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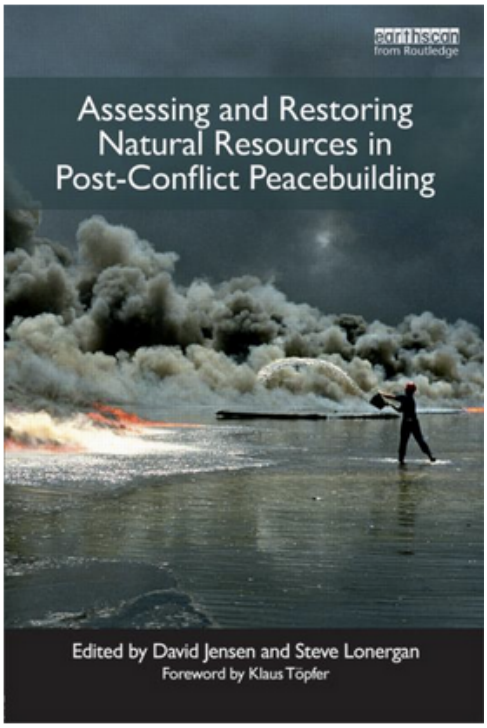

Haiti: Lessons learned and way forward in natural resource management projects

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Haiti: Lessons learned and way forward in natural resource management projects

Lucile Gingembre

Haiti is the ultimate example of a country where the environment, poverty, and instability are intrinsically interconnected. Rehabilitation of the largely degraded environment is essential to the development of the country and the well-being of its population.

Over the past few decades, many rehabilitation projects have been conducted, and substantial investments have been made in environmental improvement. However, results have been meager. A number of technically sound one-off interventions in the environmental sector have been successful, but these were implemented on a small scale, there was little follow-through after the projects were completed, and the projects were neither replicated nor systematized. Consequently, environmental degradation worsens, environmental governance remains ineffective, and the vicious cycle of poverty, instability, and vulnerability to natural disasters continues.

Given this situation, the United Nations Environment Programme (UNEP), in collaboration with the government of Haiti and a consortium of UN agencies, nongovernmental organizations (NGOs), and technical institutes, is now developing an integrated, long-term effort called the Haiti Regeneration Initiative. This program aims to reverse environmental degradation and thus reduce poverty and vulnerability to natural hazards. To assist in the design and implementation of the initiative, UNEP conducted an analysis of the experiences, lessons, needs, and challenges from past environmental projects in the country. The study examined forty-three projects and programs pertaining to natural resource management and the environment in Haiti, twenty-seven of which were still in progress at the time of the study. This chapter outlines the linkages between environmental degradation, poverty, conflict, and instability in Haiti and presents the main findings of the lessons-learned study.

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ENVIRONMENTAL CHALLENGES

Haiti is the poorest, least stable, and most environmentally degraded country in the Caribbean, and its situation reflects how poverty, instability, disaster vulnerability, and environmental problems are tightly intertwined.

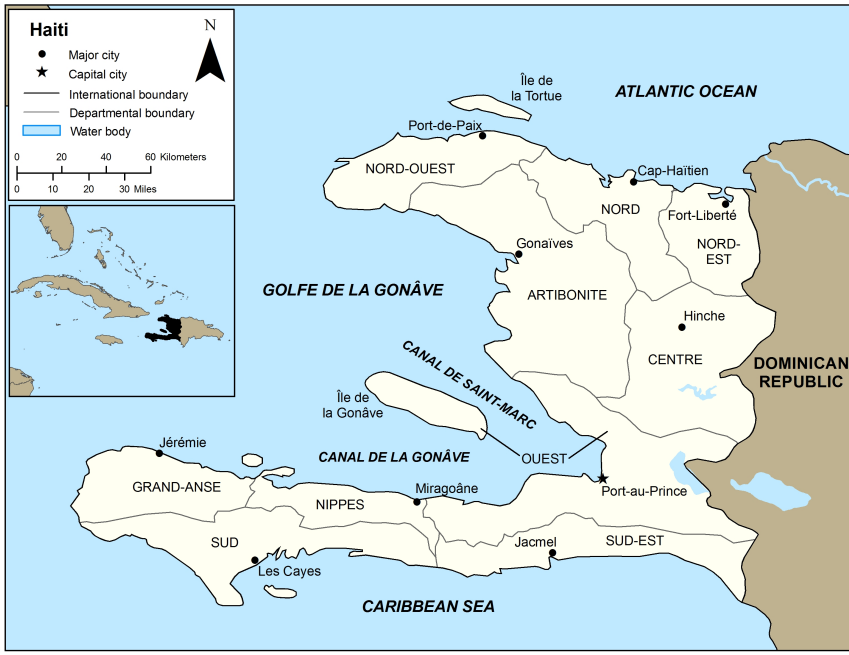
Deforestation and erosion

Uncontrolled deforestation, which began in colonial times, and associated erosion are severe in Haiti. Forests cover less than 3 percent of Haitian territory; by contrast, they cover approximately 28 percent of territory in the neighboring Dominican Republic. Twenty-five of Haiti's thirty major river basins are severely eroded. Each year, 42 million cubic meters of soil are swept away (UNEP, Ministry of the Environment, and University of Quiskeya 2010). Haiti's land area, measuring 27,700 square kilometers, is primarily mountainous. According to the Food and Agriculture Organization of the United Nations (FAO), 63 percent of Haiti's land has a slope of over 20 percent, and over 40 percent of the country is above 400 meters in elevation (FAO 2001).

In spite of these challenges, approximately 58 percent of the area of Haiti is used for some form of agriculture. On the steep slopes, farmers make a living by practicing rudimentary and unsustainable agriculture. They cut down trees to access new farmland, acquire firewood to meet their household needs, and make charcoal to sell. Wood fuel (firewood and charcoal) supplies 70 percent of Haiti's energy, further jeopardizing remaining forests (Energy Sector Management Assistance Program 2007). By 1995, Haitian peasants were felling some 30 million trees each year to produce approximately 3.5 million tons of firewood. By 2003, annual consumption of wood was more than 4 million tons, 33 percent of which was transformed into charcoal. The volume of firewood gathered annually exceeds the trees' ability to regenerate naturally. Since the 7.0-magnitude earthquake on January 12, 2010, the already dire environmental conditions have deteriorated further. In particular, deforestation has accelerated, partly because of the increased demand for construction material.

Deforestation and unsustainable agricultural practices cause erosion, loss of soil fertility, landslides, and reduction in water retention. On the slopes, crop yields decrease and become less reliable, and extensive damage to soil occurs. In downstream river areas, effects include unwanted sediment deposition and increased flood surges, which lead to loss of fertile land in the upper floodplains and catastrophic flooding in the vulnerable townships of the lower floodplains.

In marine and coastal zones, mangrove swamps, seagrass beds, and coral reefs are badly degraded. Sedimentation caused by the erosion of upper watersheds, overexploitation of resources for fuel and fishing, land-based pollution, and habitat encroachment threaten ecosystems. As a consequence, fish catches are plummeting and mariculture is declining. Because low-tech fishing gear and



inappropriate fishing techniques prevent Haitian fishers from accessing new fishing grounds farther offshore, near-shore fisheries are overexploited. Although the status of Haitian deepwater fisheries is unknown, it is acknowledged that foreign fishing fleets exploit them illegally (Wiener 2009). Between 1980 and 2005, mangrove forests decreased in area from 17,800 to 13,000 hectares (UNEP, Ministry of the Environment, and University of Quiskeya 2010). Severely degraded mangrove forests and coral reefs cannot function as buffers against hurricanes and other storms, and their diminishment limits the development of international coastal-resort tourism, an important source of income for Caribbean islands.

Vulnerability to disasters

Haiti is the most disaster prone of all the small-island developing countries (UNDP 2004). This can be explained partly by its mountainous topography and its location on two major fault lines and in an active hurricane region. Water-catchment degradation exacerbates Haiti's vulnerability to flooding and other natural disasters, which especially affect the inhabitants of lower watersheds.

Between 1900 and 2004, Haiti recorded the fifty greatest disasters in its history; it suffered seventeen hurricanes, twenty-six major floods, and seven droughts in that period (UNEP, Ministry of the Environment, and University of Quiskeya 2010). The years from 2004 to 2008 were marked by several hurricanes that left hundreds of thousands of victims and massive infrastructure loss in their

wake. In 2004, Hurricane Jeanne killed an estimated 3,000 people and adversely affected another 300,000 (4 percent of the population) (UNEP, Ministry of the Environment, and University of Quiskeya 2010; GORH 2010). The economic cost was estimated to be equivalent to 7 percent of Haiti's gross domestic product (GDP) (GORH 2010). In August and September 2008 alone, four hurricanes hit the country, affecting 826,000 people and costing the equivalent of approximately 14.6 percent of Haiti's GDP, or over US$897 million (GORH 2008).

The 2010 earthquake was a tipping point. It caused not only social and economic upheaval but also massive environmental damage, further diminishing the country's capacity to recover from chronic crisis. According to the Haitian government, 222,570 people died, over 300,000 were injured, and some 2.3 million were displaced (OCHA 2010; IASC 2010). The earthquake cost Haiti US$4.3 billion in physical damage and US$3.5 billion in economic losses, or more than 120 percent of the country's 2009 GDP. It is the first time in thirty-five years that the cost of a disaster was so high relative to the size of a country's economy (GORH 2010).

Links between environmental degradation, poverty, conflict, and instability

Poverty—combined with natural hazards, vulnerability, poor governance, weak institutions, uncontrolled population growth, insufficient economic opportunities, urban overpopulation, and economic and social inequities—produces resentment and fuels instability and political turmoil (see figure 1).

Haiti's population is expected to increase from 9.92 million in May 2009 to 11.74 million by 2020 (IHSI 2009, 2007). Fifty-six percent of the population lives below the extreme poverty line of US$1 per day; 78 percent live on under US$2 per day. Haiti's largely destroyed rural environment cannot fully feed its population or support adequate livelihoods. Around 50 percent of food is imported; 60 percent of the population suffers from food insecurity. Approximately 1 million families practice subsistence farming in precarious circumstances (ICG 2009). Because about 70 percent of Haiti's energy needs are met with firewood and charcoal, harvesting forests for revenue or fuel is a key coping mechanism that the impoverished population often relies on for survival, furthering environmental deterioration and eroding Haiti's ability to escape the negative spiral in which it finds itself.

Dwindling agricultural production, poor basic services, and a lack of employment opportunities in rural areas have spurred massive flight from the land, primarily to large cities such as Port-au-Prince, Cap-Haïtien, Les Cayes, and Gonaïves. According to an International Crisis Group study, 75,000 migrate yearly to the capital in search of work, taking up residence in overcrowded slums. Before the earthquake, Port-au-Prince was home to 2.5 million people, more than one-quarter of Haiti's total population (ICG 2009). Average population growth is 3.63 percent per year in urban areas (5 percent in the capital), but just 0.92 percent in the countryside.

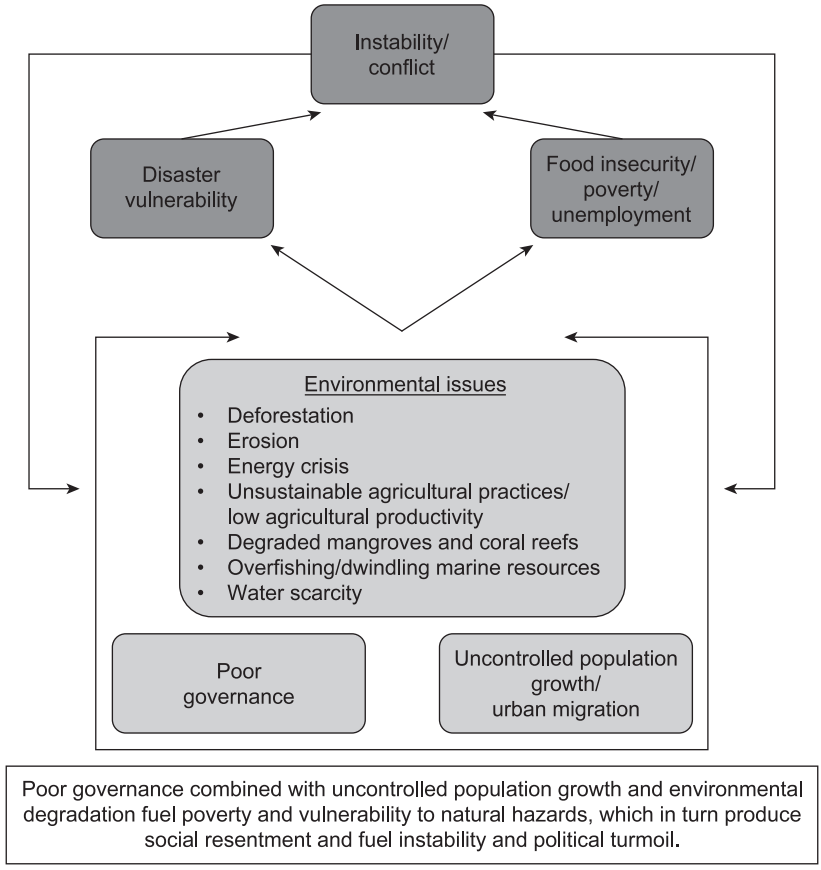


Figure 1. Linkages among disaster vulnerability, poverty, and instability

Continued overcrowding of urban slums by poor rural migrants with no remaining links to the countryside makes for an explosive social mix. Many children, now shantytown residents, have become *zenglendons* (common criminals, in Creole) because their parents are unable to pay for their schooling (ICG 2009). After the uprising of 2004, armed gangs of zenglendons took over many slums by systematically looting, kidnapping, and killing.

Since the earthquake, there have been massive and chaotic shifts in population from the directly affected Ouest and Sud-Est departments to less affected departments. The difficult living conditions and lack of food, water, sanitation, and energy in quake-affected areas and new urban settlements also jeopardize the country's stability and security. The 1.5 million migrants who have fled the earthquake zone compete with rural families for natural resources to fill their reconstruction and energy needs.

Haiti is now locked in a deepening social, economic, and environmental crisis that causes untold hardship for the great majority of the population and threatens the country's stability. Reversing the trend of environmental destruction would enable Haiti's development and enhance security and peacebuilding. Along with family planning, education, health care, access to basic services and employment, and urban planning, sound natural resource management could improve conditions in the country. Over the past few decades, there have been many projects and substantial investment in rehabilitating Haiti's environment, but with the exception of a number of small, technically sound, one-off interventions, results have been meager. Moreover, ineffective environmental governance further perpetuates the vicious cycle of poverty, vulnerability, and instability.

THE HAITI REGENERATION INITIATIVE AND LESSONS-LEARNED STUDY

Following a request from the Haitian government and the United Nations, UNEP established a country office in Port-au-Prince in 2008 to play a catalytic role in developing the Haiti Regeneration Initiative, a large-scale, long-term program that aims at reducing poverty and vulnerability to natural hazards by restoring ecosystems and establishing sustainable natural resource management. The initiative is anticipated to last around twenty years and to have a budget of over US$1 billion, with approximately 20 percent coming from foreign aid. Over fifty partners will participate in the initiative at the local, national, and international levels. UN agencies, government entities, NGOs, and technical institutes are consulting on the initiative's development.

To guide the design phase, from June to December 2009 UNEP conducted a study of lessons learned in environmental management and restoration projects in Haiti (Haiti Regeneration Initiative 2010). The study found substantial evidence that many international assistance programs had not been successful and that with smaller, beneficial projects there had been no follow-up. The lack of systematization and failure to disseminate lessons drawn from the past is a major obstacle to improving natural resource management in the country.

To record recent trends, extract key lessons, and identify best practices, evaluators analyzed forty-three projects, twenty-seven of which were still in progress at the time of the study. They conducted approximately forty follow-up interviews with project personnel, visited and inspected several sites, and identified potential improvements.

The projects involved international organizations, government institutions, NGOs, bilateral donors, and rural organizations, and they varied in duration, financing, and geographic coverage. They were chosen for the study according to several criteria, including their location in areas where the Haiti Regeneration Initiative would be implemented; their use of techniques, models, or frameworks relevant to the initiative; their duration, which needed to be sufficient to yield

lessons; and the availability of information from current and former program officers.

The study found that to reverse the negative cycle in Haiti, future projects should take five key findings into account. These involve taking an integrated and comprehensive approach to natural resource management and environmental rehabilitation, involving and empowering the local community, linking income generation to natural resource management projects, recognizing the necessity of national ownership and institutional capacity building, and remaining in place for the long term. Each of these findings is described in more detail in the following sections. Though the study took place in 2009 and therefore does not reflect strategic changes that were adopted in response to the 2010 earthquake, many of the observations are still valid in the aftermath of the disaster.

Natural resource management and environmental rehabilitation: The need for a comprehensive approach

For sustainable management of microwatersheds or whole watersheds, projects need to concurrently tackle issues such as governance, economic and social development, disaster risk reduction, agricultural productivity and food security, energy and water access and management, and conflict resolution.

Past trends in natural resource management projects

In the past, sectoral approaches prevailed in the implementation of environmental projects. A United States Agency for International Development (USAID) report lists the different natural resource management models applied in Haiti. From the 1950s to the 1970s, the commonly adopted approach was the landscape engineering strategy: "Soil conservation was considered to be a strictly technical problem to be solved by engineers installing mechanical structures, mainly rock walls and contour ditches, using paid labor. Neither land tenure nor the interest of peasant landowners were taken into account" (USAID 2007, 19). Most of the programs proved unsustainable and ended in failure; the abandoned structures can still be seen throughout the country.

In the 1980s, NGOs and peasant organizations started to promote agricultural extension and natural resource conservation programs using biological conservation structures, reforestation, and agroforestry techniques. Even though the projects succeeded in rehabilitating small areas of ecosystems and watersheds, they tended to target scattered plots of land and failed to restore whole watersheds or reduce their vulnerability to flooding, erosion, or deforestation. Moreover, coordination between development organizations was poor. Donors had no clear geographic focus or institutionalized system for sharing information. Duplication of efforts, overlapping of activities, and squandering of financial resources resulted.

The new watershed-based approach

A trend toward geographic coherence and greater coordination started to emerge in the late 1990s. Donors and organizations are now concentrating their efforts and investments on vulnerable zones, partly because of the rapid expansion of integrated watershed-management and development programs.

Large donors, such as the Inter-American Development Bank (IDB), USAID, Canadian International Development Agency (CIDA), and the United Nations Development Programme (UNDP), are rehabilitating larger, more vulnerable geographic areas on a ridge-to-reef basis, upstream to downstream in whole water catchment areas. Most of them have planned their interventions on the basis of rankings by USAID and Haiti's Ministry of Agriculture, Natural Resources, and Rural Development.[1]

For example, CIDA works on the middle and upper parts of the Artibonite watershed, UNDP on the lower section. The IDB works across the Ennery-Quinte (Artibonite); Grande-Rivière-du-Nord (Nord); and Ravine du Sud, Les Cayes, and Cavaillon (Sud) watersheds.[2] USAID has opted to concentrate its efforts on the Montrouis (Ouest) and Limbé (Nord) watersheds under the Economic Development for a Sustainable Environment (DEED) project, and on the Cul-de-Sac (Sud-Est) and Gonaïves (Artibonite) watersheds through the Watershed Initiative for National Natural Environmental Resources (WINNER) project. Spain's Ministry of Foreign Affairs and Cooperation (Ministerio de Asuntos Exteriores y de Cooperación, or AECID) focuses on the Sud-Est Department with its Araucaria and Pedernales programs.

The largest donors not only have improved the geographic distribution of their interventions throughout the country, but also have aimed to reduce duplication and overlap. Interinstitutional mechanisms include the newly created Inter-Ministerial Committee for Land Use Planning (Comité Interministériel pour l'Aménagement du Territoire), which coordinates land use planning interventions, and the Sectoral Group on Watersheds, which includes the main donors and international cooperation agencies like the IDB, World Bank, USAID, European Union, AECID, UNDP, and UNEP.

Small-budget projects have started to work on contiguous plots and at the microwatershed level. Project officers of the NGO Floresta, the FAO-CIDA Local Development Project for Integrated Natural Resource Management, the

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[1] The Ministry of Agriculture, Natural Resources, and Rural Development prioritized the watersheds but did not use clearly defined criteria. USAID adopted a systematic approach to ranking watersheds by level of vulnerability (USAID 2007).

[2] The IDB is giving greater attention to upper watersheds than before; emphasis had previously been on agricultural intensification in the lower parts of the watersheds. The IDB has now decided to allot the major part of its funding to upper watersheds in order to reduce vulnerability downstream. Two-thirds of its investments are devoted to upstream management, and one-third to downstream management—the opposite of the previous allocation (Damais 2009).

Environmental Protection and Sustainable Development in Marmelade project (the Marmelade Project), and the CIDA–Oxfam Quebec Support for Local Development and Agroforestry project in Nippes (PADELAN) have been trying to intervene on adjacent plots at the microwatershed level. The Lambi Fund, which finances projects submitted by community organizations, concentrates on the Artibonite, Sud, and Ouest departments. Evaluators of over one hundred projects funded by Lambi over the past ten years recommended creation of "project concentration pockets" to reduce projects' geographic spread; promote an integrated, regional approach; and enable sharing of economic and social services (Lambi Fund of Haiti n.d.).

Cross-sectoral and integrated interventions

In areas targeted for environmental projects, organizations have shifted to a more holistic and cross-sectoral approach that aims to improve concurrently the natural, economic, social, and political environment. But few projects focus on coastal and marine issues, and when they do, they address immediate local threats and not activities upland. Likewise, climate change adaptation strategies are still systematically ignored.

The move toward implementation of comprehensive cross-sectoral strategies at the microwatershed or watershed level requires larger-scale interventions and, therefore, improved coordination and partnership building, particularly among small programs that must pool efforts in order to scale up their activities. Successful and sustainable programs have brought together donors; stakeholders; and local, national, and international levels of government. For over ten years, the Marmelade Project has tackled local governance, watershed rehabilitation, disaster management, and job creation through the work of a bamboo-products factory; supported education by providing locally produced milk to pupils; and addressed energy issues by installing solar streetlights and planting sustainably managed forests for firewood and timber production. It has linked community leaders, local authorities, international donors (such as Dutch, Canadian, and Japanese development assistance agencies), the European Union, the FAO, and a Taiwanese company.

Of the forty-three projects studied, only six involved the Dominican Republic, despite the interdependence of the two countries' ecosystems, their shared vulnerability to natural disasters, and their need to improve relations with each other. The few cross-border projects had difficulties with design and implementation. Such projects typically require much more time and effort in terms of coordination and negotiation, as compared to national projects. Cross-border projects also call for strong commitment from the two governments and the implementing agencies.

Lessons learned

A review of past natural resource management and environmental rehabilitation projects in Haiti yields three key lessons. First, it is important to integrate natural

resource management interventions into comprehensive cross-sectoral strategies that take land use planning into consideration. Similarly, promoting cooperation among partners to scale up efforts and tackle issues at the microwatershed and watershed levels is necessary for the success and sustainability of natural resource management projects. Finally, increasing donor coordination and improving information-sharing mechanisms are crucial for ensuring efficient use of funds and for preventing duplication and overlap of efforts.

Local empowerment and community participation

Organizations involved in natural resource management projects in Haiti all acknowledge that community participation is critical to success. Yet project beneficiaries and civil servants often say that projects are inadequate for local needs, communities often feel little ownership, and interventions are often unsustainable.

Ensuring community participation involves more than informing or even consulting the population. Communities must help identify the challenges they face, find solutions, choose methodologies, and organize project activities. They must be involved at all stages of the project, including needs assessment, project design, implementation, monitoring, and evaluation. Participation is effective when stakeholders have sufficient and equal input and can openly express aspirations and concerns during the decision-making process. It involves accountability and clear definition of the roles and responsibilities of community members. Financial and material contributions from the population need to be agreed upon beforehand through establishment of partnership agreements.

Haitian community organizers can provide appropriate technical support to facilitate participatory planning and project implementation and can ensure effective communication and transparency in decision making. Information can be provided to the communities to help them understand the challenges, define a strategy, and solve problems. The Economic and Social Assistance Fund (Fonds d'Assistance Economique et Sociale, or FAES) and the German Society for International Cooperation (GTZ at the time) cite the importance of entrusting facilitation of community participation to Haitians who understand the issues, power structure, and local sensibilities (Adam and Odnel 2009; Hiriel 2009).

In some cases, participatory projects initially satisfy communities less than short-term, quick-impact programs do, but eventually, as in the case of the Marmelade Project, they usually result in a higher level of community engagement and ownership. Participation in establishing protected areas also encourages compliance and reduces the need for and cost of extensive systems of enforcement.

The NGO Floresta noted the positive aspects of ensuring community participation. In one case, farmers communicated their need for a water tank, and with the Floresta's support, they contributed to financing and building it by producing and selling seedlings (Paraison 2009). Under the WINNER project, sanitation and irrigation associations are supported for three years while they develop their capacity for self-management. The associations agreed by contract

to collect fees and maintain irrigation canals after the project ends. Through its high-altitude biodiversity preservation and development program, the NGO Helvetas trained 600 farmers in sustainable agriculture and paid for seedlings and organic fertilizer. In return, the farmers helped replant forest clearings with trees native to Haiti and were required to train others—an approach that greatly increased the project's impact in a short period of time.

Permanent participatory structures

Rather than launch a new participatory process for every project, a few programs (notably PADELAN, DEED, the Marmelade Project, and the UN Capital Development Fund Local Development and Governance Programme in Haiti's Nord-Est Department) established permanent structures for participation and dialogue, such as local development councils and watershed-management committees. They involve local authorities, the private sector, civil society, cooperatives, farmers, workers, women, schools, tradespeople, fisherfolk, and members of the opposition. Local institutions and elected officials are tasked with coordinating these participatory structures; this confers democratic legitimacy on the committees.[3] Project officers, including those from PADELAN and the Marmelade Project, say that the structures need to be in existence for ten years before they can function sufficiently on their own (Vial 2009; Brutus 2009).

By enabling sustained and extensive consultation among stakeholders, permanent participatory structures offer several advantages. They reinforce the capacities of local people, especially local authorities, in democratic governance and in planning, implementing, and monitoring development projects. For example, when a local committee is responsible for monitoring a program, the whole community can easily access firsthand information on the intervention's environmental impact. Moreover, project monitoring is more efficient and economically attractive than creating a system of controls.

Permanent participatory structures also facilitate elaboration of coherent, sustainable development strategies, including consensus-based, local development frameworks and watershed-management plans that can include environment and natural resource management interventions. These plans also make possible additional mobilization of resources. Donors are more willing to finance projects that are part of a comprehensive action plan for a locality.

These structures are also resilient in cases of political change. For example, after external involvement in the Marmelade Project ends and elections bring new officials to power, the development committee, which is empowered by decentralized civil servants, should continue to operate autonomously.

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[3] These local institutions include—at the communal-section level, for example—the local government council, or CASEC (Conseil d'Administration de la Section Communale), and the local assembly, or ASEC (Assemblée de la Section Communale).

By promoting constant dialogue among community members, permanent participatory structures reduce conflict, enhance social cohesion and peace, decrease political polarization, and support the involvement of women and vulnerable people in the development process. They also promote partnerships and synergy, and they favor involvement of the private sector through private-public partnerships. For example, Taiwanese experts supported the Marmelade Project by starting a bamboo nursery to encourage reforestation, soil conservation, and furniture making.

Project coordination structures at the local level

Having a project office on-site facilitates the participatory process, maximizes capacity building, and enables effective monitoring. Many interviewees confirmed that these are positive aspects of local project coordination structures. The coordinating body may be a governmental entity; an implementing partner like Development Alternatives International on the DEED project or Oxfam Quebec on PADELAN; or the donor's field representatives. Or, preferably, it can be a mixed steering committee that, as in Marmelade and Gonaïves, can bring together local authorities and field representatives of the organization managing the project. Such a steering committee builds ownership and develops institutional capacity.

Coordinators in an on-site support office can earn the trust of local communities and authorities because they are accessible. They can make quick decisions to advance the project, respond quickly to challenges that arise, and reorient the project if necessary. Local staff provide knowledge of local customs and needs, allowing the project to be more adapted to the specific context. Their daily presence also simplifies community participation and facilitates ongoing training and capacity building. Community responsiveness to awareness-raising campaigns and other communications about the project increases as a result. Finally, local structures reduce transaction costs and allow greater financial focus on a program's activities.

One of the Marmelade Project evaluations mentioned a high level of initial mistrust on the part of the population (FAO 2005)—which is fairly typical in rural Haitian communities, particularly during the long diagnostic phase prior to implementation. Yet on-site organizers, immersed in the community, gradually established trust and proved their commitment.

Building on existing organizations and knowledge

Although the increasingly common practice of forming local coordinating structures supports positive outcomes, building on relevant existing structures is no less critical to a project's success. However, external projects often bring about new structures or initiatives where similar local ones exist. Haitian peasants have a long history of labor organization and shared work, especially in agriculture. Several peasant organizations are engaged in soil conservation and restoration

work, and cooperate in microwatershed management. Others have created simple cooperatives. The widespread tradition of *konbit* (grouping people for a common goal, in Creole) reflects the long-standing culture of cooperation, particularly among peasants in rural Haiti, and lies at the core of Haitian society. Strengthening existing local structures rather than creating new, ad hoc ones results in more community acceptance and sustainability. Existing associations are the primary channels for diffusion and adoption of technical innovations and awareness-raising messages.

Understanding land tenure through community participation

Understanding and addressing land tenure are important for developing successful environmental projects. Indeed, land tenure problems cause many community-level disputes. Illegal exploitation of land threatens investment in natural resource management and environmental protection.

Much of Haitian land officially belongs to the state, but there is no functioning national cadastral system. Many peasants therefore cultivate state lands or harvest wood from them illegally. In rural Haiti, informal arrangements regarding land tenure are more important than formal titles, which are more expensive and less flexible. Land tenure ranges from direct access by virtue of ownership to indirect access through tenancy or usufruct. According to a USAID study, investment decisions are based on the duration of access to a plot regardless of formal tenure, and duration of access depends on a farmer's social capital and position (Smucker et al. 2005). The authors reported that "FAO-funded research by the Haitian Institute of Agrarian Reform (INARA) drew the following remarkable conclusion: *the judicial system is incapable of guaranteeing land tenure security even for those able to take full advantage of it*" (Smucker et al. 2005, 26; italics in the original). Tenure insecurity reduces incentives for people to make long-term environmental investments in plots of land because they always face risk of dispossession.

Tenure insecurity is not an insurmountable barrier to developing natural resource management projects and technologies (Smucker et al. 2005). The participatory approach helps in diagnosing land tenure and population trends and should precede any natural resource management project. By consulting the population, development practitioners have been able to understand informal land tenure systems and support the development of well-designed natural resource management projects. Conversely, projects that have skipped participatory analysis of land tenure have often stalled when tenure problems crop up. Frequently, for example, after restoration has been undertaken on a plot of land, someone will profess ownership and attempt to claim the land. Researchers from USAID and other organizations have concluded that "the primary challenge is to harness farmer incentives to cooperate across garden boundary lines by building collective social capital, motivated by the prospect of increased revenues or decreased risk" (Smucker et al. 2005, v).

Lessons learned

One of the main lessons about community participation and empowerment that were learned from past natural resource management projects in Haiti—one that is consistent with experience elsewhere—is the need to involve communities in all stages of the project cycle. Entrusting the facilitation process to Haitians who are familiar with the local context and experienced in running participatory processes is an effective way to ensure community participation. Drawing up partnership agreements with community members prior to the start of activities to clarify their roles in and responsibilities for project implementation and follow-up can promote the long-term sustainability of these efforts. It is also important to integrate the environment and natural resources into participatory local development frameworks and watershed-management plans. Finally, setting up and reinforcing local permanent participatory structures with capacity to lead in the planning, implementation, and monitoring of sustainable local development projects is an especially effective way to encourage long-term community involvement. In particular, capitalizing on and reinforcing the work of existing organizations prevents overlap of efforts and can contribute significantly to long-term success.

Natural resource management and income generation

Most of the projects analyzed in the 2009 Haiti Regeneration Initiative study link natural resource management and income generation, a widespread trend that reflects learning from earlier experiences. In a country like Haiti, which faces severe poverty and instability, any action aiming to restore the environment needs to improve beneficiaries' socioeconomic condition and provide economic alternatives. In the 1980s, USAID, FAO, and the Ministry of Agriculture, Natural Resources, and Rural Development led widespread traditional hardwood-reforestation projects, but these projects proved unsustainable. Most of the trees were cut down, were eaten by cattle, or died because peasants had no interest in caring for them. Natural parks–management projects have to create economic alternatives for communities that need to be resettled because mere prohibitive and regulatory approaches have not proved to be effective in preserving trees. Although environmental protection is not the primary consideration for most peasants invested in natural resource management, people might build up and conserve soils, and they might plant and preserve trees if they can benefit economically in a short time.

Sustainable forestry and agroforestry projects

In the 1990s international development experts began seeking to link natural resource management projects with increases in communities' incomes and to create economic alternatives through farmers' cooperatives. The market-opportunity

approach holds that stimulating the market can positively affect natural resource management. For example, approximately half of the projects analyzed included an agroforestry component. These projects have mostly encouraged the planting of trees yielding high-value fruit, such as mangoes, avocados, citrus fruits, and breadfruit, and they have supported the development of community-based nurseries or have trained local farmers in planting and grafting. Distribution of free or subsidized seedlings has proved successful and has led to a high return on investment.

To conserve soil, projects have also encouraged the planting of living fences (hedgerows) of perennials, such as pineapple, plantain, and sugar cane, as well as annuals, such as yams and sweet potatoes. In addition to stabilizing soils and reducing erosion, the living fences yield wood, nourish the soil, and function as windbreaks, especially on the plains. In the past three decades, peasants have maintained the fences with no external support, and farmers elsewhere have copied the practice.

In the Marmelade Project, the FAO is supporting establishment of a sustainable management system for a community forest that will satisfy demand for wood products, respond to energy needs, and create revenue from timber and charcoal. The initiative plans exploitation modalities for the long term (more than twenty years) and is part of a broader strategy for community development, increasing the chance of sustainability after the project comes to an end. Studies predict high profitability and return on investment in ten years. The pilot project demonstrates an alternative to bans on charcoal production and consumption. Seventy thousand tons of charcoal could be produced in projects like it, but this is still less than one-quarter of current overall consumption (Energy Sector Management Assistance Program 2007).

Jatropha, a large perennial shrub that can grow on arid and eroded land, produces an oil that can be used as a biofuel. As a result, many people in Haiti advocate cultivating it as a solution to the country's energy shortage and as erosion protection. However, many are concerned that Haiti's food insecurity might be aggravated if small producers replace food crops with jatropha.

In many reforestation projects, trees have been chosen because they grow rapidly and yield revenue quickly, even if they are nonnative, invasive species that can disrupt ecosystems and impair ecosystem reconstruction. This is the case for casuarina, bamboo, eucalyptus, and neem, for example, whereas native species could be planted instead. Fewer trees are felled when communities can choose to plant culturally acceptable and common species that are well adapted to the ecosystem and profitable to grow. Therefore, technical assistance in forestry should be provided to enable communities and project managers to select species wisely, taking all of these factors into account.

Natural resource value chains

Local economic development can "build up the economic capacity of a local area to improve its economic future and the quality of life for all. It is a process

by which public, business and non-governmental sector partners work collectively to create better conditions for economic growth and employment generation" (World Bank n.d.). Such development requires implementing market-driven strategies and improving marketing links. Past experience has shown that projects aiming to protect natural resources should pay close attention to market conditions and value chains. In the development of a value chain, all the products and processes essential to the production of a good or service need to be taken into account. For example, in the case of fruit tree yields, all key elements such as planting, financing, processing, storage, packaging, and distribution need to be considered in project design and implementation.

The Organization for the Rehabilitation of the Environment (L'Organisation pour la Réhabilitation de l'Environnement, or ORE), an NGO that has worked for more than twenty years in southern Haiti to improve environmental, agricultural, and economic conditions in rural areas, developed fruit tree value chains for mangoes, avocados, and citrus. ORE has taught farmers how to graft mango trees to produce commercial-quality fruit, has strengthened regional mango cooperatives, has built a factory to process and package dried mangoes, and has negotiated with exporters. These activities add value and create revenue in the region (Finnigan 2009).

Practitioners should carefully study every aspect of the supply chain to identify bottlenecks and to remove them with targeted investments. For example, ORE mango producers close to Camp-Perrin (in Sud Department) claimed that they could sell only one-tenth of their crop to exporters because poor roads made it difficult to transport their product to market. The state of the infrastructure, including roads and transportation, needs to be taken into account in the project-planning process. Likewise, the credit situation of the area needs to be considered. Project beneficiaries may need financing to participate in the project, for example, to buy inputs or extra fuel. In rural areas, access to credit is often limited, so a project could seek to reinforce existing local credit institutions, guarantee beneficiaries' loans to facilitate access to credit, or set up a local fund to be managed by the community.

The food- or cash-for-work approach and conditions for success

Temporarily paying local labor to protect or restore the environment combines revenue generation with environmental rehabilitation and balances immediate socioeconomic needs and environmental sustainability. Workers may repair rural railroad tracks, improve sanitation, or construct gabions to regulate rivers and terraces to fight erosion.

Interventions that respond immediately to urgent food-security and financial needs are popular in vulnerable communities. For example, through a World Food Programme–UNDP–International Labour Organization project to prevent natural disasters and rehabilitate the environment through revenue-generating activities in Gonaïves, laborers were paid half in kind (one World Food Programme

ration per workday) and half in cash.[4] Another example is the market-opportunity approach taken by the Foundation for the Protection of Marine Biodiversity in its environmental rehabilitation project for coastal communities of the Arcadins (northwest of Port-au-Prince). For that project, people were hired to guard the mangroves and care for the tree nursery. With a relatively small investment, the mangroves were protected, awareness of proper resource management was raised, and substantial profits were made.

Following the January 12, 2010, earthquake, the UN and various NGOs widely promoted cash-for-work schemes, particularly for clearing rubble from roads and removing waste. While earning small wages to cover critical needs, workers helped preserve stability and provided vital reconstruction services.

If the benefits supported by cash-for-work arrangements are to be sustainable, community engagement and ownership need to be addressed from the beginning. Community members who are remunerated for construction projects often expect to be paid for maintenance and repair work as well. From its inception, the USAID WINNER project included maintenance in initial contracts with community organizations. For three years, management committees received technical assistance until communities could take over the maintenance of installations themselves.

The staff coordinating and implementing cash-for-work projects must consider environmental guidelines and be trained in fields such as engineering, agronomy, pedology, and hydrology to ensure quality and sustainability. Careful selection of the target population, on the basis of objective criteria, is also crucial to a project's positive outcome. Even though cash-for-work programs are responses to emergency situations, they need to include planning for the long term and ideally be integrated into a comprehensive development strategy for the area.

Lessons learned

Offering people cost-effective solutions that provide an incentive for preserving natural resources is crucial to the success and sustainability of any natural resource management project. This can be achieved through a variety of different mechanisms, depending on the circumstances. One way to create incentives for preserving natural resources is to encourage farmers to develop high-value products from sustainable forestry and agroforestry. Similarly, promotion of soil-conservation structures that not only prevent erosion but replenish the soil's nutrients and provide rural families with food and wood have proved successful. Carrying out cash-for-work projects related to natural resource management is another option. Local communities will be able to maintain these projects if they are integrated into longer-term, comprehensive development interventions. Likewise, for reforestation

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[4] The daily rations the World Food Programme provides can vary greatly, depending upon location, circumstance, and population being served. One ration generally provides 2,100 kilocalories of energy to the recipient. See www.wfp.org/nutrition/WFP-foodbasket.

initiatives, it is important to provide communities with technical assistance in forestry and with information about appropriate plant species. Finally, prior to the implementation of any natural resource management project, it is crucial to identify and analyze local competitive natural resource–related value chains, taking into consideration possible bottlenecks, key actors, and potential partnerships.

National ownership and institutional capacity building

A lack of national ownership of and commitment to natural resource management projects seriously undermines their sustainability. Too often the Haitian government is hardly consulted or involved and has little control over project programming, monitoring, or financing. At times, projects are directly implemented by NGOs with no interaction whatsoever with the government.

Government involvement

Overlapping mandates and competencies, competition, and the occasional disinterest of Haitian government institutions are significant obstacles to government involvement in environmental projects. Because the environment is a crosscutting issue, responsibilities for its protection and rehabilitation are divided among several government ministries, mainly the Ministry of the Environment; the Ministry of Agriculture, Natural Resources, and Rural Development; and the Ministry of Planning and External Cooperation. In practice, the Ministry of Agriculture, Natural Resources, and Rural Development has the biggest mandate and the largest budget for environmental activities.

The success of several projects was hampered by the complexity of governmental management. For example, the World Bank's Forest and Parks Protection Technical Assistance Project involved the Ministry of the Environment and the Ministry of Agriculture, Natural Resources, and Rural Development (through the Forest Resources Service, the National Parks Service, and the Center for Research and Agricultural Development, Directorate of Training and Continuing Education); an independent body, FAES; and numerous NGOs and firms, including the organization CARE, the Centre d'Etude et de Cooperation Internationale, and the local NGO ASSODLO (Toussaint 2008). Several technical experts from the Ministry of the Environment said that institutional complexity hindered the project. The new Inter-Ministerial Committee for Land Use Planning (Comité Interministériel pour l'Aménagement du Territoire), which was started in 2009, may facilitate coordination and enable governmental entities to steer projects more effectively.

Institutional capacity

Haitian institutions have very limited resources and few skilled workers who can participate in decision making and day-to-day monitoring. The Ministry of the Environment is particularly weak in human and financial resources and lacks

political influence. According to a 2010 report on the state of Haiti's environment, "the operations of the MOE [Ministry of the Environment] were mainly confined to the implementation of projects based on external funding, such as the management of protected areas or focused on local development, and on the production and follow up of basic environmental information" (UNEP, Ministry of the Environment, and University of Quiskeya 2010, 14).

The last decree on environmental affairs, which was passed on January 20, 2006, was intended to encompass all national policies and make government management and citizen use of the environment compatible with sustainable development goals.[5] But a lack of political and financial support has hindered the Ministry of the Environment's leadership and enforcement of the decree; in practice the measures are hardly implemented.

More recently, the 2010 earthquake killed a number of Ministry of the Environment staff and considerably damaged equipment and buildings, such as the National Geographic Information Systems Center, resulting in substantial loss of technical capacity and institutional memory.

Stability

Chronic instability in the country has led to frequent governmental reorganization and political unrest. It has also contributed to frequent changes in strategy and interruptions in project implementation and follow-up. Even though the government has been increasingly willing to reverse environmental degradation, its involvement often remains too limited.

Still, achieving political support and government ownership is key to a project's success and sustainability. The government deployed full-time staff to participate in project formulation and execution with the Marmelade Project and with World Food Programme–UNDP–International Labour Organization disaster-rehabilitation projects in Gonaïves. In other cases, the government has decided to dedicate significant financial resources. These positive signs of engagement demonstrate political will for specific project support.

Few of the projects studied focused on institutional capacity building and policy development at the national level. Yet according to an International Crisis Group study:

> The catastrophic state of the environment is closely related to the country's deep-seated institutional, political and governance problems. Coherent national socioeconomic development policies have been mostly absent, due to management and political limitations and the narrow interests of those holding economic power, thus contributing to the problem. The extreme environmental vulnerability also stems from the state's institutional weakness and poor governance, especially at the local level (ICG 2009, 5).

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[5] Decree Concerning the Environmental Management and Regulation of the Conduct of Citizens for Sustainable Development.

Natural resource management in Haiti calls for a strong legislative framework and reinforcement of knowledge-management capacities, project monitoring, management tools, and material means. Buildings, vehicles, computers, and hardware may be required. Development of financial and report-writing skills may encourage more meaningful involvement of staff in project management.

The Ministry of Environment's Environmental Management Support Program (Programme d'Appui à la Gestion de l'Environnement), which is financed and supported by UNDP, is the most important of the few programs that directly target national institutional capacity building for environmental governance and management. The program played a central role in the creation of the National Environment and Vulnerability Observatory (Observatoire National de l'Environnement et de la Vulnérabilité). The observatory's role is to disseminate information; produce and monitor environmental data; and offer technical and monitoring services to all organizations that address the environment and vulnerability. It has great potential to increase knowledge management on environmental issues and to improve governance and management of institutions. However, the observatory is still at an early stage; it continues to lack leadership, it struggles to gain donors' confidence, and progress has been slow.

Although efforts to reinforce capacity at the national level are still limited, many donors and international organizations have sought to strengthen decentralized and devolved authorities so they can effectively manage natural resources in rural areas. Many interventions support mayors, local administrative councils, and devolved authorities of the Ministry of Agriculture, Natural Resources, and Rural Development with material support, such as computer equipment, and with technical training in natural resource management, local governance, program management, finance, and agronomy. Empowered local structures that have been involved from the outset have assumed responsibility for management of projects and have ensured their continuity.

Lessons learned

The experiences of past natural resource management projects in Haiti yield several lessons regarding the promotion of national ownership of and government commitment to such projects. First, prior to project implementation, it is important to realistically assess the capacity of governmental structures. This assessment should be followed by efforts to reinforce both national and local capacity, which involves supporting the government in developing and updating enabling legal and policy frameworks for natural resource management and environmental protection, including frameworks for energy, protected areas, and waste management. Encouraging cooperative relationships between government agencies with clearly defined roles and responsibilities for project management is also important. This can be accomplished with the establishment of clear partnership agreements prior to implementation. Finally, in order to ensure sustainability, it is important to establish project-monitoring or steering committees to build ownership and improve follow-up.

Long-term intervention and follow-up

Protecting Haiti's environment must go hand in hand with improving socioeconomic conditions, raising general environmental awareness, strengthening institutional capacity and empowering communities. Reinforcing capacity and developing a sense of ownership are lengthy processes that call for long-term commitment and a high level of financial investment, whether from large donors or from smaller agencies that build solid partnerships to ensure the impact of their interventions. However, environmental interventions are often short-term, small-scale, and ill-adapted to the resolution of longstanding, complex issues. Prevailing short-term approaches and isolated small investments have not succeeded, and will not succeed, in solving long-term natural resource management issues and reversing environmental degradation.

Project duration and financing

Extremely short project cycles of less than one year prevent the establishment of plans for follow-up and in nearly every case lead to unsustainability. Most projects are still short- to medium-term programs of two to five years, though there is a tendency to extend them. Fortunately, compared to past decades, more projects—particularly those involving local development and watershed management and rehabilitation—are designed to last longer (see figure 2).

Of the forty-three projects covered in the Haiti Regeneration Initiative's 2009 study of lessons learned in managing environmental projects, twenty-six were small- or medium-scale (below US$5 million). Just three projects received between US$5 million to US$10 million, and ten received more than US$10 million. The largest donors included the IDB, USAID, and the World Bank (see figure 3).

International aid for Haiti is extremely unstable. The massive influx of international aid under President Aristide in 1990–1991 was followed by an embargo during the military regime in 1992–1994 (World Bank 2006). Total official development assistance dropped from just under US$200 million in 1991 to US$112 million in 1992–1993. Between 1995 and 2000, official development

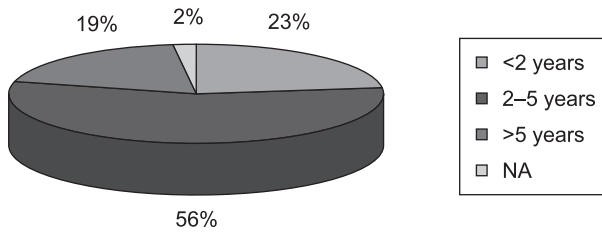

Figure 2. Duration of projects covered by the Haiti Regeneration Initiative's 2009 study of lessons learned in managing environmental projects

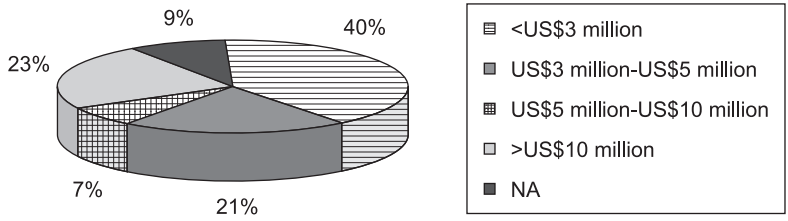

Figure 3. Funding for projects covered by the Haiti Regeneration Initiative's 2009 study of lessons learned in managing environmental projects

assistance resumed, reaching an annual average of US$383 million. After the disputed elections in 2000, aid declined to US$195 million, or 6 percent of GDP, from 2000 to 2004. These fluctuations have repercussions on project financing: project funding is frequently suspended, and short-term projects are often not renewed.

Four factors contribute to lack of continuity and follow-through in funding: changes in donor strategies, chronic instability, failure of projects, and political changes.

First, donors often redefine their strategies and cut off funds suddenly. For example, the entire environmental component of the USAID Hillside Agriculture Program was removed during implementation. The Marmelade Project came close to joining the long list of abandoned programs after the Netherlands terminated its funding. Programs such as the Substitution of Energy for Protection of the Environment project, implemented by CARE/Haiti and funded by USAID, carried through to the end of their terms but were not renewed, even though studies and promising results called for a next phase.

Smaller organizations suffer most from donor inconstancy. These organizations have relatively low financial capacity and are therefore obliged to develop their budgets and plan their activities for short periods of one to three years. The smallest organizations remain dependent on annual budgeting, although they are aware that results can only be achieved in the medium term of six to seven years.

Second, in periods of crisis, many donors withdraw from Haiti. During the military regime in 1992–1994 and the political unrest of 2000–2004, some donors stopped all of their interventions and suspended programs that were underway. USAID and the World Bank interrupted several projects as a consequence of the unrest in 2000–2004, only to reinvest in Haiti a couple of years later with new projects that were in tune with new strategies.

Third, some projects are suspended or not renewed because midterm or final evaluations conclude they have not met their objectives. Their failure may be due to unrealistic schedules, inability to adapt to local needs, or lack of local ownership.

Finally, Haitian electoral cycles disrupt policy development and program funding. New governments often make clean sweeps of projects supported by their predecessors. For example, a European Union cross-border environmental

program suffered from, among other things, the different visions of two successive governments. Thus some activities had to be completely abandoned during the second phase of the project.

Building a long-term presence

For assimilation of new techniques, concepts, and practices to happen, communities need continuous support. Training must be spread over time, targeting ever-larger groups or new beneficiaries as trust in a project and its staff gradually builds.

Long-term presence is critical to projects that deal with chronic and structural issues and require a change in attitudes. CIDA's involvement in Nippes (first through an agroforestry project and then through PADELAN) and FAO's participation in Marmelade illustrate the importance of a continuing presence. Even though the communities were at first discouraged by slow progress, they later acknowledged that the extensive time spent to build their capacity in local governance and to shape local development committees was crucial to the creation of public-private partnerships and the achievement of results. After close to ten years of engagement, the community members, supported by decentralized authorities, can plan and manage sustainable local development. Cooperating organizations can now withdraw gradually, passing on information, coordination responsibilities, and management with no major risk of diminished activity.

Once a sense of ownership has been developed, transferring the costs of project management to the government, the community, and the private sector is easier. The UNDP Carrefour Feuilles solid waste management project strove for public-private partnership and for financing by institutional, private, and community agents. It was scheduled to last three years (2006–2009), and its goal was to reduce armed violence, social unrest, and poverty by instituting sustainable solid waste management and revenue-generating activities, including the manufacture and sale of artificial charcoal briquettes made of solid waste. This pilot project, which employed 385 people, would not have lasted without continued financial support from UNDP. With stronger management capacity and several years' additional financial backing, the project may be able to achieve full autonomy (Nicolini 2009).

Finally, many high-quality technical studies have examined Haiti's environment, but systematic management of environmental information is lacking. Longer projects allow time to do an inventory and compile existing and new information as well as build on lessons learned from past interventions.

Lessons learned

Past natural resource management projects in Haiti yield some lessons for project duration and financing. First, interventions need to follow appropriate timelines. Long-term projects that build ownership and capacity are often necessary, and they should be designed to address deeply rooted problems. It is essential to

allocate sufficient time to conduct a preliminary analysis of existing information and studies on relevant themes and geographic areas. Finally, achieving long-term financial stability through strong managerial partnerships is crucial to the development and implementation of successful and effective natural resource management projects.

CONCLUSION

Despite the large number of natural resource management projects conducted in Haiti and the considerable investments made in the past few decades, widespread vulnerability, poverty, and instability remain. Recently, however, there have been gradual improvements in the effectiveness and sustainability of international assistance, and institutional leaders have been able to adopt, better coordinate, and scale up integrated projects, particularly for water catchment management and sustainable local development.

To be effective in the long term, natural resource management programs must be characterized by an extended duration of five years or more; local ownership, with community participation in all phases of the project cycle; and integration of environmental concerns into rural livelihood frameworks. They must build institutional capacity and support the development of enabling policies and legal frameworks; roles and responsibilities of participating institutions must be clearly agreed upon; and information must be gathered, analyzed, and shared so practitioners can learn from past experiences and improve the sustainability of future interventions.

With external support for natural resource management augmenting its own significant human resources and resilient grassroots social structure, Haiti has the capacity and opportunity to address its environmental challenges.

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