Chapter 11

Community Organizing for Natural Resource Management: Strategies for Mitigating Farmer-Pastoralist Conflict through Decentralized Governance

Michael Bertelsen, Salmana Cissé, Keith M. Moore, and Abdoulaye Touré

Like many landscape systems around the world, the Inland Delta and hinterlands of the Niger River are transitioning to more intensified agriculture and animal husbandry. These dominant and interrelated farm household/enterprise systems must serve as the engines for sustainable economic development, providing food security and alleviating poverty. For centuries, subsistence agricultural communities of this region have been nested within an ecosystem characterized by open range, opportunistic grazing managed by transhumant (migrant) herders. Recently, however, increasing population pressure, changing political structures, declining and erratic rainfall, and degraded natural resources have forced both agricultural and pastoral communities to transform their production systems and the social relations on which they are based. Unfortunately, this transformation has brought about increasingly violent conflicts between farmers and pastoralists over natural resources, overlaid with ethnic differences.

The policies of the centralized colonial and post-colonial Malian state have not been adapted to growing market forces. Often they have perversely incited conflict by introducing projects, programs, and policies favoring one group of resource users over another. Across the Sahelian region of West Africa there is a growing consensus that central governments are poorly placed to make many of the decisions critical to their citizens' welfare.

At the Nouakchott (Mauritania) Conference in1984, sponsored by the Interstate Committee for the Fight against Desertification in the Sahel, West African governments for the first time formally recognized the need for local involvement in development projects. This conference was followed by two other Interstate Committee for the Fight against Desertification in the Sahel sponsored conferences, one in Ségou, Mali, in 1989 that further emphasized the need for decentralized natural resource management (NRM) governance; and the other in Praia, Cape Verde, in 1994 that highlighted the relationships between decentralization and land tenure. Subsequently, West African governments embarked on a policy of decentralization, devolving responsibility for governance to local administrative structures with far-reaching implications for the region. At the same time, multinational and bilateral donor agencies such as the World Bank and the United States Agency for International Development as well as nongovernmental organizations (NGOs) began promoting local civil society organizations as a core element in their new strategies for rural development and NRM. The advent of decentralization has provided the impetus for mobilizing rural civil

society in the transition to more intensified farm household production systems and transforming the vicious cycle of poverty into a virtuous circle of poverty alleviation.

NRM is one of the powers decentralized to the community/watershed system level across West Africa, shifting governance and consensus building to those nearest and most knowledgeable to address these issues. However, this has placed a significant burden on newly emerging local NRM decision-making institutions. Frequently illiterate and without specialized knowledge or skills, local officials are poorly equipped or trained to deal with NRM issues. Also, members of the rural councils are fully occupied in becoming acquainted with the large number of additional duties and responsibilities they have assumed under decentralization. A consistent, effective approach to building and reinforcing the social and human capital necessary to facilitate local NRM decision making is needed.

Decentralization has changed the dynamics of NRM, but it has not yet yielded a methodology for effective local governance in the Sahel. In response to this insufficiency, the Sustainable Agriculture and Natural Resource Management (SANREM) Collaborative Research Support Program (CRSP) West Africa project (Phase II, 1999–2004) designed and implemented a program to develop and test an approach to address issues surrounding decentralization, conflict, and NRM in the Niger Delta of Mali. The driving force behind the approach was the need to find long-term institutional structures to manage complicated natural resource management problems. Typically, transhumant Peul herders have found their cattle trails increasingly encroached on by settled Marka farmers who find their crops trampled by wandering cattle as the dry season approaches.

Although in dealing with conflict over natural resources, it is important to implement short-term conflict resolution/management strategies, the SANREM approach also focuses on long-term consensus building and provision of social infrastructure as a platform for change and improved agricultural and natural resource decision making. The same tools being used to resolve conflict and develop a set of organizational skills (human capital investment) for consensus building and local governance are being used simultaneously to establish a new form of social infrastructure (social capital investment) to bridge relationships, build trust among local communities, and link these communities with scientific research services to identify and introduce technologies that increase the productive capacity of the natural resource base. The working development hypothesis of SANREM in Mali has been as follows: When a local population is provided with (1) methods for natural resource and conflict management, and (2) an institutional vehicle for inter-village, inter-ethnic dialogue, the population can then become proactive in addressing major agricultural productivity and natural resource management issues.

Local Institutional Environment

The proposed social infrastructure was designed to build linkages within the local institutional environment and bridges to external organizations and stakeholders. Two bases of institutional power at the community/watershed system level in rural Mali have vied for control of resource mobilization for development and environmental conservation: state power through the *chef de arrondissement (sous-prefet)*, who can bring to bear the police force; and customary power through village and other resource chiefs, who control the immediate allocation of resources for household livelihoods.

The resources of the state in north central Mali have been mobilized by an array of technical extension services that have attempted to assure environmental protection by threat of law and regulation of surplus extraction through development initiatives. For instance, the Office

Riz (the rice marketing cooperative) has been a major state initiative, reformulated from time to time, to enhance the productive power of the peasantry in rice production. This effort has been implemented by organizing farmers into village rice-growing associations. The livestock service monitors cattle health and the movement of herds within the zone. The forestry service polices the cutting of wood for fuel and timber to assure that overharvesting does not occur, frequently levying fines and collecting fees for woodcutting. The Centre Régional de Recherche Agronomique (CRRA)/Mopti is charged with developing new and adapted technologies to increase productivity.

Rural civil society has been restricted for the most part to the village level. Village associations are common among men and have often provided a point of contact for state development efforts. Women's associations have been largely neglected until recently. The Herders' Association of Nérékoro was established as a local organization to protect the interests of migrant herders who have local bases within the region but little or no administrative representation.

Since the end of the Traoré regime in 1991, the establishment of rural communes (local government units) has brought government closer to the population while ostensibly empowering the people to improve their livelihoods. Supporting this movement, NGOs have provided an alternative source of incentives for self-improvement, stimulating new initiatives and developing organizational skills. The communal elections in June 1999 brought to power the first elected officials who actually lived and worked in the rural communes of Mali. Despite their names being drawn from national party lists, their local roots and residence have increased the tendency for them to be more responsive to local concerns. Time will tell whether these elected officials will be truly responsive to the expressed concerns of the populations they serve.

Any process that involves multiple stakeholders should address how benefits can be optimized for the group as a whole. Stakeholder involvement implies not only participation but also recognition that not all participants have the same goals or the same power to achieve them. Successful negotiation of a shared vision involves pooling of earlier knowledge and reasoning processes and is predicated on a collective need or desire for results by and for the group. Confronting the reality of opposing stakeholder interests is necessary if the sense of ownership in a shared vision is to be created and the plan embedded in the social consciousness.

The SANREM CRSP West Africa project captured this holistic element by building on landscape concepts drawn from watershed management and complementing the metaphor with a new term: lifescape. Landscapes are constructed realities. In the global lexicon of SANREM Phase II, working at the landscape/lifescape scale meant going beyond what has come to be known as *gestion de terroir*, or village-based development in the West African Sahel. Indeed, the scale at which livestock management operates requires movement across ecosystems in a seasonal adaptation to fulfill resource needs. As scale increases across the nested landscapes, a wider range of stakeholders, often having no direct interest in specific local communities or production systems, becomes involved. SANREM Phase II research focused on understanding the complicated biophysical and social processes within and across community/watershed systems.

For small groups, it is easy to gather in one location and quickly take these steps at one or two meetings. However, this is not possible in the context of decentralized administrative units because the population of each community can range from 2,000 to 15,000 individuals. In this case, a standardized methodology is necessary to aggregate local (*terroir*/village) participation into commune-wide participation. An adaptive management approach was necessary to learn how to expand the networks of the community/watershed system and determine the most feasible mechanisms for aggregating village priorities and concerns. Local knowledge and practice, in fact, provide one of the most reliable ways to identify mechanisms for this adaptation and aggregation.

SANREM West Africa Approach

The SANREM West Africa approach to improving natural resource and conflict management at the commune level comprises five steps:

1. Ascertain local perceptions and priority needs.
2. Build commune consensus and establish local management capacity through a natural resource management advisory council (NRMAC).
3. Build institutional capacity for impact, including training of NRMAC members in literacy, numeracy, and governance; and training in natural resource management and conflict management.
4. Complement local knowledge with biophysical and socioeconomic research and development that lead to improved technologies and decision-making tools.
5. Monitor and evaluate.

These steps are summarized below.

Step 1. Ascertain local perceptions and priority needs

Implementation of the SANREM process is predicated on the interests of local partners and local government. Further, local perceptions of the constraints and potentials of the region's nested landscape systems must be understood. Generally, perceptions vary over time, within communities, and among stakeholders: farmers, pastoralists, village associations, NGOs, and technical service providers. The best way to initially reveal and document these perceptions is with a rapid participatory survey at a multivillage level, such as the participatory landscape/lifescape appraisal (PLLA), developed by the SANREM CRSP as an improvement on the standard rapid rural appraisal.

The PLLA is based on the proposition that any successful NRM project must be grounded in a balanced, thorough appreciation for the biophysical and socioeconomic milieu of the target community (Earl and Kodio 2005). The PLLA forms multidisciplinary teams of researchers and local stakeholders to examine the natural resource base and the socioeconomic realities of the community. Participatory techniques identify key biophysical and socioeconomic constraints and opportunities. Groups and individuals from all strata of the local population become involved, and a representative picture of the commune becomes apparent during the course of the weeklong exercise. Particular attention is paid to institutions and customs that provide an interface across systems, for management decisions affecting both landscape and lifescape are made through them. The PLLA also provides the opportunity to inform the local population about the nature of the SANREM interventions and helps to form realistic expectations within the community about what collaboration may mean in the future.

The PLLA in the commune of Madiama in February 1999 identified three major NRM constraints: the poor and degrading condition of soil fertility, pasture, and water points for livestock. These constraints formed the basis for prioritizing the activities that became the work plans and research programs prepared by the partners, including representatives from the local population.

Step 2. Build commune consensus and establish local management capacity through a natural resource management advisory council

In September 1999, a SANREM CRSP–sponsored delegation of national agricultural researchers, the newly elected mayor of the commune, and representatives of the local Office Riz and a World Bank NRM project visited all 10 villages in the commune of Madiama (Moore et al. 2005). In each village, the chief and a group of his counselors were informed about the objectives, value, and role of participation in village NRM user groups and a commune-level NRMAC. The members of the delegation explained that the primary purpose of the NRMAC was to provide a forum for reflection on NRM to improve communal resource management. Village NRM user groups would provide an essential link for communicating technological innovations developed by researchers. The NRMAC would provide a network through which researchers could learn about commune priorities, technology, and information needs and a local platform to prevent, mitigate, and resolve NRM conflicts and to develop a plan for natural resource management.

Each chief selected five delegates to represent the village in a commune-wide general assembly. According to the relative importance of the activity to village livelihoods, either two herders, two farmers, or one of each was selected. Two or three more villagers were selected to represent women, hunters, and crafts/forest gatherers. Two of 10 villages initially declined to participate, but one of them later sent four representatives to the assembly. Each of the nine participating villages and the local irrigation management committee sent three to five representatives to the general assembly in October 1999.

The mayor of the commune opened the assembly with the 45 village representatives, including seven women, and another 25 participants, including representatives from research, NGOs, development projects, locally based government services, the commune council, and the *sous-prefet*. The anticipated objectives, role, and structure of the NRMAC were again described. Translations were provided in the two local languages, Peular and Bambara. Participants were divided into four discussion groups: organizational and administrative issues; dryland farming, rice farming, and fishing issues; livestock, hunting, gathering, and craft issues; and the role of women. The groups were enjoined to debate the concerns and priorities of the commune with respect to each topic. After the groups reported their conclusions at the plenary session, all research, technical service, NGO, and elected officials withdrew, and elections were held to form the NRMAC. Twelve men and two women were elected; four more women were added later for gender balance. The village that had originally declined to participate for political reasons sent a representative to join the committee after it had been established.

NRMAC roles include the following:
- collaborating in drawing up each year's work plan, choosing farmers and pastoralists to participate in field tests, monitoring and evaluating results of field tests and progress toward fulfilling work plan objectives, and disseminating awareness of these activities and any recommendations resulting from them
- working with farmers, pastoralists, local chiefs, and other stakeholders to avoid and manage disputes over natural resources
- acting as a liaison between the local population and the commune's mayor and other government authorities regarding natural resource issues
- providing training and acting as mentors for the development of holistic and conflict management strategies in the commune's villages

Great care was taken to ensure that all social strata in the commune were equitably represented on the advisory committee, particularly in terms of socio-professional groups, ethnicity, and gender. Because perceived constraints and solutions vary considerably, any excluded group will not attach much legitimacy to decisions or advice coming from the committees. In Madiama, representatives were elected to the commune-level NRMAC from representatives of each village user group. Each village committee had at least one representative. One-third of the commune-level committee members were women. Although SANREM encourages diversity, the village committees are less diverse than the commune committee because the villages themselves are less heterogeneous in terms of ethnicity, socio-professional groups, and in their views of gender roles.

The NRMAC can function well only if village chiefs, the mayor, and other authorities are fully informed, provide support, and understand that their own role in the local hierarchy will remain secure and undiminished by collaboration. In Madiama, the NRMAC established good relations with the mayor, who regularly participated in meetings, often officially opening and closing them. The *chef d'arrondissement* also attended. Both were outspoken in encouraging committee activities.

NRMAC sustainability is an important issue. Sustainability in this context is dependent on the participants acquiring the training and skills necessary to maintain adaptive capacity in the management of everyday problems and on the capacity to access and interact with local providers of technical services. The emergence of complex adaptive systems in a commune means that new and difficult challenges will arise in the future. The NRMAC has been designed to build social capital within Madiama to meet these challenges, whether through the solidarity of horizontal bonds between villages and ethnic groups or through bridges connecting the community to service providers.

Legitimacy of the Natural Resource Management Advisory Council

Four factors contribute to the legitimacy of the NRMAC as a viable community organization. They are all based on the foundation of the participatory approach developed between researchers and the community for establishing and operating the committee. The first involves gaining formal recognition of the committee as a legal entity. The second is the establishment of relationships with stakeholders and partners in the association's environment. The third is serving a valued purpose for the community. The fourth is the re-election of committee members after their first term had been served.

Formal recognition of the association. To become legally recognized, the NRMAC was required to conform to national laws concerning associations. With the assistance of a local NGO, CARE/Djenné, the general assembly drafted, discussed, and passed bylaws that were approved by the judicial authorities. The NRMAC then formally petitioned the *prefet* of the Cercle of Djenné for legal recognition. Initially, the *prefet* refused the request because the domain of the NRMAC activities fell within the range of authorities devolved to the commune council. Therefore, the NRMAC requested that the mayor, who had assisted in the process of association development, send the *prefet* a letter in support of formal recognition. The mayor obliged and, on receipt of that letter, the *prefet* approved the request. The NRMAC was formally registered as an association by the Cercle of Djenné in October 2001.

Relations with other associations, technical services, and villages. Partnerships have been developed to provide a framework for productive relationships. These partnerships are either formal ones, conforming to the standards of national civil society, or informal ones, based on shared understandings of customary practice at the village level.

The first step in developing formal agreements of cooperation/collaboration was the signing of a protocol with CARE/Djenné, the NGO providing the NRMAC with institutional development training and assistance. Once formally recognized as a registered civil society organization, the NRMAC also signed a partnership agreement with the commune council. This document, perhaps the most significant of the NRMAC's formal protocols, provides a framework for the NRMAC to influence NRM decisions within the commune, to be consulted concerning decisions of the commune council, to be recognized throughout the commune as a significant player in the resolution of conflicts linked to natural resources, and to actively participate in the economic development of the commune. (The NRMAC proactively explored other formal partnerships. To develop collaborative relations, the NRMAC invited representatives of the technical services for the Cercle of Djenné to a meeting. Subsequently, a relationship with the Service Locale de la Réglementation et du Contrôle, which is charged with protecting the forestry resources of the Cercle, was established.)

The second type of partnership builds collaborative relationships with customary authorities and villagers. Although not formally documented, these relationships were formed while conducting activities involving the village chief. This kind of partnership began with the establishment of village NRM user groups under the direction of the village chiefs. By sending representatives to the general assembly to elect the NRMAC, the chiefs in effect confirmed the legitimacy of the NRMAC. The reticence of certain chiefs to designate village members to participate in the initial general assembly of the association bears witness to the validating role that chiefs play. This form of legitimacy is fragile and arbitrary in nature. Unlike formal, documented recognition, it may be withdrawn at any moment. (Frequent communication with all partners is essential for effective organizational functioning. However, this communication is more than a matter of transferring information; it involves continually renewing understandings between the NRMAC and the village chiefs. NRMAC members have regularly kept the village chiefs informed of their activities, the training programs in which they participate, and the research activities they monitor.)

Valued purpose. Unless the NRMAC serves the community, community members have difficulty understanding why the association should be of any concern to them. Based on the priority concerns of villagers, the NRMAC's mission has been to promote the management of natural resources in the commune by introducing and adapting technologies to local conditions so that the people can improve their livelihoods. An essential element in this mission involves the management of conflicts generated in the use of natural resources by various community members. By providing such services, e.g., protecting and planting trees, resolving conflicts, and introducing new technologies, the NRMAC legitimizes itself in the eyes of local leaders and villagers.

Reelection of committee members. This legitimacy was validated with the reelection of the NRMAC. Announcement of the process for reelecting the members was circulated through the commune, in each village, and on rural radio. As when it was first constituted, the process started at the village level. The chiefs assembled the village NRM user groups, and five representatives from each of the 10 villages were sent to a general assembly at the commune seat of Madiama. At this assembly, presided over by the mayor and the sub-prefect, the NRMAC president and executive bureau presented an activity and financial report of their accomplishments during the past three years. After a question and answer session, all the NRMAC members resigned. Following an open debate and consideration of their experience and training, all members of the committee were reelected by acclamation, thereby renewing their mandate. As an additional outcome of the debate, a commission of peers including a representative from the commune council, the village

chiefs, and other customary or religious leaders, the CRRA/Mopti, and NGOs working in the area will monitor this new term of office.

Step 3. Build institutional capacity for impact

While formal training was important, learning by doing was crucial for the development of effective skills. Early in its development the NRMAC visited each village to develop a list of NRM priorities. These lists, along with the committee's consolidation of them, were presented to CRRA/ Mopti researchers at a meeting in February 2000. A discussion ensued during which the committee prioritized two biophysical themes: improved soil fertility in croplands and improved pasture management for researcher assistance. The committee also emphasized the importance of reinforcing its organizational capacities. These priorities formed the basis for the initial research and outreach relationship. All training activities were developed and extended in a training-of-trainers format. In addition, key leaders of the NRMAC have profited from national and international study tours.

Formal training of NRMAC members and their local technical assistance partners covered three domains. Holistic management (HM) workshops focused on applying holistic principles to evaluate on-farm research trials, establish wetlands management, and develop a grazing system for open rangelands. Conflict management workshops focused on building consensus, managing power and change, and adapting this training to the management of wetlands and open rangeland grazing. Institutional reinforcement based on an institutional analysis of organizational strengths and weaknesses led to training in the following: functional literacy; democratic governance; financial management and accounting; strategic planning; NRM texts, codes, and laws; decentralization codes and laws; and lobbying.

Training in natural resource and conflict management

Holistic management as an approach to natural resource management was first conceived in southern Africa and has been applied around the world. It helps to foster skills necessary to maintain adaptive management dialogue among stakeholders. HM involves diagnostic tools to evaluate resources, rotational grazing strategies to optimize livestock feeding and pasture management, and visioning techniques to channel dialogue toward consensus. HM training and implementation in Madiama initially concentrated on the contentious issue of *bourgou* management and moved on to help the NRMAC with more common dryland pasture issues, introducing timed rotational grazing strategies. (*Echinoloa stagnina* or *bourgou* in French is a wetland grass that grows with the rising river waters during the rainy season. It is prized as a very nutritious animal feed.)

Training in conflict management

This training provides techniques for resolving differences within the contexts of scarcity, diversity, and unequal power distributions (Goebel et al. 2005). The training is well adapted to conflict avoidance and management where natural resources are concerned. NRMAC members have been very pleased with conflict management training and assert that it has had the most impact of all early SANREM interventions; indeed, fewer conflicts were reported by community members. Clashes have been avoided or managed using the techniques learned during the training. Conflict management tools used successfully helped legitimize the NRMAC and the SANREM program, particularly when combined with agricultural and NRM research and interventions planned in collaboration with the NRMAC and jointly implemented with local partners.

Training in literacy, governance, and financial management

To be effective, NRMAC members require significant training in organizational leadership, democratic procedures, literacy, and financial management. The value of literacy and numeracy training is that it gives the NRMAC the capacity and confidence to act autonomously: gathering information, writing plans, managing a budget, and contacting government authorities. Training is essential in the processes of decentralization and democratization.

Institutional strengthening was provided to the committee by the Djenné office of CARE/Mali through formal workshops, informal exchanges, monitoring and technical assistance, and study tours. The institutional reinforcement training program was initiated with an institutional diagnosis that identified the strengths and weaknesses of the organization. Focusing on the identified weaknesses, a plan for institutional development was elaborated. Thus, the formal training program applied functional literacy methodologies, focused on the principles of democratic governance, and assured comprehension of national texts, laws, and codes for NRM and decentralization. Subsequent training addressed financial management and accounting, strategic planning, and lobbying. These workshops were designed to create a framework of exchange and dialogue between the NRMAC and the other actors implicated directly or indirectly in NRM. The NRMAC also benefited from the support of CARE in conducting inter-village negotiations to establish agreements for wetlands management. Institutional coaching also included assistance in developing statutes and rules of procedure, formal registration of the organization, financial management, the mobilization of the external resources, and the development of linkages with other local service providers and NGOs.

Since the initial workshops, the lessons learned at these training sessions have been routinely communicated at the village level, at first under the supervision of the SANREM trainers. However, responsibility for this communication has increasingly shifted to NRMAC members. To date, NRMAC trainers have designed and implemented five workshops at the village level and hosted a workshop for commune level representatives across the Cercle of Djenné. These events created a framework for exchange and dialogue among the NRMAC and other local leaders.

Step 4. Complementing local knowledge with biophysical and socioeconomic research and development that lead to improved technologies and decision-making tools

SANREM's science-based tools include biophysical and socioeconomic models that can be used to generalize the experience of one commune to other, broader geographical areas.

Biophysical modeling

In Madiama, SANREM has applied CropSyst, a cropping systems model that predicts the influence of climatic conditions as well as soil and management practices on productivity and sustainability at the field system level (Badini et al. 2005). CropSyst serves three purposes:

- to simulate results with variables such as yield, soil fertility and erosion over 20 years, allowing for long-term evaluation and comparison of current and alternative farming and NRM technologies without long-term field tests
- to identify crops and technologies best suited for ecosystems in the region
- to provide a basis for dialogue with NRMAC, local farmers, and herders

The biophysical models require rainfall data, obtained from official meteorological statistics and supplemented with rain gauges placed by the project and monitored by local stakeholders.

The models also use soil data collected by a cost-effective alternative to classic intensive soil surveys that combines computer-based remote sensing analysis and geographic information system technologies with limited field assessment and ground-truthing to classify and map soil types, vegetative cover, and agricultural land uses.

The dialogue with local resource users builds on the farmers' and herders' own considerable knowledge of the land and on prescriptions regarding crops and NRM techniques suggested by the modeling. Researchers correlate their scientific soil training with conventional soil concepts that farmers have devised, and they enter into discussion with farmers using the local terminology. Through this dialogue, researchers use the model to confront the local reality, and farmers gain access to the researchers' knowledge of model-identified alternatives and the benefits they can bring.

Socioeconomic modeling

SANREM researchers also developed a social accounting matrix (SAM) for the commune of Madiama. The SAM is a modified input-output model that shows the flow of income and expenditures among production activities and among socioeconomic groups and the community/watershed level. It is a flexible, powerful tool that can be used to analyze market systems in diverse social and cultural settings from villages up through states and regions. Given its flexibility, the SAM can also be developed to address specific topics such as environmental issues (Miller et al. 1985) or migration (Adelman et al. 1988) and may also complement expanded policy analysis built on computable general equilibrium modeling efforts (Taylor et al. 1999).

The SAM is organized as an accounting matrix of modeler-selected endogenous and exogenous sectors' inflows and outflows. It is based on the assumption that production activities are endogenous and demand-driven. Endogenous accounts are those for which changes in the level of expenditure directly follow any changes in income. The endogenous accounts typically include the following: production activities (the input-output submatrix), factors such as labor, and institutions such as households and firms. Exogenous accounts are those determined outside the community level. Typically these consist of policy and markets.

Four types of farm household systems were identified according socio-professional status by community leaders as being most important for understanding the commune: farmers, whose income is mainly from crops; agro-pastoralists, who have a significant amount of livestock as well as crops; sedentary pastoralists, who grow crops but regard livestock raising as their primary occupation; and transhumants, who move their livestock seasonally to grasslands within or outside the commune along traditional routes. Major findings illustrated how benefits from increased production in any activity are passed on through repeated cycles of spending and income to benefit other production activities and the incomes of the other household types. In Madiama, it was found that an increase in production in any sector, including livestock, benefits transhumants far less than the other three socio-professional groups. Thus interventions must take particular care to target transhumants specifically, or they will tend to fall farther behind economically, a situation that could contribute to greater conflict. The Madiama SAM results are relevant to neighboring communes with similar socioeconomic groups and natural resource bases (Brewster et al. 2004).

Step 5. Monitor and evaluate

The broad-based SANREM strategy requires an equally broad-based monitoring and evaluation process to assess progress and to identify and correct problems. Much of the monitoring and evaluation process is participatory, with indicators and measurements identified and followed

by the local participants. However, to take advantage of local learning and apply it horizontally across communes and vertically to the regional level, the universal language of science must be employed. While local definitions of resources, indicators, and results are indispensable for local applications, on their own they may not be widely applicable. The fundamental strategy that SANREM uses to apply results to contexts beyond the commune is to ensure that biophysical and socioeconomic researchers work with those variables and categories that local populations understand and are familiar with. This choice of variables and categories is the responsibility of the researchers so as not to overburden local participants with data gathering they do not understand or for which they have no practical use.

Services Provided

The NRMAC has served as an interface for the commune with government services. However, during its first three years of existence, the committee initiated additional activities.

Monitoring Research Trials

Improved soil fertility

During the first year, researchers worked with user groups in three target villages. These groups chose collaborating farmers for the field tests. In the second year, the NRMAC made certain that each of the village NRM user groups participated. Trial sites in each village allowed for this participation. However, not all farmer collaborators managed their plots conscientiously. The NRMAC learned from this experience and more closely monitored the quality of farmer participation in subsequent years. These trials provided a focus for addressing issues of increasing soil fertility within the commune.

Pasture improvement

Given the complexity of coordinating the management of communal pasturelands, pasture improvement research began more slowly by building rapport and establishing common objectives within the community at both the commune and village levels. Two open-range rotational grazing sites and ensilage trials based on *Cassia tora* to optimize forage resources for women were ultimately established (El Hadj et al. 2005; Abaye et al. 2005).

Information Exchange

A considerable amount of information filters through the NRMAC. This privileged position allows the NRMAC to learn about new techniques and technologies, codes, and laws concerning decentralization and NRM; and to develop skills in the management of community affairs, including conflict prevention. The primary method of information exchange is through direct contact. The committee holds business meetings on the last Sunday of each month and less routinely conducts training workshops at the village level. The mayor or his representative routinely participates as an ex officio member. The village representative on the committee reports the information and/or issues discussed in these meetings to the village chief and to some extent the village NRM user groups. NRMAC members are not equally proficient at reporting back to their villages, due in part to their educational levels but also to a reticence or lack of confidence in their own information transfer roles. Consequently, the overall quality of these communications has suffered. Nevertheless, village chiefs report being well informed about NRMAC activities.

NRMAC members have been trained as trainers and have appropriated this training to develop their own training modules, often in a local theater format, a mechanism that disassociates the individual from the message. This training has been conducted in four villages. The NRMAC has also conducted four information and awareness-building programs on the local radio station, with three rebroadcasts to date. Five committee members, including two women, led each program, with a total of 10 committee members participating. These programs have described the NRMAC mission, a campaign to protect the balanzan (*Acacia albida*), local agreements for the promotion of wetlands regeneration, and issues of decentralized administration.

Forestry Services

Early in the life of the NRMAC, the mayor called on it to assist him in the promotion of a national campaign to protect the *Acacia albida.* Drawing on the network of village NRM user groups, the NRMAC was able to disseminate the message quickly. This action resulted in a reported decrease in damage to this nitrogen-fixing tree.

The NRMAC also led a reforestation effort, purchasing and planting trees. Six villages had sufficient water at the time of planting to assure tree establishment and consequently requested a total of 149 trees of three species (neem, baobab, and néré), which were planted. The village NRM user groups were responsible for planting and watering until these trees were fully established. The head of the Service de la Conservation de la Nature (forestry service) was impressed with the user groups' independent action and assured them that future support would be available.

Agreement Development

The NRMAC has initiated dialogues with selected villages to develop agreements for the regeneration of seasonal wetlands in the commune of Madiama. Stakeholder negotiations were initiated in four villages, but due to a lack of consensus in one of the villages, only three were retained for the wetlands regeneration program. Negotiations were also begun with neighboring villages and stakeholders to establish local agreements governing the sustainable exploitation of these basins. (The objective of these agreements is to minimize conflicts between wetland users, improve the management of pastures, and develop the financial resources to maintain them. The agreements define the parameters of collaboration as well as the roles and responsibilities of each party. Two multivillage agreements have been drafted, but no progress in implementation has been made.)

Conflict Resolution

Violent conflict in the commune of Madiama decreased over the three years following the initiation of SANREM activities (Moore and Cissé 2005). Although their claims were difficult to verify objectively, community members attributed this at least in part to the awareness building of the NRMAC. The local population deeply appreciated its ability to resolve conflicts locally, that is, without recourse to government authorities.

On two occasions, the NRMAC was called on to intervene in local conflicts. The first occasion involved the early entry of cattle into the commune. This incident was the result of a need for water and did not actually involve cattle entering unharvested fields. However, other herders in the commune were not happy about this breach of the agreement concerning the date of entry, for their herds were forced to remain outside the commune. After informing the mayor of the unauthorized entry into the commune, the other herders were ready to call the *gendarmerie* of the Cercle.

However, NRMAC members spoke with the principals in the conflict and negotiated a resolution, thereby avoiding involvement with the authorities.

The second incident involved a fight between a Peul and a Marka in the village of Promani. When one of them was seriously wounded, the village chief called the *gendarmerie*, and the aggressor was taken to jail in Djenné. Only after this incident was the NRMAC called in. Although at this point there was still considerable animosity between the two combatants' families, the NRMAC was able to negotiate an *entente* between them and persuaded the family of the wounded participant to withdraw the charges against his assailant, resulting in his release from jail.

Resource Mobilization

The NRMAC has benefited from both technical and financial assistance through the SANREM CRSP project. However, the committee recognizes that it must be able to generate its own resources if it is to maintain a meaningful role in the community.

Internal

NRMAC membership cards have been designed and printed at the expense of the association to provide a credible presentation and to generate funds through a one-time membership fee. By mid-2003, more than 250 people had paid the 500 FCFA fee. (FCFA is the name for the West African [francophone] financial community currency. Five hundred francs CFA is worth about $1.00.)

External

Learning of an opportunity to request funding from the philanthropic organization Fondation de France, the NRMAC considered proposing income-generating activities, including animal vaccinations, soap production by women, and techniques for seed multiplication. However, it was concluded that the NRM mission would be best served through assistance in developing a communication strategy for the association. With help from CARE/Djenné, the NRMAC submitted a proposal that was later revised and resubmitted. Fondation de France approved the proposal, and the consultancy has been completed.

Summary

The NRMAC has begun to mature as an organization in the service of civil society in Madiama. Founded in both modern legal traditions and customary practice, the NRMAC is on the cutting edge of the transformation in rural civil society in Mali during this era of decentralization. It has provided space for dialogue between villages and ethnic groups and is building the confidence to address sensitive issues involving resource allocation.

NRMAC members see communication as key to viability as a civil society organization. Linkages with CRRA/Mopti researchers, other service providers, NGOs, the village chiefs, and the commune council place the NRMAC in the center of an important network of NRM decision makers. With its members trained not only in the management of their organization but also in how to provide leadership for other community groups at the village and commune levels, the committee has taken a leadership role in disseminating information concerning new technologies, innovative approaches to community-based NRM, decentralization, tree planting, and other issues of natural resource conservation. Members have dealt with conflict situations and facilitated

their resolution. They have also initiated but not consummated the establishment of multi-village resource management agreements. Overall, from the villages to the commune council, community members have been satisfied with NRMAC performance and have renewed its mandate.

Conclusions

Skills in conflict resolution have led to increased confidence in relationships across ethnic groups and village clans. Although this has not yet led to a broad-based local consensus on resource use, the building blocks for an autonomous civil society are emerging. (Previously social capital was never explicitly mobilized due to the ignorance or contempt of the administration or the rigidity of its rules and procedures. It can now be seen to have possibilities. For example, all the village chiefs of the commune of Madiama questioned concerning their perception of the creation of the rural communes [decentralization] noted that it had led to the breaking of relations with the commandant [*sous-prefet*], that is, with the administration [Touré 2003]. Those same village chiefs also noted the positive contributions of the NRMAC to commune life.) For consensus to occur, two conditions are needed: a fully committed national decentralization policy involving protection for minority rights, and new bridging organizations between traditional village hierarchies and local government. Through a sector-specific (NRM) initiative in Madiama, disparate groups have initiated dialogue on critical decision-making issues. This analysis demonstrates the importance of building on established social relationships and combining them with linkages across groups for community-based NRM. In this way, viable negotiated solutions can be achieved and a new social contract realized.

The policy of decentralization in Mali has created the opportunity for civil society to emerge as a component of rural community systems. However, further changes at the national level supportive of independent civil society organizations are necessary for rural civil society to prosper. Decentralization has created the opportunity to build existing bonds at the village level into a network of relations creating a modern tool at the commune level. However, national leaders and administrators must devolve more authority to match the responsibilities that have been decentralized. At the same time, maintaining an independent judiciary is critical as minority groups assert their rights in a context of shifting local power relations.

Organization at the multi-village commune level in the Sahel is essential. We believe that donor and NGO emphasis on building village-level associations, while successful in mobilizing local resources for development, is insufficient because the scale is too small to offset the costs of extended replication and village social capital is too insular for these associations to have a transformative effect on rural social structures and dynamics. For rural civil society to grow, linkages among villages must be developed and citizen networks established. In particular, we recommend the reinforcement of all commune-wide associations that increase the number of ties between agriculturalists and pastoralists. We must qualify this in regard to the development of women's role in rural society. While women are often constrained by tradition to remain in the village, women's village associations are serving to mobilize them in their struggle for improved quality of life. These opportunities for women to formally associate should be encouraged.

Finally, a word of caution: Creating opportunities for empowerment of local populations takes place in historically specific conditions where power and the "weapons of the weak" are well entrenched. Development agents trying to encourage the growth of modern civil society should take into account our lessons learned:

1. Including all stakeholders is a necessary but problematic task.
2. There is no single model for building social capital; linkages are historically contingent.
3. Project and partner personnel need to be well trained in participatory approaches.
4. Power relations and stakeholder interests need to be carefully taken into account.
5. Development agents must foster synergy between public and private sectors.
6. Conditions of dependence on external resources should be avoided.

References

Abaye, O., M. El Hadj, A. Kodio, and M. Keita. 2005. Controlled grazing: Botanical response and animal performance. *In* Conflict, Social Capital and Managing Natural Resources: A West African Case Study, ed. K.M. Moore. Wallingford, Oxfordshire, UK: CABI.

Adelman, I., J.E. Taylor, and S. Vogel. 1988. Life in a Mexican village: A SAM perspective. Journal of Development Studies 25:5-24.

Badini, O., B. Traoré, and M.S.M. Touré. 2005. Biophysical assessment of alternative soil fertility technologies through modeling. *In* Conflict, Social Capital and Managing Natural Resources: A West African Case Study, ed. K.M. Moore. Wallingford, Oxfordshire, UK: CABI.

Brewster, C., D. Kaboré, M. Bertelsen, and P. Wyeth. 2005. Economic linkages in the commune of Madiama. *In* Conflict, Social Capital and Managing Natural Resources: A West African Case Study, ed. K.M. Moore. Wallingford, Oxfordshire, UK: CABI.

Earl, J. and A. Kodio. 2005. Participatory landscape/lifescape appraisal. *In* Conflict, Social Capital and Managing Natural Resources: A West African Case Study, ed. K.M. Moore. Wallingford, Oxfordshire, UK: CABI.

El Hadj, M., O. Abaye, A. Kodio, and M. Keita. 2005. Dry season feed supplements: The potential role of Cassia tora. *In* Conflict, Social Capital and Managing Natural Resources: A West African Case Study, ed. K.M. Moore. Wallingford, Oxfordshire, UK: CABI.

Goebel, J., C. Ampagoomian, and A. Touré. 2005. Conflict nanagement training. *In* Conflict, Social Capital and Managing Natural Resources: A West African Case Study, ed. K.M. Moore. Wallingford, Oxfordshire, UK: CABI.

Miller, R.E., and Blair, P.D. 1985. Input ± Output Analysis: Foundations and Extensions. Englewood Cliffs, NJ: Prentice Hall.

Moore, K.M., and S. Cissé. 2005. Social capital and improved NRM. *In* Conflict, Social Capital and Managing Natural Resources: A West African Case Study, ed. K.M. Moore. Wallingford, Oxfordshire, UK: CABI.

Moore, K.M., S. Cissé, and A. Touré. 2005. Building Social Infrastructure for Sustainable Development. *In* Conflict, Social Capital and Managing Natural Resources: A West African Case Study, ed. K.M. Moore. Wallingford, Oxfordshire, UK: CABI.

Taylor, J.E., A. Yúnez-Naude, and S. Hampton. 1999. Agricultural policy reforms and village economies: A computable general-equilibrium analysis from Mexico. Journal of Policy Modeling 21(4):452-480.