?
- What are the impacts of action research interventions on participation in decisionmaking processes, identified watershed problems, policies, and the resulting livelihoods or assets of diverse groups?

Action research questions are as follows:

- What conditions (social, technological, policy, economic) and facilitation processes are required to enhance socially optimal voices (decisionmaking), choices (technological, social, and income options), and benefits (poverty alleviation, improved management and access to natural resources)?
- What policies, bylaws, and support from local governments are required to bolster community actions and collective action toward more effective and equitable NRM and income generation? What are the most effective approaches for engaging communities with local government and service providers to achieve these policy reforms?

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4. Empirical research questions emphasize understanding of the current situation, whereas action research questions focus on the conditions for or elements of an effective change process. In many action research cases, this change process does not yet exist in reality but will be created through research. In action research, the research questions and hypotheses are necessarily broad, given the difficulty of holding both the context and approach constant. Although a generic approach to facilitating change was developed based on a review of collective action theory, the participatory nature of action research means that both the participants and the circumstances (for example, the specific problem to be addressed or resources available to address it) shape how it is applied.
Hypotheses

Research hypotheses were explicitly developed for the action research and focus on conditions for effective change:

- Strategies to improve NRM at the farm and landscape levels will be more effective if decisionmaking on technologies and natural resource governance is equitable, given the broad social support required to sustain collective action.
- Increased capacity to develop better-designed and more equitable bylaws will improve livelihoods by enabling technology adoption, enhancing collective action in NRM, and reducing the need for bylaw enforcement.

Methodology

Site Selection

Four sites were chosen for this research, two in Ethiopia and two in Uganda. All sites are highland microwatersheds characterized by smallholder farming systems, high population density, and evidence of natural resource degradation. For 5–10 years each of these sites has served as a benchmark site for AHI, where new approaches to integrated NRM are first developed and tested and from which regional lessons are drawn from comparative research. Each site is home to one or more ethnic groups with a long history of occupation of the area and limited in-migration from other groups or areas. Despite some similarities, each site has unique characteristics that merit attention in the context of collective action and NRM. Details on each site are available in German et al. (2008); however, all four sites face a broad range of NRM needs such as:

- enhancing the productivity and returns from crop, livestock, and tree components without further exacerbating system nutrient decline;
- reversing water resource degradation by fostering positive synergies among trees, soil conservation structures, and water in microcatchments;
- integrating technological innovation with improved natural resource governance to minimize the incidence of conflict emanating from small landholdings, limited economic opportunities, gender inequalities, and a tendency for land users to pursue individual over collective interests;
- enhancing equitable resource access, given the inhabitants’ histories of ethnic conflict (cattle raiding);
- managing resources sustainably in the buffer zone of national parks, given histories of displacement and conflict; and
- increasing the quality of and access to support services.
The methodology consisted of four primary steps.

**Situation Analysis**

The situation analysis used an empirical research approach to understand (1) how resources are distributed within communities and (2) the role of internal and external institutions in enhancing or constraining resource access and decision-making by diverse groups. The situation analysis consisted of two primary methods. Focus group discussions were first used to identify local and external institutions and the participants, beneficiaries, and nature of benefits derived from each. The second step consisted of household interviews to quantify levels of and variation in household assets (the five “capitals,” described later) by gender and wealth, as well as participation in local and external institutions (assessed as one component of social capital). At each site, at least 60 household interviews were conducted. Households were purposely sampled by gender (men, women from female-headed households, and women from male-headed households) and wealth (based on local indicators and thresholds). The primary local criteria for wealth ranking at all sites included landholdings, livestock holdings, and the quality of housing.

**Stakeholder Workshops**

Following the situation analysis, site and national stakeholder workshops were conducted to share findings and agree on action research priorities. Site-level workshops consisted of (1) sharing of findings from the situation analysis; (2) identification of NRM issues requiring collective action, changes in institutional practice, or bylaw reform; (3) prioritization of these issues based on a set of “minimal criteria”; and (4) development of preliminary action plans for prioritized topics. The screening criteria for action research themes included

- themes that involved change at multiple levels (local and outside institutions, policies);
- themes that involved current inequities or required close attention to diverse local priorities; and
- themes that could bring some change within one and a half years.

**Action Research**

Following stakeholder prioritization of action research themes, site teams developed action research protocols to clarify the research questions and strategies to be tested in facilitating local stakeholders’ efforts to address identified problems. Each theme involved two levels of action research:

- local-level action research on how to foster collective action in NRM through explicit consideration of diverse views when negotiating access to benefits, NRM strategies, and policy proposals and
Enabling Equitable Collective Action in Eastern Africa

higher-level (subcounty/peasant association or district/woreda) action research on how to support equitable collective action processes at the local level through changes in institutional practice, policies that reflect local priorities, and negotiation support.5

A common strategy was tested to foster negotiated solutions to identified NRM problems. This consisted of the following steps for each action research theme:

- identifying stakeholders, with an emphasis on local interest groups;
- meeting with the individual stakeholder groups (individuals who share a common position in relation to the issue) to raise awareness and elicit their views on the problem and solutions and their preferred approach to engagement;
- conducting multistakeholder negotiations, including
  1. providing feedback on the identified NRM issue and on earlier meetings with individual stakeholder groups;
  2. engaging in open dialogue (for validation and clarification of issues and interests);
  3. negotiating socially optimal solutions that do not bring harm to any given group and emphasize concessions on both sides, including agreed rules for resource management (often formally endorsed bylaws) and technologies that provide alternatives to practices restricted in bylaws; and
  4. development of action plans; and
- periodically conducting participatory monitoring and evaluation to evaluate progress, troubleshoot, and re-strategize.

Participatory Assessment of Outcomes

The final step of the action research was to evaluate outcomes and impacts from the action research intervention. Site teams conducted focus group discussions to elicit individuals’ perceptions of the types of impacts and then asked farmers to quantify the degree of change or the relative merits of different approaches using matrix ranking exercises. Although the findings are somewhat subjective and provisional, they nevertheless provide a sense of what variables matter to farmers and whether any changes in these variables have been observed. In such cases, caution should be used in deriving any quantitative conclusions from these data. In the few cases in which field measurements were taken by farmers

5. Under Ethiopia’s system of ethnic federalism, there are three levels of local government: zone, woreda, and kebele administration (Ayele 2009). The lowest administrative structure, the kebele—often translated into English as “peasant association” (PA)—is a carryover from the Derg period and generally includes ten thousand or more people. The woreda, roughly equivalent to a district, is the second-lowest level of government and is the most important administrative unit in the Ethiopian local government structure.
or researchers (case studies 1 and 2, described later in this chapter), quantitative measurements are more reliable. Nevertheless, in the absence of a control group, the observed changes cannot be attributed with certainty solely to the interventions, because there may have been other contributing factors.

The findings presented in the next section are grouped according to the three phases of research: situation analysis, stakeholder workshops, and action research.

**Situation Analysis Findings**

*Household Assets and Investment Potential*

The surveys measured households’ current levels of assets using the “five capitals”: human capital (age and education level of household members), social capital (access to social networks, participation in local forms of collective action), natural capital (water, forest, land, and so on), financial capital (off-farm income, savings), and physical capital (roads, structures, transport, communications). The idea behind these was (1) to determine whether current assets determined households’ ability to acquire new assets and (2) to understand the role of both local forms of collective action and outside institutions in asset accumulation.

Table 7.1 shows a two- to fifty-three-fold difference in land and livestock holdings between lower- and higher-income households. To determine the extent to which “wealth begets wealth,” we analyzed the annual level of investment in productive activities by wealth category (Tables 7.2 and 7.3). This was used as an indicator of the extent to which wealth determines the ability to acquire additional wealth through investment. The data suggest a strong correlation between households’ current wealth status and their ability to invest in productive activities.

*The Influence of Local and External Institutions on Assets and Livelihoods*

Local collective action institutions were abundant at all research sites. They included local savings and loan groups, merry-go-rounds (rotational savings plans), religious associations, funeral associations and stretcher groups, labor-sharing arrangements for private and communal works, traditional conflict resolution mechanisms, arrangements for saving or pooling resources for celebration.

<table>
<thead>
<tr>
<th>TABLE 7.1</th>
<th>Land and livestock assets by wealth category in four sites in the eastern African highlands, 2005</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of asset</td>
<td>Areka High</td>
</tr>
<tr>
<td>Landholdings (hectares)</td>
<td>0.74</td>
</tr>
<tr>
<td>Head of cattle</td>
<td>3.7</td>
</tr>
</tbody>
</table>

*SOURCE: Authors.*
tions, commercial labor groups (in Kabale District), and land- and livestock-sharing arrangements (at the Ethiopian sites) (German et al. 2008). The benefits of these institutions are both social and economic. Social benefits include strengthened social ties and networks and support during periods of hardship, while the economic benefits include access to resources for agricultural and domestic functions (labor, utensils, food, seed, and cash) and “safety-net” functions (for example, avoiding impoverishment following times of hardship). Due to their voluntary nature, nearly all local institutions of collective action were seen by focus group participants as benefiting all those who participate (see German et al. 2008 for a detailed discussion of the Ethiopian sites). One exception was found in Ethiopia, where contracting out land to others was seen as enriching some households (landowners) at the expense of others. Yet households continue to practice this activity when they have no alternative, generally due to the shortage of inputs (primarily labor).

### TABLE 7.2 Annual agricultural investments (in birr) by wealth category at the two Ethiopian sites, 2006

<table>
<thead>
<tr>
<th>Investment</th>
<th>Ginchi Low</th>
<th>Ginchi Medium</th>
<th>Ginchi High</th>
<th>Areka Low</th>
<th>Areka Medium</th>
<th>Areka High</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seed</td>
<td>336.1</td>
<td>510.9</td>
<td>273.9</td>
<td>72.1</td>
<td>106.8</td>
<td>165.7</td>
</tr>
<tr>
<td>Pesticide</td>
<td>28.3</td>
<td>69.0</td>
<td>48.3</td>
<td>0.6</td>
<td>0.4</td>
<td>0.9</td>
</tr>
<tr>
<td>Fertilizer</td>
<td>133.2</td>
<td>210.7</td>
<td>407.6</td>
<td>46.5</td>
<td>84.9</td>
<td>173.2</td>
</tr>
<tr>
<td>Feed</td>
<td>65.8</td>
<td>170.9</td>
<td>232.5</td>
<td>10.8</td>
<td>20.6</td>
<td>55.0</td>
</tr>
<tr>
<td>Veterinary</td>
<td>23.3</td>
<td>55.1</td>
<td>72.9</td>
<td>9.8</td>
<td>10.5</td>
<td>15.0</td>
</tr>
<tr>
<td>Total</td>
<td>586.7</td>
<td>1,016.6</td>
<td>1,035.2</td>
<td>139.8</td>
<td>223.2</td>
<td>409.8</td>
</tr>
</tbody>
</table>

**SOURCE:** German et al. (2008).

**NOTE:** Exchange rate is 8.65 birr/US$1.00.

### TABLE 7.3 Annual agricultural investments (in Ugandan shillings) by wealth category at the two Ugandan sites, 2005

<table>
<thead>
<tr>
<th>Annual investment</th>
<th>Kabale Low</th>
<th>Kabale Medium</th>
<th>Kabale High</th>
<th>Kapchorwa Low</th>
<th>Kapchorwa Medium</th>
<th>Kapchorwa High</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seed</td>
<td>23,640</td>
<td>31,844</td>
<td>72,129</td>
<td>19,980</td>
<td>29,464</td>
<td>42,388</td>
</tr>
<tr>
<td>Pesticide</td>
<td>3,269</td>
<td>7,074</td>
<td>35,059</td>
<td>13,000</td>
<td>20,000</td>
<td>80,714</td>
</tr>
<tr>
<td>Fertilizer</td>
<td>119</td>
<td>279</td>
<td>19,823</td>
<td>1,035</td>
<td>10,963</td>
<td>18,000</td>
</tr>
<tr>
<td>Feed</td>
<td>2,144</td>
<td>11,820</td>
<td>20,882</td>
<td>2,000</td>
<td>76,683</td>
<td>100,000</td>
</tr>
<tr>
<td>Veterinary</td>
<td>226</td>
<td>3,270</td>
<td>7,177</td>
<td>4,666</td>
<td>20,000</td>
<td>86,000</td>
</tr>
<tr>
<td>Total</td>
<td>29,398</td>
<td>54,287</td>
<td>155,070</td>
<td>40,681</td>
<td>157,110</td>
<td>327,102</td>
</tr>
</tbody>
</table>

**SOURCE:** Authors.

**NOTE:** The exchange rate varied from 1,780 to 1,845 Ugandan shillings per US$1 during the data collection period.
Although all participants in collective action benefit in most institutions of collective action, certain participants benefit more than others in some of these institutions (German et al. 2008). For example, land- and livestock-sharing arrangements in Ethiopia confer unequal benefits to participants. Landowners benefit most in sharecropping because they receive the benefits from their land with limited investment, but they benefit least in contracting because they are paid poorly for the use of their land. Livestock-sharing arrangements are similarly imbalanced. In Areka, a livestock-sharing arrangement called *hara* benefits cattle owners most because they acquire offspring with limited investment, while the individuals rearing the cattle receive only livestock products. In Ginch, on the other hand, a livestock-sharing arrangement called *ribi* most benefits the poor, who acquire offspring as well as livestock products from cattle owned by others.

Although local forms of collective action benefit all who participate, some social groups cannot gain access to certain forms of collective action. Resource-poor households, for example, generally cannot participate in savings and loan groups, while commercial labor groups are male dominated. The sick, elderly, and disabled seldom participate in local forms of collective action but often receive some form of assistance from others. In Kabale, women are more active in local forms of collective action, particularly those involving agricultural production.

Despite the caveats, communities generally agree that local institutions of collective action play a strong positive role in livelihoods. This function is achieved by enabling households to access resources and acquire assets that otherwise would have been unachievable, buffering households during shocks and crises, and expanding social networks for intrahousehold sharing and support.

**Collective Action in NRM**

With the exception of labor-sharing arrangements, there was a notorious absence of collective action for addressing shared NRM concerns (see German et al. 2008). Many NRM problems requiring collective action, therefore, remain unsolved. Through a detailed participatory diagnosis of landscape-level NRM concerns and several years of action research to explore means to address these concerns, reasons for the persistence of NRM problems requiring collective action despite these problems’ negative effect on livelihoods were identified.

Two predominant scenarios may help to explain this disconnect. First, NRM problems affecting agricultural productivity and requiring collective solutions are treated as individual problems by the community and by external organizations. Extension organizations continue to work with individual households when promoting soil and water conservation technologies, despite the need to foster common drainage ways. No household wishes to have common drainage ways pass through their farms because they take up agricultural land and excess water can damage crops. The costs and benefits of soil and water conservation for farmers residing in upper and lower parts of the landscape also differ. Those
residing in lower parts of the landscape may benefit from the deposition of fertile soil from the upper slopes or be negatively affected by excess runoff or deposition of infertile soil. Those residing on upper slopes have less incentive to invest because their farms are less affected by upslope cultivation activities. Soil and water conservation activities clearly require the negotiation of solutions to such problems to ensure that solutions are not overly harmful to any given land user and to enable the investments of any given household to align with the perceived benefits.

Another example of a situation that can be improved through collective action is the control of pests, disease, weeds, and wild animals. Although traditional forms of collective action for pest and disease control were found in Ethiopia, most contemporary approaches to pest and disease control emphasize control by individual households. Yet the effort that one household must expend to control these problems grossly exceeds the benefits of such effort, given the tendency of farm plots and livestock to be contaminated by adjacent farms and livestock.

A second reason for the disconnect between the need for collective action and the failure to engage in it is that land users emphasize individual economic returns over collective goods or collective impacts. One example is the cultivation of fast-growing tree species on farm boundaries. This practice benefits landowners economically but adversely affects the livelihoods of adjacent households given the competition of these trees with crops for light, nutrients, and water, as well as the allelopathic affects associated with some tree species.

Similarly, some land management practices—such as the pollution of springs and waterways with detergents, human waste, and pesticides; the cultivation of “thirsty” trees; and the consumption of high levels of irrigation water—achieve livelihood improvements for some land users at the expense of others. Such scenarios clearly require a governance solution in which harmful land-use practices are regulated according to collective choice arrangements.

Institutional Practice

Contrary to local institutions, which were generally seen as equitable and supportive to most households, a number of external institutions were seen by participants in focus groups as highly biased in terms of the groups benefiting. Institutional practice at times unknowingly favors some groups at the expense of others (Schroeder 1993; Rocheleau and Edmunds 1997; German et al. 2010), whereas local institutions have not stepped in to fill the gap and to govern development interventions and resources more equitably. At times this has led to increased social differentiation and loss of social cohesion in rural communities (Schroeder 1993; Thébaud and Batterbury 2001). Some government agencies are also seen as corrupt, undermining policies that they themselves are supposed to enforce—and the commitment of stakeholders at all levels to these policies (see, for example, the literature on decentralization: Bigombé Logo 2003; Colfer and Capistrano 2005; Oyono, Ribot, and Larson 2006).
<table>
<thead>
<tr>
<th>Type of collective action</th>
<th>Site 1 (Ethiopia)</th>
<th>Site 2 (Ethiopia)</th>
<th>Site 3 (Uganda)</th>
<th>Site 4 (Uganda)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agricultural research</td>
<td>Agricultural research favors farmers with previous exposure to technologies and information who live near roads and have some education.</td>
<td>Agricultural research benefits the few farmers who have enough land and labor.</td>
<td>On-farm experiments are conducted with few farmers, and the results or varieties are not shared with the community. There is little follow-through on experiments or technical follow-up.</td>
<td>Only those who can afford or access inputs value the research initiatives.</td>
</tr>
<tr>
<td>Agricultural extension</td>
<td>Educated farmers benefit most; extension has poor coverage of the area.</td>
<td>Farmers with a lot of land and labor benefit, especially male farmers.</td>
<td>The continuity of National Agricultural Advisory Services (NAADS) is affected by funding availability; support goes only to farmer groups that pay the annual fee of 10,000 Ugandan shillings. More support is available to the elite farmers who easily adopt technologies.</td>
<td>NAADS allegedly favors the relatively well off (who can co-fund), kinsfolk of leaders, and prominent members of society.</td>
</tr>
<tr>
<td>Local administration</td>
<td>Those living near the seat of the district government benefit most; some exhibit a bias toward their friends and relatives.</td>
<td>Local administration was not mentioned by farmers.</td>
<td>Local administration is biased toward the “politically correct.”</td>
<td>Those related to or favored by staff of the local administration are given special attention.</td>
</tr>
<tr>
<td>----------------------</td>
<td>-----------------------------------------------------------------------------------------------------------------</td>
<td>-------------------------------------------------</td>
<td>-------------------------------------------------</td>
<td>----------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Cooperatives</td>
<td>All members benefit equally from inputs; those who cannot make down payments do not benefit.</td>
<td>The poorest farmers benefit least.</td>
<td>Involved in marketing barley, coffee, and maize to the World Food Programme and serve mainly large-scale farmers or farmer associations.</td>
<td>This is seen as a more exclusionary savings and loan mechanism that mainly serves the more resource-endowed farmers, who are able to save.</td>
</tr>
<tr>
<td>National conservation authority</td>
<td>National conservation authority was not mentioned by farmers.</td>
<td>National conservation authority was not mentioned by farmers.</td>
<td>Local employees of the national conservation authority (park rangers) favor community members who engage in illegal extraction that is condoned by and benefits these officials.</td>
<td>The National Environmental Management Authority tends to pamper some communities, paying farmers to ferry planting materials and dig water trenches on their own land.</td>
</tr>
</tbody>
</table>

**SOURCE:** Authors.
summarizes local institutions seen to confer unequal benefits on local residents at the four sites. Clearly, institutional biases—mostly unintentional—are widespread, and urgent action is needed to avoid the elite capture of benefits from these interventions.

**Stakeholder Workshop Outcomes**

Site-level stakeholder workshops were the most instrumental in generating concrete strategies for addressing identified problems and are the focus of this section. Following feedback of findings from the situation analysis, participants were asked to identify NRM issues requiring collective action at their respective sites. A long list was derived and subjected to a prioritization process. At some sites where participant farmers were few in number, this involved reflecting on findings from household surveys in which individuals had prioritized those issues around which they would readily engage in collective action. At other sites where large numbers of farmers were present, workshop participants engaged in the prioritization process themselves. At each site, two to four issues given priority rankings were selected for intervention and joint learning through action research. These are summarized in Table 7.5.

Participants were asked to highlight forms of institutional intervention required for each of the prioritized action research themes. These are grouped into three categories: (1) negotiation support, (2) bylaw reforms, and (3) changes in institutional practice (Table 7.6).

Problems stemming from limited stakeholder collaboration at the local level (horizontal stakeholder engagement), as well as from poorly structured linkages with external organizations (vertical stakeholder engagement), were prioritized in action research. Table 7.7 summarizes how the case studies presented in the next section relate to these two levels of intervention. Although a few case studies may be clearly defined around horizontal or vertical stakeholder engagement, a few others clearly combine both strategies in the identification of solutions.

**Action Research: Lessons from Implementation of Prioritized Actions**

Although many of the interventions were at early stages of implementation at the time of writing, early successes suggested the promise of building on negotiation support in enhancing collective action in NRM at the local level and in improving institutional practice to enhance equitable benefits capture from development interventions. The results are presented in the form of case studies by action research theme. The first three of the four case studies illustrate horizontal stakeholder engagement processes, while all illustrate some degree of vertical stakeholder engagement involving outside institutions.
<table>
<thead>
<tr>
<th>Areka</th>
<th>Ginchi</th>
<th>Kabale</th>
<th>Kapchorwa</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spring development (appropriate tree species and spring maintenance)</td>
<td>Spring management (appropriate trees, ensuring long-term water supply, maintenance of structures)</td>
<td>Harmonization of bylaws between conservation zones and adjacent areas (with an emphasis on free grazing)</td>
<td>Collective action in enterprise development and making land investments</td>
</tr>
<tr>
<td>Equitable approaches to technology dissemination</td>
<td>Soil and water conservation (gulley stabilization, common drainage, collective action for labor-intensive activities)</td>
<td>Soil erosion control, emphasizing steep slopes and impacts on valley-bottom plots</td>
<td>Co-management of resources of protected-area buffer zone and benefit sharing</td>
</tr>
<tr>
<td>Boundary tree management</td>
<td></td>
<td>Minimization of harmful agro-forestry practices, especially on land boundaries</td>
<td>Collective action to mitigate conflicts in NRM accruing from diverse or unclear property regimes (land, trees, water, grazing rights) and sharing of benefit streams</td>
</tr>
<tr>
<td>Collective action for the control of pests, diseases, and wild animals</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Source: Authors.*
<table>
<thead>
<tr>
<th>Intervention</th>
<th>Areka</th>
<th>Ginchi</th>
<th>Kabale</th>
<th>Kapchorwa</th>
</tr>
</thead>
<tbody>
<tr>
<td>Negotiation support</td>
<td>Negotiating access to technologies by groups facing barriers (women, the poor)</td>
<td>Negotiating regulations on livestock movement in outfields to facilitate soil conservation and agro-forestry investments</td>
<td>Supporting local negotiations for increased cooperation within and among villages Lobbying for the political and technical leadership at the subcounty level to support ongoing project initiatives</td>
<td>Negotiating access to water points for all community members (in particular for livestock)</td>
</tr>
<tr>
<td>Mobilizing widespread support for porcupine control with the involvement of elders and local authorities and research on different “treatments” in different villages</td>
<td>Mobilizing widespread support for porcupine control with the involvement of elders and local authorities and research on different “treatments” in different villages</td>
<td>Negotiating trees compatible with springs (among spring owners and users) and farm boundaries (among farm owners and affected farmers)</td>
<td>Negotiating access to and control of communal grazing lands</td>
<td>Negotiating access to or custodianship of natural resources in Mount Elgon National Park by indigenous people</td>
</tr>
<tr>
<td>Involving peasant association and religious leaders to facilitate negotiations for farm boundary management by gender, wealth, and divergent interests (cultivating farmers versus neighboring farmers negatively affected by boundary trees) to identify appropriate niches</td>
<td>Involving peasant association and religious leaders to facilitate negotiations for farm boundary management by gender, wealth, and divergent interests (cultivating farmers versus neighboring farmers negatively affected by boundary trees) to identify appropriate niches</td>
<td>Negotiating equitable contributions to spring maintenance</td>
<td>Negotiating compatible technologies</td>
<td>Negotiating compatible technologies</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Negotiating soil and water conservation structures (common drainage channels and balanced investments by upslope and downslope farmers)</td>
<td>Negotiating the sharing of benefits of introduced technologies</td>
<td>Mobilizing for the adoption of eco-friendly practices for landscape conservation</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Negotiating equitable benefits from eco-enterprises</td>
</tr>
</tbody>
</table>

**TABLE 7.6** Interventions proposed during national stakeholder meeting held in 2005 to enhance collective action in national resource management (NRM) for the four benchmark sites in the eastern African highlands.
Fostering negotiations on spring management by gender, wealth, and divergent interests (land owners and spring users), involving government and religious leaders, to minimize the effect of eucalyptus on water and ensure equitable contributions to spring maintenance.

Negotiating soil conservation activities among adjacent farms and administrative units, adapting technologies to land size and farming systems.

<p>| Bylaw reforms | Boundary trees: Writing a bylaw to replace eucalyptus with a profitable tree species that does not have - (continued) | Springs: Writing a bylaw specifying which trees may be planted within a specific distance of springs (100 meters) | Reviewing existing NRM bylaws or writing new bylaws to limit free grazing, establishing soil erosion control | Forming agreements between the Uganda Wildlife Authority and the Benet on use rights and responsibilities of |</p>
<table>
<thead>
<tr>
<th>Intervention</th>
<th>Areka</th>
<th>Ginchi</th>
<th>Kabale</th>
<th>Kapchorwa</th>
</tr>
</thead>
<tbody>
<tr>
<td>negative impacts on cropland (such as <em>gravelia</em>)</td>
<td>upslope, 25 meters downslope)</td>
<td>Farm boundaries: Writing bylaws on (1) a minimum (10-meter) barrier between eucalyptus and cultivated land; (2) payment of reparations if policy is ignored; (3) acceptable locations for eucalyptus</td>
<td>structures (individually and collectively), and controlling bush burning and the planting of trees on farm boundaries</td>
<td>the Benet with regard to co-management</td>
</tr>
<tr>
<td>Springs and waterways: Writing a bylaw to replace eucalyptus with a profitable tree species that does not have negative impacts on springs (such as <em>gravelia</em>)</td>
<td></td>
<td></td>
<td>Trees and grass: Merging or harmonizing community bylaws and later scaling them up to the subcounty level</td>
<td>Writing bylaws for resolving conflicts in watershed areas</td>
</tr>
<tr>
<td>Soil and water conservation: Writing a bylaw to ensure 100 percent participation (one nonconserving farmer jeopardizes all)</td>
<td>Outfield management: To be determined following further negotiations</td>
<td>Soil conservation: Writing bylaws (1) specifying that nonconserving farmers will compensate for losses to downslope farmers and (2) governing drainage and gulley management</td>
<td>Sensitizing the community and wider subcounty residents on the harmonized bylaws and lobbying for the subcounty leadership to endorse and support implementation and enforcement of NRM bylaws</td>
<td></td>
</tr>
<tr>
<td>Porcupine control: Considering the need for bylaws to ensure widespread collective action in porcupine control</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Changes in institutional practice

- Technology dissemination:
  Writing bylaws to regulate how technologies should be governed at the peasant association level (for example, through which social units and with which rules for access)

- Spring maintenance:
  Writing bylaws to balance benefits with contributions to maintenance

- Countering the “road bias” in agricultural research
  Mobilizing for improved extension coverage
  Fostering linkages between the peasant association and traditional law enforcement mechanisms

- Encouraging local government and subcounty technical staff to work with project staff to sensitize the community and foster the implementation of NRM bylaws
  Enhancing support to the negotiation process, especially at community and watershed levels

- Encouraging multi-stakeholder commitment to addressing prioritized issues
  Community visioning and priority setting involving community-based organizations
  Encouraging the Uganda Wildlife Authority to give greater attention to the Benet on co-management

SOURCE: Authors.
Case Study 1: Porcupine Control in Areka, Southern Ethiopia

BACKGROUND. The crested porcupine is the most important vertebrate pest in Gununo watershed, as identified by farmers during a stakeholder workshop held in Soddo in 2004. Application of known control methods on an individual basis was ineffective in controlling the pest, given that porcupines travel more than 14 km in a single night and infestation rates from neighboring farms and villages were high. Collective action was therefore seen as essential to control this problem.

APPROACH. The approach used to foster collective action in porcupine control consisted of the following main steps:

1. Identification of indigenous and chemical pest control methods and the landscape niches in which each is best applied through interviews with key informants, and design of “treatments” to test different control methods;
2. Discussion facilitated by scientists from Areka Agricultural Research Center (AARC) of the most appropriate forms of collective action for coordinating the porcupine control campaign and bylaw reforms;
3. Stakeholder identification through consultations with randomly selected households;
4. AARC-facilitated negotiation among different local stakeholder groups to generate solutions acceptable to all;
5. The conduct of village-level meetings by AHI-CAPRi community facilitators to formulate bylaws on porcupine control with the full participation of each village, based on agreements reached in the previous step;
6. The delivery of short training sessions for farmers by expert farmers and AARC scientists on the application of indigenous and chemical methods.

### Table 7.7

<table>
<thead>
<tr>
<th>Form of stakeholder engagement</th>
<th>Subjects of case studies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Horizontal</td>
<td>Porcupine control in Areka, Ethiopia</td>
</tr>
<tr>
<td></td>
<td>Enabling outfield conservation investments in the Galessa highlands (Ginchi site), Ethiopia</td>
</tr>
<tr>
<td>Horizontal and vertical</td>
<td>Participatory governance of natural resources in Kabale District, Uganda</td>
</tr>
<tr>
<td></td>
<td>Facilitation of equitable technology dissemination in Areka, Ethiopia</td>
</tr>
<tr>
<td>Vertical</td>
<td>Facilitation of co-management of the Mount Elgon National Park in Kapchorwa District, Uganda</td>
</tr>
</tbody>
</table>

SOURCE: Authors.
Enabling Equitable Collective Action in Eastern Africa

of porcupine control, emphasizing strategies previously unknown to participant farmers (namely, the wire trap method), and for local leaders on the collection of data on numbers of porcupines killed or caught, the methods used, and so on, using prepared data collection forms;

- mass mobilization by community members for application of the agreed “treatments”; and
- data collection, monitoring, and evaluation by local leaders and farmers.

OUTCOMES. Farmers presented many traditional methods for the control of porcupines but prioritized three methods considered most effective: the use of deeply dug pits at the outlets of porcupine caves, circular ditches around graveyards, and a wire trap system. A fourth treatment, use of the chemical zinc phosphide, was also combined with the first two methods as two additional treatments. In this fourth treatment, farmers modified the first method, deep digging to 3–4 meters’ depth, to create shallower pits (1–1.5 meters deep) that were used in combination with zinc phosphide (RATOL®). Methods were selected based on their suitability to different landscape niches. These would be applied during the season when porcupines were most harmful to crops.

The large size of the kebele or peasant association (PA) meant that collective action had to be mobilized at a lower level. The de facto institutional structure for organizing community development actions in the study area is the sub-PA, or “developmental unit” (DU). Farmers selected DUs to coordinate collective action because they have the ability to enforce local bylaws and, with only 25–30 households, may easily mobilize collective action and monitor activities during implementation. During the campaign, each DU designated one to two “development days” per week to carry out collective efforts for porcupine control. It was further decided that the PA-level magistrate court and local leaders would follow up on bylaw enforcement during the collective action period.

Negotiations were then supported between farmers whose crops were frequently affected and the least affected households, as well as between farmers participating and not participating in the Safety-Net Program. Bylaws were then formulated with the participation of each group of farmers and distributed to all PA and sub-PA leaders. Negotiations with farmers found to be particularly knowledgeable about certain porcupine control methods were also needed to enable agreements to be reached on knowledge sharing. This highly specialized

6. The Safety-Net Program is a government program designed to help low-income farmers by paying them to carry out development activities (construction of schools, offices, and health centers; road maintenance; and so on) for the PA. Some nonparticipating farmers are uncooperative in collective activities, arguing that Safety-Net farmers alone have the responsibility because they are paid for these activities by the government. However, negotiations led to the joint conclusion that porcupines are a problem to both parties and affect each group equally, requiring joint efforts by both groups.
knowledge had been coveted by these knowledgeable individuals because it could provide them with periodic income from other farmers, who hired them to control porcupines in their fields.

Once the control methods, administrative units, and bylaws for operationalizing collective action were established and the relevant individuals trained on control methods and data collection procedures, the campaign was launched. Farmers went out on foot and in vehicles with megaphones and local music to publicize the campaign across all DUs, villages, and PAs. Following the campaign, records were made by DU leaders on the number of porcupines caught or killed by different farmers and villages in various niches and using each control method.

The final numbers indicated that close to 1,000 porcupines were killed or caught through collective action in the watershed in a single growing season. In Gununo watershed, Offa village ranked first in the control of porcupines. This may be attributed to the high levels of collective action sustained by all households and to the higher levels of porcupine infestation in this village than in other villages in the watershed, as evidenced by the high number of porcupine niches known in the village (more than 100). The use of rodenticide in combination with the modified deep digging technique (digging to 1.5 meters depth) at the outlets of porcupine holes proved to be the most effective control method (Table 7.8). However, farmers were generally reluctant to use chemical control methods due to their cost and found deep digging and the use of wire traps reasonably effective.

Most important to households, however, were the livelihood impacts of porcupine control, as evaluated through the monitoring of local indicators (Fig-

<table>
<thead>
<tr>
<th>Method of control</th>
<th>Niche where applied</th>
<th>Numbers of porcupines killed or trapped</th>
</tr>
</thead>
<tbody>
<tr>
<td>Method 1: Rodenticide alone</td>
<td>Graveyards</td>
<td>197</td>
</tr>
<tr>
<td>Method 2: Circular ditch + rodenticide</td>
<td>Porcupine caves located near graveyards</td>
<td>126</td>
</tr>
<tr>
<td>Method 3: 3-meter hole at the outlet of a porcupine cave</td>
<td>All porcupine caves located away from graveyards</td>
<td>88</td>
</tr>
<tr>
<td>Method 4: 1.5-meter hole at the outlet of a porcupine cave + rodenticide</td>
<td>All porcupine caves located away from graveyards</td>
<td>455</td>
</tr>
<tr>
<td>Method 5: Wire body trap at the outlet of a porcupine cave</td>
<td>All porcupine caves</td>
<td>92</td>
</tr>
</tbody>
</table>

SOURCE: Begashaw et al. (2007).
Figure 7.1. Households reported a sharp reduction in crop damage, a reduction in the amount of time spent or the number of household members policing fields at night, and a reduction in visits to the health center because of weather-induced illness. Interestingly, the latter two were felt to have contributed the most to improving local livelihoods relative to the reduced crop loss.

Lessons learned. A number of important lessons may be distilled from this case study. The first is that collective approaches to pest control can yield much higher returns per effort expended than can individualized approaches, provided that the free-rider problem can be controlled through governance innovations. Here the challenge was to ensure that porcupine controls were applied on all farms irrespective of the level of damage, lest these farms harbor pests that would later attack neighboring farms. This raises the challenge of effectively balancing the costs and benefits of collective action for the most and least affected households, a well-known collective action principle (Ostrom 1990). Facilitating explicit negotiations between households that stand to gain more and less from the activity, with agreements backed up by locally negotiated (and thus socially legitimate) rules or bylaws, can help to substantially advance collective action by addressing the free-rider problem (defined, in this case, as household nonparticipation, which can easily undermine the returns from collective action initiatives). The second lesson is that the integration of local knowledge, introduced technologies, and collective action within a single strategy allowed for synergies in problem solving that would have been unattainable using piecemeal approaches.
Case Study 2: Participatory Governance of Natural Resources in Kabale District, Uganda

BACKGROUND. In Rubaya Subcounty, as in many other areas in the Kigezi highlands of southwestern Uganda, land degradation is a critical challenge. Soil conservation has mainly taken the form of scattered individualized efforts. Yet much of the damage caused by unconserved farmland comes from excess runoff from upslope farms—a more immediate concern of most farmers than the medium-term costs of soil loss. This creates a disconnect between the benefits and costs of soil conservation activities, with upslope farmers bearing the costs and those farther downslope reaping the benefits. Furthermore, most NGOs working in NRM in the region tend to emphasize the technological dimensions of NRM, often neglecting community perceptions and interests and the social and psychological dynamics underlying human behavior. Government organizations such as the National Environmental Management Authority had, for example, paid farmers to adopt soil conservation technologies (for example, digging water trenches on their own land), thereby undermining sustainability. Because development agencies supporting NRM through farmer groups often end up supporting few households and emphasize individualized decisions on land management, many problems that are collective in nature remain unaddressed. Examples of NRM challenges requiring collective action at the Rubaya site include land conflicts, the planting of incompatible trees on farm boundaries, destruction of crops from free grazing and bush burning, and acute land degradation (that is, from the formation of gullies and landslides).

Finally, poor leadership and nonenforcement of NRM bylaws had led to a situation in which rules were left unenforced. Local environmental committees (LECs) were established by local governments to coordinate and oversee environmental concerns at the parish and subcounty levels. These committees were perceived by farmers as dysfunctional due to financial and capacity constraints and lack of downward accountability. Other local institutional structures for NRM had also been established through research and development interventions. An earlier project by AHI and the International Center for Tropical Agriculture had established policy task forces (PTFs) in four pilot villages to address NRM conflicts through participatory bylaw reforms. Although collective action in NRM has been much stronger in these villages, the effectiveness of the bylaws in these villages is still undermined by inadequate enforcement, lack of political will, and inadequate support of technological options that would substitute for land-use practices curtailed through bylaws.

APPROACH. AHI facilitated multistakeholder efforts to improve NRM in three subcounties of Kabale District. From the outset, AHI set out to build on existing institutional foundations—namely, LECs and PTFs. Earlier work on bylaws provided a strong foundation for early successes in Rubaya Subcounty. In each of the villages where these activities were carried out, AHI followed a
series of eight steps to engage stakeholders to develop collective solutions to shared NRM problems. These included

- the holding of community forums by subcounty and village leadership representatives and volunteer community-based NRM facilitators and the sensitization of communities by leading them through an analysis of the role of collective action in NRM and livelihoods;
- the conduct of meetings facilitated by the AHI community facilitator (CF) at the subcounty level with representatives from pilot villages and local leaders (elected officials and opinion leaders) to identify or develop organizational structures for spearheading NRM at the subcounty and village levels;
- the capacity building of existing or new structures by the CF and local government on their roles and responsibilities in NRM;
- the provision of support to NRM structures to lead a participatory review of existing bylaws in the four villages with longstanding involvement in AHI and formulation of new bylaws in the two new villages to strengthen natural resource governance;
- cross-site visits organized by the CF to take members of villages new to participatory bylaw reforms and the subcounty leadership to communities that had successfully implemented model NRM bylaws and technologies;
- the conduct of a multistakeholder workshop to harmonize bylaws emanating from the six villages at the subcounty level with representatives of subcounty and village NRM structures, each village (representatives of the Local Council 1, the lowest tier of local government, and male and female farmer representatives), local government (the subcounty chief, subcounty chairperson, and secretary for production), and the National Agricultural Advisory Services coordinator;
- the provision of technical support by the CF to subcounty NRM structures to plan and facilitate parish and village meetings for the purpose of sensitizing community members and eliciting their feedback on newly revised or formulated bylaws at the subcounty, parish, and village levels; and
- the lobbying of the leadership to endorse bylaws that will apply at the subcounty level.

OUTCOMES. The subcounty leadership and community representatives resolved that new organizational structures be established to supersede both PTFs and LECs but incorporate their functions. Farmers and other stakeholders observed that some PTFs were not fully functional, and new pilot communities lacked these structures. LECs, on the other hand, were said to exist only in name. They were constituted via appointments by the subcounty leadership and were of limited effectiveness due to inadequate financial resources and ambiguity in their roles and responsibilities. Thus, natural resource protection commit-
tees (NRPCs) were constituted at the subcounty and village levels to spearhead NRM initiatives; they were comprised of subcounty and village leadership (ex-officio members) and elected committee members. NRPCs were seen as more representative than previous structures, extending to the village level through the involvement of LC1 leaders, farmer representatives, and community-based NRM facilitators. Furthermore, at the subcounty level they were composed of all representatives of LCs from pilot villages, village NRPCs, community-based facilitators, and ex-officio members at the subcounty level. PTFs included only two members at the parish level drawn from the pilot villages.

In villages where bylaw reforms were ongoing under AHI, participatory review of bylaws was carried out to address the deficiencies of existing bylaws. Some of the existing bylaws lacked punitive measures, such as fines. Other bylaws were too general in nature, failing to specify how they would be operationalized. In villages new to participatory governance, new bylaws were established. Most of these were adapted from the bylaws of other villages with previous experience in participatory bylaw reforms, taking into account the unique circumstances and land management challenges in a particular community or landscape or felt NRM needs. Following the formulation of bylaws on free grazing and soil and water conservation, technologies were seen as necessary for bylaw implementation. For example, prohibitions against free grazing require alternative sources of fodder, and soil and water conservation would require the planting of trees and grasses to stabilize conservation structures. Collective action emerged around communal tree nurseries for this purpose.

Cross-site visits proved instrumental in motivating additional interest in improved natural resource governance in villages new to the approach due to the concrete benefits observed. Community members were motivated by both the social cohesiveness for collective action and the effectiveness of technologies (check dams, water trenches). Cross-site visits catalyzed farmers’ interest in immediately returning to their villages and implementing observed methods of controlling soil erosion. Pickaxes, spades, and forked hoes were provided on request as an incentive to farmers. Bylaws helped to mobilize collective action in constructing check dams across upper slopes to reduce runoff to farms below, while individually dug water trenches were used to capture excess water. Following the construction of soil erosion control structures, seedlings from previously established nurseries were transplanted to protect the conservation structures. This mobilization of collective action in four villages led to the establishment of 1,503 meters of check dams (where none had existed prior to the intervention), the establishment of 5,444 meters of water trenches (representing increases of between 47 and 2,080 percent for different villages), and a sharp reduction in soil erosion and flooding in some locations.

The meeting at the subcounty level to harmonize bylaws led to the development of one final set of bylaws for adoption at the wider subcounty level (Box 7.1). Several different criteria were used in this harmonization process. The
### BOX 7.1 Reformulated and harmonized bylaws in Rubaya Subcounty

**Soil and water conservation:**

- Everyone shall dig water trenches (soil erosion structures), especially on hillsides, in their own land prior to any cultivation. Anyone who violates the above bylaw will be liable to a fine, which will be decided by the sub-county (LC 3) council, in collaboration with representatives of Policy Task Forces (PTFs).
- Napier/elephant grass and other grasses (and/or trees) shall be planted in landscapes where water trenches are not feasible, such as in very rocky or rugged terrain.
- Every farmer should consult neighboring land owners prior to breaking down the terrace or contour bund along common land demarcations or borders.
- No one shall cultivate their land without digging water trenches or planting trees and grasses to conserve soil and water in their own land.
- Prior to cultivating, everyone should excavate trenches, steps, and A frames.

Those who violate these bylaws shall be fined Sh. 5,000 or else they will be forwarded to the LC 3 council authorities for punishment.

**Grazing:**

- No one shall graze in the valley, whether or not the land in the valley is one’s own.
- Everyone shall graze in their own land and if not, seek permission to graze in others’ land. Any abandoned land—including hilltop land—should be utilized for growing agro-forestry species.
- No one is allowed to come from another country and graze in Uganda. [This bylaw is specifically in reference to neighboring Rwanda.]

Those who violate these bylaws will be fined Sh. 10,000.

**Water:**

- Everyone who draws water from a communal water source or well shall cooperate with others in its cleaning or maintenance.
- Anyone utilizing land near a communal well, road, footpath, or water trench should reserve a stretch of 1–2 meters of uncultivated land between their land and the said communal structures.
- No one is allowed to graze or cultivate land near, or wash clothes in, communal water sources.

Those who violate these bylaws will be fined Sh. 5,000.
subcounty chief assumed veto power to ensure that locally formulated bylaws adhere to the national laws on maximum fines and are feasible under existing financial and land-use scenarios. Although fines were conflicting but not considered too high by the chief, participants selected a single figure through consensus-based decisionmaking. The levels of fines selected by participants depended on their determination of the balance between feasibility and fairness; they wanted fines that were not so harsh as to be unfair but at the same time high enough to ensure that the bylaws are followed. This supports the observation by Ostrom (1990) on the need for sanctions to be “graduated” or matched to the level of the offense. Farmers also strongly felt that local leaders should be exemplary in NRM. If they do not follow the bylaws, everyone else will feel that they too have no reason to respect the law. Elected leaders were often reluctant to support the enforcement of NRM bylaws for fear of alienating the electorate, in effect jeopardizing their source of votes. Accordingly, one of the key roles of NRPCs was to lobby the leadership structures to buy into the concept of supporting the establishment and enforcement of NRM bylaws.

Following this harmonization process, the NRPC assumed responsibility for calling NRM bylaw stakeholder meetings at the parish and village levels to increase the awareness of the harmonized bylaws and elicit feedback from farmers. Each bylaw was discussed in a plenary session. After this process was finished, amendments were made to the harmonized bylaws. The bylaw on bush burning, for example, was amended to include damage to property caused by wildfires in addition to the imposition of a fine of 10,000 shillings for those starting such fires. Farmers similarly requested an additional bylaw amendment

Other:
- Burning of grasses, hillsides, weeds, and trees is strictly prohibited. (Those who violate this bylaw will be fined Sh. 10,000.)
- When cultivating, leave some reserve narrow strips of land along boundaries, the road side, livestock tracks, etc. (Those who violate this bylaw will be fined Sh. 5,000.)
- Whoever cuts down trees should plant more. (Those who violate this bylaw will be fined Sh. 5,000.)
- Every household should cultivate fruits, such as avocados. (Those who violate this bylaw will be fined Sh. 5,000.)
- Anyone who owns or rents land in another village should abide by the natural resource management bylaws obtaining in that village.
- Village PTFs should have representatives at the LC 3 (subcounty) level.

Source: Meetings between authors and residents of Rubaya Subcounty
Note: Sh. means Ugandan shilling.
Enabling Equitable Collective Action in Eastern Africa

219

on free grazing, requiring the culprits to compensate households for the value of crops lost, soil conservation structures damaged, and other damages incurred.

The NRPCs at the village and subcounty levels lobbied the subcounty leadership for bylaw endorsement. As a result of persistent lobbying, the bylaws were finally endorsed by the Rubaya Subcounty Local Council on January 17, 2007. Copies of the endorsed bylaws were distributed to local leaders in each village and to the village information centers. To bolster political support of bylaw enforcement, a publicity campaign at the village, parish, and subcounty levels and district endorsement of the bylaws were scheduled.

LESSONS LEARNED. Several lessons may be learned from this case study. First, sustainable land management, often treated as the responsibility of individual households by farmers and development agencies alike, requires collective effort in the form of collective rules, regulations, and implementation of agreements. This experience also puts into question the way in which soil erosion has been perceived by development agents worldwide: namely, that the key challenge is loss of soil from one’s plot. Yet for farmers, the more immediate concern is the economic damage caused by excess water from upslope runoff washing away seed, fertilizer, and property. Understanding this dynamic is essential to mobilize collective action, given the need to understand that the primary benefits of soil conservation activities flow to downslope rather than upslope farmers (which is commonly misperceived given the greater degree of erosion on upper slopes).

Second, the sensitization of farmers to the potential benefits of the intervention through the cross-site visit was essential in catalyzing interest in and commitment to collective action. Political commitment also plays a vital role in mobilization, sensitization, and ensuring commitment to collective choice rules (in the form of formal endorsement of local bylaws). The failure of local leaders to be exemplary in abiding by the bylaws on their own farms as well as to respect the bylaws through their enforcement is an important disincentive to others.

Effective collective action and natural resource governance also takes time, as illustrated by the greater responsiveness of farmers in the subcounty where bylaw reforms had a longer history. A final lesson is derived from the apparent synergy of bylaws (rules), technologies (the new knowledge acquired on check dams and on vegetation to protect newly formed soil conservation structures), and capital (in the form of tools) in addressing local NRM challenges.

Case Study 3: Equitable Technology Dissemination in Areka

BACKGROUND. Gununo watershed is located in the highlands of southern Ethiopia, where land is scarce due to intense population pressure. The productivity of crops is very low due to several factors, one of which is poor genetic potential. Food shortage is common for at least three months per year, even in years of good rainfall. The government has tried to disseminate improved seeds
to farmers on credit. However, repayment rates were very low, and the government has shifted to disseminating seeds in exchange for cash payments. Because most farmers in the watershed are resource poor, especially women, it has become difficult for them to access improved seeds through this system. During preliminary focus group discussions, women complained of an extreme gender bias in agricultural extension. Farmers in some villages stated that no female-headed households in their villages had ever accessed improved seeds through the formal extension system. Participatory action research was conducted to explore ways to enhance equitable technology access in the watershed.

**APPROACH.** Following identification of gender inequities in agricultural extension during gender-disaggregated focus group discussions (situation analysis), community meetings were called by AARC scientists and AHI community facilitators to discuss the way forward. The meetings were held at the village level (in five villages of Gununo watershed) to identify and prioritize local problems and possible solutions. These solutions, involving bylaw formulation and technology multiplication and dissemination following the specifications laid out in the bylaws, were then reviewed and approved at a watershed-wide forum facilitated by the AARC site team. Innovative farmers were selected by the watershed community, and five farmer research groups (FRGs) were formed (one per village) in two PAs to evaluate crop varieties and identify those with high levels of acceptance by farmers. As varieties were being evaluated, draft bylaws specifying rules and procedures for equitable technology multiplication and dissemination were developed at the village level through gender-disaggregated focus group discussions with farmers. Following PA-level harmonization of collective choice rules emanating from different social groups, draft bylaws were authenticated by local PA leaders for subsequent enforcement. Seeds of tested crop varieties (Boloso-I for taro, Simba for wheat) were given to farmers according to rules established in the bylaws, through a system of in-kind credit and following training on management practices. These farmers agreed, in turn, to multiply the seed and transfer the same amount of seed they had been given to other selected farmers according to agreed bylaws. Follow-up monitoring to ensure compliance with agreed bylaws was done by FRG leaders, FRG members, and other male and female watershed residents at various stages of the process. FRG leaders were charged with the responsibility of reporting offenders to members of the local administration, who would, in turn, take action through the PA courts. Data were collected on the repayment process and farmers’ perceptions of the effectiveness of the approach.

**OUTCOMES.** The outcomes were as follows.

**FRG establishment.** To implement the proposed community plan of participatory seed technology evaluation, multiplication, and dissemination, FRGs were established to enable a greater number of farmers to participate in research and extension activities in the watershed. FRG members were selected by the community and included farmers from different social categories (women and men, poorer and wealthier farmers). A total of five FRGs were established in
the five zones of the watershed. Each was established according to location (village) rather than technology. This was done to reduce the difficulty in management and thus facilitate greater coverage.

**Bylaw formulation.** To enhance crop production and address challenges of technology access, farmers felt it necessary to identify local seed multiplication and dissemination channels that would give equal consideration to different categories of farmers, independent of gender or wealth. Thus, local bylaws were established. A number of meetings were held with key informants and focus groups to develop draft bylaws. Finally, agreement was reached on one bylaw that it was believed would equally benefit all social categories throughout the watershed. This bylaw was authorized by two PA leaders and by social court judges. The bylaw required that women farmers be included among beneficiaries and outlined mechanisms of seed transfer and sanctions for offenders (Box 7.2).

**Seed multiplication and dissemination.** Planting material for selected varieties of taro and wheat was distributed to farmers as starter seed through FRG leaders. Farmers were given planting material on credit so that they would pay back an equal amount of planting material to be transferred to other selected farmers until all farmers in the watershed gained access. Five kilograms of improved wheat seed (varieties Wabe and Abola) were given to each of 160

**BOX 7.2 Articles in the bylaw for equitable technology dissemination, Areka, Ethiopia**

- One-third of the beneficiaries must be women when selecting beneficiary farmers.
- A farmer has to manage the new starter seed given to him/her better than or equivalent to his/her own private seed. He/she has to transfer amounts of improved seed equal to what he/she was given initially to another farmer selected by farmer research group (FRG) leaders immediately after harvest.
- If he/she needs to sell the surplus product, he/she has to sell it to farmers within the watershed at a free market price until all the watershed community gets access to the improved seed. If there is no one who wants to buy the seed within the watershed, the seed owner can sell his/her product outside the watershed after informing FRG leaders.
- If a farmer disobeys the bylaw, he/she will be reported by FRG leaders to the peasant association (PA) court. The PA court will make the judgment, and the PA leaders will take action based on the ruling of the judge.
- If a farmer partially loses his/her seed through natural disasters, he/she will repay a smaller amount determined by the FRG leaders.

**SOURCE:** Meetings between authors and residents of Gununu watershed, Areka, Ethiopia.
farmers from five villages. Similarly, corms of an improved taro variety called Boloso-I were distributed as planting material to more than 120 farmers. The FRG leaders monitored seed multiplication from sowing to harvest. The yield of the new variety of taro was higher than that of the local cultivars. The high yield was attributed to the high number of tillers (up to 40) and corms per hill, coupled with the new variety’s relative tolerance to low-moisture stress.

**Credit repayment and bylaw implementation.** The available evidence suggests that the bylaws contributed to a substantial improvement in credit repayment rates, with 100.0 percent of farmers successfully repaying taro and from 43.3 to 97.0 percent of farmers repaying wheat (Figure 7.2). Yet even in the villages with the lowest repayment rates, rates of default still fell dramatically relative to those seen under previous credit systems (shown in the first two columns), indicating the improved effectiveness of the new credit system supported by bylaws. Farmers who did not repay their loans were taken to local courts by FRG leaders. Although most of them admitted to being aware of the bylaw, they had expected exemption from repayment, in line with their previous experience. Following moral persuasion by their colleagues, the farmers in most villages paid voluntarily. In Gegecho and Ofa, where the lowest repayment rates were recorded, this informal follow-up led 25 percent of participants to repay their loans. However, a few households said that their wheat yield was poor and they were unable to repay.

**Livelihood benefits.** Farmers said that the new taro variety had enhanced food security in the watershed due to its high productivity, short growing season, and resistance to decay when stored in the fields for long periods. These features have extended the season in which food is readily available in farmers’ fields to three to four months per year. The variety is also becoming a cash crop. Some farmers said that they had never received so much income from any other crop, even coffee (Ethiopia’s primary cash crop). Some farmers declared a 225 percent increase in income relative to the local variety on the same amount of land. One farmer received more than 2,000 birr (US$230) from taro in 2006, and several households are expanding their area under taro cultivation. As a result of these successes, the new taro variety is being disseminated very quickly—primarily through purchase. Farmers also claimed that the new variety saved on fuelwood and that they had gone from three bundles of fuelwood to one to cook a pot of taro. The Ministry of Agriculture at the district level is now trying to use this variety of taro as part of its food security program. The performance of new wheat varieties was similar to that of the local variety and variable across farms and villages due to differences in fertilizer application and weeding, and therefore of less interest to farmers.

The benefits of the approach used go beyond the technologies. According to focus group–based evaluations of the approach, it has brought more equitable benefits to women and poor farmers relative to the formal extension service (Table 7.9). In-kind credit was also seen as more favorable to farmers than loans
**FIGURE 7.2** Credit repayment rates associated with bylaws, by village, compared to earlier credit systems at the African Highlands Initiative–Areka benchmark site, Ethiopia, as evaluated in 2006

<table>
<thead>
<tr>
<th>Villages</th>
<th>Repayment rate (percent)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-2005 MOA, Gegecho</td>
<td>40%</td>
</tr>
<tr>
<td>Pre-2005 AHI, Gegecho</td>
<td>80%</td>
</tr>
<tr>
<td>Gegecho, 2006</td>
<td>60%</td>
</tr>
<tr>
<td>Chare, 2006</td>
<td>90%</td>
</tr>
<tr>
<td>Ofa, 2006</td>
<td>70%</td>
</tr>
<tr>
<td>Tach Busha, 2006</td>
<td>80%</td>
</tr>
<tr>
<td>Lay Busha, 2006</td>
<td>90%</td>
</tr>
</tbody>
</table>

**SOURCE:** Mazengia (2006).

**TABLE 7.9** Farmers’ perceptions of the equitability and benefits of the African Highlands Initiative (AHI)/Areka Agricultural Research Center (AARC) approach as an alternative to the approach used by the extension service, Gununo watershed, southern Ethiopia, 2006

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Formal extension service (average rank)</th>
<th>AHI/AARC (average rank)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Equitable access by women farmers</td>
<td>13.4</td>
<td>86.6</td>
</tr>
<tr>
<td>Equitable access by poor farmers</td>
<td>26.6</td>
<td>73.4</td>
</tr>
<tr>
<td>Form of credit (repayment in kind, as opposed to cash)</td>
<td>17.6</td>
<td>82.4</td>
</tr>
<tr>
<td>Awareness of technology prior to wider dissemination</td>
<td>14.4</td>
<td>85.6</td>
</tr>
<tr>
<td>Quality and frequency of technical support</td>
<td>23.6</td>
<td>76.4</td>
</tr>
</tbody>
</table>

**SOURCE:** Mazengia (2006).

**NOTE:** Results were derived from group-based matrix ranking of the two approaches, with 100 seeds divided among the two approaches for each indicator (and more seeds representing better performance) and the results averaged across the five villages.
to be repaid in cash, as was the ability of farmers to learn about new technologies prior to adoption through prior testing of technologies within FRGs. Unlike under the previous credit system, in which farmers consumed or sold all of their produce to escape repayment, most farmers have maintained improved seed for the next planting season. Surprisingly, some farmers claimed to prefer the new approach over the then-current Safety-Net Program, which gave seed to resource-poor farmers at no cost. That approach, which required them to submit to on-farm screening prior to taking loans, was also instrumental in improving varietal performance and farmers’ ability to repay at harvest, although the benefit was attributable to the variety. Farmers outside of the pilot site have begun requesting that local government agencies adopt a similar system of in-kind loans.

Given their previous experience, farmers were reluctant to work with researchers at the beginning. The relationship between researchers and farmers has improved due to the active participation of farmers and greater consideration of their interests by researchers.

LESSONS LEARNED. A number of lessons may be learned from this case study about collective action in general and about approaches to enhance equitable technology access in particular. First, farmers were found to respect collective-choice rules much more than government-imposed rules for credit repayment, suggesting that locally negotiated bylaws have great promise for enhancing collective action and local governance. Second, a higher number of farmers who had failed to pay their loans on time were found to pay following informal persuasion as opposed to formal prosecution, which tends to breed resentment and resistance. The effectiveness of informal persuasion was strongly grounded in the group decisionmaking process during which the bylaws were negotiated, because all farmers present had agreed to the terms. Because social pressure often makes it difficult for local leaders to enforce bylaws with harmful consequences for others (such as fines), informal enforcement efforts such as moral persuasion may be an important tool that complements formal bylaw endorsement and enforcement. In this case, however, restricting offenders from taking new loans remained a crucial complement to moral persuasion in enhancing credibility in the system and also in controlling free riders. Third, loan repayment rates were higher when FRG leaders performed their roles and responsibilities as agreed, pointing to the crucial importance of good leadership and bylaw enforcement in enhancing collective action. In this case, the absence of an article in the local bylaws to hold FRG members and local administrative leaders accountable to agreements undermined repayment rates. The lesson is that the roles and responsibilities of all parties, including leaders and enforcement agents, must be clearly articulated.

Case Study 4: Co-Management of Mount Elgon National Park

BACKGROUND. In the 1930s, the British colonial government declared the Mount Elgon area a Crown forest and gazetted it as a forest reserve, officially
excluding people from the area. Up until the 1970s, cultivation in the forest was forbidden, and the forest was largely intact. Through an informal understanding, the Benet (Ndorobo) were allowed to continue hunting and gathering in the forest and cultivating in the moorlands. At that time the forest was overseen jointly by the Forest Department and community leaders. The Benet continued to occupy the area until 1983, when the Government of Uganda changed the official designation of the area to Mount Elgon Forest Park, forcing all people still residing within the park’s boundaries to leave the protected area. This, in effect, cut the Benet off from their traditional resource base and livelihood system. Prolonged pressure from the Benet community (a group of elders) and district leaders caused part of the forest reserve to be degazetted for use by the Benet. However, some of the Benet were not resettled and remained landless. Livelihood changes induced by resettlement and growth in the human and livestock populations have increased the pressure on park resources, compromising both livelihood and conservation objectives.

In 1993, the Government of Uganda again changed the designation of the protected area to Mount Elgon National Park, shifting management from the Forest Department to the Uganda Wildlife Authority. This led to tighter restrictions on protected-area access by local people, further souring relations between communities and park staff and intensifying the illegal harvesting of park resources by local residents—a practice tacitly accepted by park rangers. Harsh enforcement of exclusionary policies resulted in rapid deterioration of the relations between the Benet and the government. Livestock grazing and cultivation of Irish potatoes in the moorlands were prohibited, and any Benet homes found inside the protected area were burned. Benet elders, with the support of Action Aid and Land Alliance, formed a legal entity called the Benet Lobby Group. The Benet Lobby Group and Benet Settlers Association worked at the local and national levels to increase the awareness of immediate risks to their livelihoods. They initiated and sustained a court case against the Government of Uganda until its resolution in favor of the Benet in 2005. Exclusionary policies had a number of other negative spin-offs; for instance, protected-area officials encouraged bribes from local elites (mostly non-Benet) for access to forest resources. Also, women and children who entered the park to collect forest products without paying bribes were physically abused. Communication between local communities and the Uganda Wildlife Authority (UWA) had largely broken down.

In 1995 a new co-management policy was implemented for all protected areas in Uganda. This policy was designed to improve relations with local people through the sharing of the benefits of and responsibilities for park management and conservation. Participatory action research was conducted in two communities neighboring the national park to explore approaches to reducing conflict and enhancing the benefits flowing to customary rights holders.

**APPROACH.** The Kapchorwa District Landcare Chapter (KADLACC), with support from AHI, has worked to end this impasse between the Benet and UWA. The intervention strategy included the following steps:
• Participatory stakeholder mapping with district stakeholders to identify relevant stakeholders for co-management and benefit sharing.
• Focus group discussions facilitated by KADLACC with each of the identified stakeholder groups: four Benet villages located in the degazetted zone, UWA (community rangers with their sector head), and the Benet living outside the resettlement zone.
• Stakeholder meeting facilitated by district champions to initiate dialogue on co-management among relevant government departments, community-based organizations, farmer groups, and NGOs. A consensus was reached on key issues from the community’s point of view, and community members presented requests for technologies that could address their livelihood and conservation needs.
• A visit by KADLACC to the UWA sector warden’s office to communicate the Benet’s interest in acquiring technologies found at the UWA field office. UWA obliged by providing tree and fodder planting materials.
• A district-level meeting facilitated by KADLACC involving community representatives, subcounty council members, the UWA sector head, district leaders, and local government departments. The following were discussed: (1) the livelihood consequences of conservation and (2) possibilities for co-management of the park despite an ongoing court case between the Benet and UWA. The dialogue resulted in the development of an action plan, including specified days when the Benet can collect honey and bamboo shoots, in exchange for community contributions to the control of illegal activities within park boundaries.\(^7\)
• Informal discussions between community members and KADLACC on the types of activities that could be negotiated to further build the relationship with UWA while posing no significant threat to the conservation objectives of the protected area.
• Multistakeholder meetings facilitated by KADLACC at the parish level with community representatives, an UWA official, and representatives of subcounty government to elicit community views on protected-area management and negotiate rights and responsibilities in co-management.

OUTCOMES. The reconciliation process was jump-started by UWA efforts to share technologies with the Benet and to initiate collaboration around mutual interests. Representatives were identified for each stakeholder group, and a trust-building process was initiated at different levels of organization. Through informal lobbying, the parties were sensitized to each other’s points of view, and agreements were reached on how to facilitate the development of a shared understanding among the stakeholders. During the negotiation process, UWA

\(^7\) Such activities include nonpermitted activities for the involved villages, as well as all activities by others (those without customary rights or negotiated access agreements).
Enabling Equitable Collective Action in Eastern Africa

representatives and the Benet were encouraged to consider the interests of the other party, with the conservation of biodiversity forming an agreed “bottom line” objective based on conditions set by UWA for engagement in dialogue. This enabled them to move beyond the former positioning around particular outcomes (for instance, total exclusion versus restoration of the Benet’s historical tenure and use rights) to dialogue around resource use options that would not compromise the bottom line while ensuring that the needs of both parties would be better met. This led the Benet to expand their expectations beyond land rights to include access to resources within park boundaries. The two parties were then able to reach a mutual agreement on shared custodianship of the park. This was associated with strengthened access rights for customary users of resources within park boundaries (Figure 7.3) in exchange for their assistance in regulating access by outsiders and led to a reduction in the number of arrests per week. Only time will tell whether this innovation can be sustained and whether it will produce any improvements in the resource base.

LESSONS LEARNED. A number of lessons may be derived from this early stage of co-management. First, the role of a neutral facilitator cannot be overemphasized. KADLACC provided a forum for both parties to engage positively despite their history of conflict and an ongoing court case that had kept enmities strong. Given the negative social and economic costs of conflict, in the most serious conflicts there may be opportunities for reconciliation with appropriate mediation. A first gesture of reconciliation (in this case, UWA’s sharing the

FIGURE 7.3 Changes observed in local indicators in 2006 following methodological innovations for co-management in Kapchorwa District, Uganda

Change observed

<table>
<thead>
<tr>
<th>Change observed</th>
<th>Before</th>
<th>After</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head loads of bamboo products harvested per week</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of households collecting park resources per week</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heads of livestock illegally grazed in park</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of days livestock are allowed into park per week</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of arrests or fines per week</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

requested technologies with farmers) can also go a long way toward thawing tense relations. A second lesson for engaging in negotiations involving prior conflict is the need to respect stakeholders’ “bottom lines” (in this case, biodiversity conservation for UWA) while fostering shared sacrifices (here, the granting of increased access rights to neighboring communities in exchange for their assistance in policing against the entry of those without customary rights). If only one party is seen to compromise for an outcome beneficial to the other party, the party bearing most of the costs with the least benefit will quickly withdraw from dialogue. This supports the observation in the collective action literature that the perceived benefits of collective action must be equal to or greater than the costs (Ostrom 1990). Finally, parallel multistakeholder dialogues at diverse levels may help to bridge the gap between policy intent (in this case, co-management of protected areas) and action on the ground. In this case, UWA representatives at higher levels within the administrative hierarchy were found to have more favorable attitudes toward co-management than park guards, attitudes which could be leveraged to support behavioral changes among park guards and increase the chances of a more equitable solution.

Discussion and Conclusions

Local communities were found to have a rich array of collective action institutions, which in turn provide a variety of economic and social support functions. Although some of these were seen to support some groups more than others, most forms of collective action were found to have a positive effect on local livelihoods. The practices of several external agencies were found to be biased by wealth, gender, or levels of political influence, and greater attention must be given to methods for fostering more equitable forms of development assistance.

Despite the apparent benefits derived from local forms of collective action, they were seldom found to foster solutions to priority NRM problems other than the provision of inputs (land, labor, capital). Action research findings illustrate the potential for improving livelihoods and fostering more sustainable use of natural resources by catalyzing collective action on NRM where it is absent. Effective collective action seems to require the use of both informal negotiation support processes and formal bylaw reform and enforcement. Participatory bylaw reform creates stakeholder buy-in, which reduces ambiguity and makes people feel more accountable to other parties for their actions. A combination of formal and informal mechanisms is needed to revitalize natural resource governance and related livelihood and environmental service outcomes. NGOs, community-based organizations, or local governments can play an important role in reducing the transaction costs of organizing through information provision, community mobilization, facilitation, advocacy, monitoring, and negotiation support.

Our findings support the two research hypotheses. Strategies to improve NRM at the farm and landscape levels were more effective when more equi-
table decisionmaking processes were used that explicitly acknowledged diverse “stakes.” Bylaws helped in holding each party accountable for following the resolutions reached through negotiations. Adapting bylaws to local conditions and to stakeholder priorities also induced livelihood improvements by enabling collective action and technology adoption. But bylaws need enforcement. Our study suggests that participation in bylaw formulation increases the likelihood of rule compliance and of offenders’ adherence to sanctions, provided that these rules are backed by formal or informal means of enforcement. Improved governance of natural resources is a process that involves overcoming past expectations and behaviors, such as individualized solutions, nonpayment of loans, and nonenforcement of bylaws, and gradually learning the value of collective solutions built on trust.

**Implications for Practitioners and Policymakers**

There are three particular implications of our findings for NRM practitioners and policymakers. First, collective action serves critical development and social support functions in local communities. Development organizations should seek ways to build on local institutions that are highly valued or seen to contribute most to local livelihood goals, in particular for women and poorer households.

Second, by failing to serve the needs of disadvantaged groups, any development intervention can result in winners and losers or simply exacerbate existing socioeconomic inequalities. Extension and development organizations must make greater efforts to understand their clientele and their diverse circumstances prior to development interventions and to identify different political or economic interests within a community that could be fostered or undermined through a particular intervention (as well as socially optimal solutions8). They must then learn to work explicitly with these diverse groups and divergent political interests to foster more equitable solutions to development and NRM challenges through stakeholder identification and negotiation support. More effort must also be given to monitoring the outcomes for different social groups.

Third, fostering equitable collective action where it is absent requires an understanding of local interest groups, informal negotiation of solutions among these groups, and a means to formally endorse collective-choice rules (whether through local government, customary leaders, or another moral authority seen as legitimate by all parties). A well-facilitated process of participatory bylaw reform may create stakeholder buy-in, thereby reducing the cost of enforcement and ambiguity. However, bylaw enforcement by communities themselves is a challenge, because it involves sanctioning friends and relatives. In many cases, there may be complementary roles for moral persuasion (as a first option) and

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8. These may be defined by their ability to benefit all social actors and to ensure that no harm is done to any given group or individual.
for local government or another form of authority to assist in the enforcement of collective-choice rules (as a second option). In many situations, neither formal nor informal mechanisms for rule formulation and enforcement would be fully effective without the other.

Local forms of collective action emphasize enhancing incomes and “safety-net” functions, leaving many common NRM problems unaddressed. Many individualized efforts at NRM are undermined by the effort that must be expended relative to the returns, as seen in the case studies on controlling excess run-off and pests. External support for “horizontal” negotiations among local resource users combined with technological inputs can go a long way in supporting collective solutions to NRM problems. There is also an urgent need for NGOs, local governments, and other development actors to facilitate the evolution of democratic governance through the development of collective-choice rules at the local level as a means to address environmental concerns while operationalizing (largely ignored) national environmental policies.

Mechanisms and incentives for institutional cooperation toward more equitable and negotiated solutions to NRM are sorely needed. The partitioning of mandates among research, extension, and law enforcement agencies causes these issues to be treated separately and important synergies to be lost. Rural development and law enforcement agencies need to forge partnerships and synergies to revitalize natural resource governance at the local level. Managers of research and development organizations must also seek ways to bridge the gap between knowledge generation and development practice. This may include providing increased support to action research (with appropriate support from social theory) or enhanced efforts by those engaged in research to go further downstream in supporting development practitioners—building knowledge on social theory and increasing their efforts to integrate this understanding into everyday extension and facilitation practices.

References


Enabling Equitable Collective Action in Eastern Africa


