Guidelines for Mitigating the Impacts of HIV/AIDS on Coastal Biodiversity and Natural Resource Management

USAID
FROM THE AMERICAN PEOPLE

PRB
POPULATION REFERENCE BUREAU

Coastal Resources Center
University of Rhode Island

GUIDELINES FOR MITIGATING THE IMPACTS OF HIV/AIDS ON COASTAL BIODIVERSITY AND NATURAL RESOURCE MANAGEMENT

About the Authors

Elin Torell is coastal management specialist at the Coastal Resources Center, University of Rhode Island. Baraka Kalangahe is PEACE Project coordinator for Tanzania Coastal Management Partnership. Melissa Thaxton is policy analyst at the Population Reference Bureau. Abdulrahman Issa is country director at the Eastern Africa Regional Office of the World Conservation Union (IUCN). Vera Pieroth is executive director of Uzima Kwa Sanaa (UZIKWASA). Omar Fahmy is a student at the University of Rhode Island. James Tobey is senior coastal manager at the Coastal Resources Center, University of Rhode Island.

Acknowledgments

The authors would like to thank the following for their insights and contributions to this report: Judy Oglethorpe (World Wildlife Fund); Nancy Gelman (Africa Biodiversity Collaborative Group); and Roger-Mark De Souza (Population Reference Bureau).

This report was made possible by the generous support of the American people through the United States Agency for International Development (USAID).

This publication is available on the Population Reference Bureau's website at www.prb.org and on the University of Rhode Island Coastal Resources Center's website at www.crc.uri.edu.
For more information contact: Coastal Resources Center, University of Rhode Island, Narragansett Bay Campus, South Ferry Road, Narragansett, Rhode Island 02882, USA. 401-874-6224; Fax: 401-789-4670; Email: elin@crc.uri.edu.

Citation: Elin Torell, Baraka Kalangahe, Melissa Thaxton, Abdulrahman Issa, Vera Pieroth, Omar Fahmy, and James Tobey, *Guidelines for Mitigating the Impacts of HIV/AIDS on Coastal Biodiversity and Natural Resource Management* (Washington, DC: Population Reference Bureau, 2007).

Disclaimer: The content is the responsibility of the authors and does not necessarily reflect the views of USAID or the United States Government. Cooperative agreement #623-A-00-05-00339-00.

Cover photos: The four cover photos illustrate linkages and mitigation actions related to HIV/AIDS, gender, and coastal biodiversity in Tanzania. Clockwise from upper right: migratory fishermen in Bagamoyo; Theater for Development performance in Pangani; paprika drying in Mkalamo village, Pangani; and women meeting to discuss mangrove replanting.

Photo credits (clockwise from upper right): © 2006 Baraka Kalangahe (first three); and © 2004 Elin Torell.

TABLE OF CONTENTS

INTRODUCTION

In sub-Saharan Africa, AIDS is not only a health crisis, but a challenge to development, since AIDS affects nearly every dimension of social and economic life, especially in the worst-affected countries.

In Tanzania, more than 1.8 million adults (7 percent of the adult population) currently live with HIV/AIDS, and AIDS-related illnesses are now the primary cause of illness and death among adults.[1] The HIV-prevalence rate varies significantly between age groups. It is highest among women between ages 30 and 34 (13 percent) and among men between 40 and 44 (12 percent) (TACAIDS 2005).

Poverty and inequality between women and men are both strongly connected to the spread of HIV, where poverty can drive women and girls to engage in unprotected sex in return for money or food, and women's lower status can make it difficult or impossible for women to negotiate for the use of condoms. Women are doubly hit, as more females than males are infected every day, and women are also the primary caregivers when other household members become ill. The impacts on natural resources conditions and management are less clear, but a growing body of evidence suggests that AIDS often leads to an overuse of natural resources, loss of traditional knowledge, loss of human capacity and labor, and diversion of conservation funds to meet HIV/AIDS-related costs,[2] and it undermines efforts in community-based natural resources management.

WHAT ARE THESE GUIDELINES ABOUT?

This document describes the problems that lie at the interface between AIDS, gender, population, and coastal biodiversity conservation and resource management. The authors describe how HIV and

The PEACE Project

In 2004, the Population, Equity, AIDS, and Coastal Environment (PEACE) Project was launched to promote improved biodiversity conservation through the sustainable use of coastal resources, while also seeking to enhance the quality of life of coastal people in Tanzania. The target area has been eight villages bordering on or surrounded by the Saadani National Park. Based on a threats assessment completed in the project's first year, the project determined that HIV/AIDS-affected households increase stresses on the available natural resources, because these households depend more on wild foods, wildlife, medicinal plants, timber and fuel wood in their search for ways to diversify their sources of food, income, and health services.

PEACE began implementing pilot mitigation measures in 2005 to address this situation. This includes helping women and other groups vulnerable to HIV/AIDS (migratory fishermen and youth) to start alternative livelihoods such as paprika farming and milkfish culture—livelihoods that do not further stress the coastal resources or threaten coastal biodiversity. Other mitigation measures include introducing the use of fuel-efficient stoves and establishing wood lots instead of cutting mangroves and/or coastal forests for fuel wood. The project also works to communicate culturally appropriate messages, mainly through community theater performances, to reduce risky sexual behavior and promote environmental stewardship.

In this report, we present text boxes with examples from the PEACE Project to illustrate various actions one can take to mitigate the impacts of HIV/AIDS on biodiversity conservation.

In October 2006, the PEACE Project became part of the Sustainable Coastal Communities and Ecosystems (SUCCESS-Tanzania) Project, a five-year project funded by USAID. Activities started under PEACE will continue through 2010.

AIDS affect all people in a community by driving faster rates of resource extraction and use, increasing gender inequality, lowering the general health of the labor force, and impeding an individual's ability to maintain a viable livelihood. For each problem, we propose goals and a number of simple actions that development planners, extension officers, project managers, and community leaders can take to prevent and mitigate the problems. We also present indicators that can be used to measure progress toward achieving program goals and objectives. We hope these guidelines contribute to the work already underway to reduce HIV prevalence in Tanzania, and at the same time help mitigate negative impacts on the environment.

The information presented is based on a threats assessment conducted in coastal Tanzania, encompassing an area with several terrestrial and marine conservation zones and adjacent communities in the southern portion of the Pangani district and the northern area of Bagamoyo district. The linkages and threats associated with HIV/AIDS, coastal biodiversity and natural resource management, gender, and migration were evaluated using participatory rural appraisal (PRA) and rapid rural appraisal (RRA) methods between January and June 2005.

The intended audience for these guidelines is district and village-level planners and extension officers in coastal areas, environmental project managers, and community leaders. The authors also hope that it will be of use to nongovernmental organizations (NGOs), protected area authorities, donors, and students. While based on the experience and conditions of coastal Tanzania, the suggested mitigation actions will be of value to both coastal and noncoastal communities in many parts of the world.

PART 1.
THREATS OF HIV/AIDS TO BIODIVERSITY AND NATURAL RESOURCE MANAGEMENT

Little has been published in the academic literature to date on the nexus between HIV/AIDS and biodiversity conservation. Summarizing the existing, often "gray" literature, we have concluded that HIV/AIDS poses four threats to coastal resources and biodiversity. They are: accelerated rate of extraction of natural resources, such as fuel wood, wild foods, medicinal plants, and fish; decreased availability of labor; reduced management capacity; and loss of traditional/indigenous knowledge and skills. These threats are briefly described below. For more detailed descriptions see Tobey et al. (2005).

ACCELERATED RATE OF EXTRACTION

AIDS can lead to an accelerated rate of resource extraction when people turn to natural resources to replace household income lost after an income-earning family member dies from an AIDS-related illness or is too sick to work. The result is often increased resource dependence and intensity of use (ABCG 2002). People who have been affected by or who are afflicted with HIV or AIDS may develop a short-term outlook on both economic and environmental issues (Loevinsohn and Gillespie 2003). For example, in coastal Tanzania, some fishers have turned to the production and selling of charcoal to supplement their small incomes in order to support their AIDS-affected households, further stressing local forest and mangrove ecosystems. Also, AIDS-affected communities or households may not observe conservation rules and sustainable practices in agriculture, fishing, and other resource-dependent activities, such as harvesting of wood or medicinal plants, because they do not see the benefits of stewardship accruing to them personally—especially if the benefits take longer to accrue than the affected household members expect to live.

DECREASED AVAILABILITY OF PRODUCTIVE LABOR

The second direct, negative impact that AIDS can have on natural resources stems from an increase in mortality and the consequent reduction in labor capacity. Because HIV/AIDS primarily affects adults between the ages of 25 and 45 years—the very people who work to support families and are usually the most productive economically—loss of adult labor and the capacity for heavy labor often leads to changes in affected households' use of land and water resources and agricultural practices. A study conducted in Zambia found evidence that AIDS disrupted agricultural production because farmers suffering from AIDS could not dedicate as much time to field labor as could household members who were healthy (Baylies 2002). Because many rural families combine fisheries and farming as their primary livelihoods, the loss of adults in the prime of life can lead to serious labor shortages and a significant reduction in a household's income. The death of an adult can also have detrimental impacts on the quality of childcare and make general household maintenance extremely difficult.

In Kenya, it is estimated that the agricultural sector will have lost a total of 329,000 person-years by 2020 due to AIDS (Allison and Seely 2004). In Tanzania, it is estimated that between 1985 and 2020 the country will have lost 13 percent of its agricultural labor force due to the disease (FAO 2002). Fishing is also a labor-intensive and physically demanding livelihood, which is vulnerable to changes in fishers' capacity for long work hours. Sick fishermen may prefer fishing in shallow waters where the work is less labor-intensive, resulting in greater environmental deterioration and depletion of fish stocks. Near-shore waters are important marine habitat to sea grass, corals, and mangroves and serve as nurseries for juvenile fish, yet most of the artisanal catch is concentrated in these shallow waters.

REDUCED MANAGEMENT CAPACITY

HIV/AIDS can lead to loss of trained and experienced people within the conservation community. Conservation workers are often located in remote areas and may be away from their families for long stretches of time. This makes them especially vulner-

able to HIV infection because they are more likely to take new, possibly multiple, sexual partners. In turn, there is a risk that HIV-positive conservation workers will bring the virus into remote communities with hitherto low prevalence rates.

Due to changing priorities, HIV/AIDS also often leads to fewer children—especially girls—being sent to school. It is common for a family to decide to keep a child from attending school because an extra hand is needed in the household (to help out with collecting water or other chores), or because funds previously set aside for school fees are used instead to pay for medical expenses. A less-educated workforce is less likely to be a prime mover and supporter of conservation initiatives and is less likely to produce qualified individuals to become part of the next cohort of conservation leaders (see Figure 1).

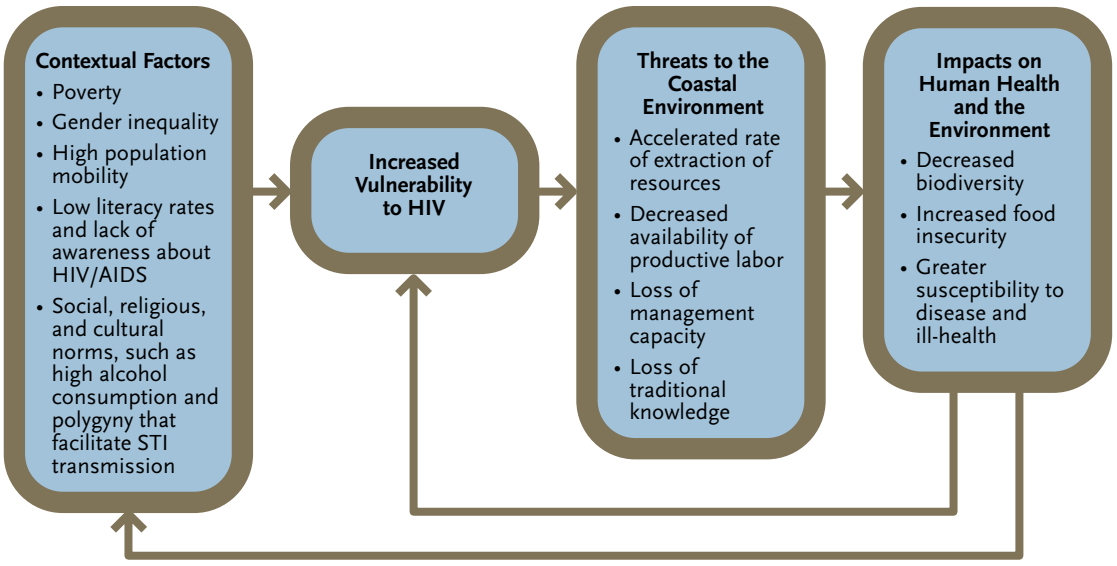
When staff members working for natural resource management organizations pass away, those organizations lose valuable institutional experience and memory. Loss of park rangers, extension officers, senior officials, and other conservation personnel can have detrimental impacts on coastal biodiversity conservation. For example, when conservation staff die, organizations may have to divert some of their conservation funds to pay for death benefits and costs associated with caring for sick employees and funerals, while also suffering from increased employee absenteeism.

Enforcement of protected area management rules and regulations may also suffer if an adequate staff size is not maintained. For example, if a protected area loses some of its rangers to AIDS and they are not replaced by other trained staff, villagers may become more inclined to poach or break other resource use rules, because the risk of getting caught is lower. This situation might be exacerbated if, knowing that they will die within a few years, villagers lose a long-term view of stewardship. People may then become less willing to engage in community-based natural resource management.

LOSS OF TRADITIONAL KNOWLEDGE

Loss of traditional knowledge is the fourth direct impact that AIDS can have on conservation and effective environmental management. When children have not acquired the skills from their parents and grandparents to perform key agricultural, fishing, or other economic activities, livelihood insecurity increases. Loss of knowledge about sustainable land and resource management practices, which are traditionally passed on between generations, can cause natural resources degradation and a decline in productivity. For example, as men in their prime working years succumb to AIDS, more unskilled youth take on fishing responsibilities before they would otherwise do so and before they understand or have gained experience with sustainable fishing tools, methods, and techniques.

Figure 1. Relationship Between HIV/AIDS, Socioeconomic Context, and Impacts on Human Health and the Environment



Source: J. Tobey et al., *HIV/AIDS and Threats to Coastal Biodiversity in Tanzania*.

PART 2.
CRITICAL FACTORS

In coastal Tanzania, gender inequality and migration (especially high mobility of fishermen) are two main factors that exacerbate the spread of HIV infections. The following sections explain why these factors are critical in shaping the impact of HIV/AIDS on the natural environment in coastal areas.

GENDER ROLES AND INEQUALITY

Understanding the different perceptions, roles, and responsibilities of men and women—and the culturally constructed power relations between them—is crucial for effectively addressing the root causes of risky sexual behavior (see box on page 9). The AIDS epidemic is now embedded in the lives of coastal men and women, affecting not only the communities' health and economic well-being, but also threatening the surrounding natural environment.

Our 2005 threats assessment made clear that women in the coastal area of Tanzania have primary responsibility for rearing children and ensuring sufficient resources to meet family needs. Women also are the principal managers of essential household resources like water, fuel for cooking, and food for household consumption. Despite women's significant responsibilities, the male head of household makes most decisions concerning income expenditure, labor allocation, health care provision, food production and acquisition (both agriculture and fishing), and mobility of family members. Women suffer from a lack of decisionmaking power and very low status relative to men in these coastal villages.

The proportion of adults living with HIV/AIDS who are women is approximately 58 percent in Tanzania (TACAIDS 2005). Women are especially vulnerable to HIV infection for social, cultural, and biological reasons. And intergenerational sexual relationships and limited access to information make teenage girls even more susceptible to infection. In coastal Tanzania, cultural and religious norms allow men to take several wives and young girls are often married to older and wealthier men. A dowry is often the driving motivation for parents to marry off their young daughters—often just 12 or 13 years old. And once a girl is married, it is unlikely that she will continue her education. Divorce and remarriages are common and partner sharing is on the increase, especially in villages with notable seasonal migrants. The cultural practice of polygyny[3] also puts women in a vulnerable position. In Tanzania, women who are in polygynous unions have an HIV-infection rate of 9.9 percent, compared with 6.6 percent for women in nonpolygynous unions (TACAIDS 2005). Biologically, women are less likely to show symptoms of sexually transmitted infections (STIs) and less likely to seek treatment for STIs, resulting in chronic infections with more long-term complications. Untreated STIs increase the likelihood of HIV infection.

Women carry the main burden of caring for the sick, reducing their ability to engage in productive labor. Important caregivers also include young girls who drop out of school to help their mothers cope with the increasing workload at home. When women have to spend more time caring for the sick people, they will have decreasing amounts of time to earn cash income outside the home, often leading to a cycle of poverty and sickness. Apart from the time lost to care giving, household resources are often redirected toward increased health care expenditures. In interviews conducted for the threats assessment, women reported that they are often the ones who must make up for these losses. In an effort to retain some control over at least a portion of household income, women have become more entrepreneurial and have adopted a variety of new coping strategies: collecting "extra" fuel wood or water that can be sold; engaging in alternative, nontraditional income-generating activities such as prawn fishing, alcohol brewing, and weaving and selling mats and baskets; acting as "wholesalers" in the charcoal trade; and exchanging sex for money.

Due to this context of poverty and structural gender inequality, women are uniquely vulnerable to HIV infection. However, men are also affected by the gen-

Gender Roles, Responsibilities, and Access to Resources

- Women are the principal managers of essential household resources, such as fuel for cooking, water, and food.
- Men make most decisions concerning labor allocation, food production, and health care.
- Women and men often have different types of traditional knowledge, such as fishing and farming techniques, sources and ways to collect natural resources, and sources and uses of medicinal plants and minerals.
- Women tend to have less access than men to formal decisionmaking authorities and are less involved in local decisionmaking structures.
- Women and men often have different coping strategies for drought and disasters.
- Women are less likely to attend school, work in the formal sector, and have access to credit.

der relations and prevailing power structures within their communities. Working environments in the coastal area, such as that of mine workers, construction workers, fishermen, and traders, may contribute to male notions of masculinity and sexuality. Besides the boredom and loneliness of such jobs, these workers endure dangerous and unpleasant working conditions, poor accommodations and isolating environments, to which they may respond with exaggerated "masculinity" and sexual bravado.

POPULATION MOBILITY

Seasonal migration is a major factor affecting population dynamics in coastal villages. Throughout the year, men—mostly between the ages of 15 and 39—move between villages according to fishing and farming seasons. While most migrants come from neighboring villages, large numbers of "outsiders" migrate to fishing centers, where lucrative fish trades (such as shrimp and tuna) attract businessmen from nearby islands and larger towns and cities.

Research in Africa has long demonstrated that the prevalence and patterns of the spread of infectious diseases are closely associated with patterns of human mobility (Smith 2002; Drimie 2002; Allison and Seely 2005). People become more vulnerable to HIV/AIDS when their work regularly takes them away from home and family. With fewer social ties and lack of social cohesion in settings away from home, migrant workers are more likely to take multiple marriage partners. The optimal context for HIV transmission is one where men have money, have few recreational options, and are away from their families. In addition, these men work in communities where limited access to education, employment, credit, or income can force women to resort to sex work to earn a living. This is the reality in many Tanzanian fishing villages.

Studies in Africa have also found that fishers are particularly susceptible to HIV infection and more vulnerable to the impacts (Simon-Meyer 2002). Mobility is thought to be a major factor, together with the availability of cash and sex at landing sites—fueled by a masculine subculture and social marginalization of women. One study of the Kagera region in Tanzania found that fishermen were five times more likely than farmers to die from side effects of AIDS (Ainsworth and Semai 2000). Although certainly not all migrant fishermen seek out commercial or transactional sex, the majority of those who do place themselves and their partners in highly risky situations by having multiple sex partners, use condoms inconsistently or not at all. During the fishing season, fishers earn cash on a daily basis, which is easily spent on alcohol and sex when living away from home. They also have a significant amount of free time, as fishing activities usually take place in a three- to five-hour time span in the early morning or evening.

PART 3.
MITIGATION ACTIONS

This section presents actions, including those related to gender and population, that can be taken to lessen the impacts of HIV/AIDS on biodiversity conservation. There are three goals in implementing these mitigation actions:

- Enhance the quality of life of women, girls, and other groups vulnerable to HIV/AIDS to reduce vulnerability and increase household resiliency if a family member becomes ill.
- Provide prevention awareness to vulnerable groups, particularly women, girls, and migratory fishermen.
- Build capacity to enable behavior changes and social norms that reduce the HIV-infection rate and minimize negative impacts on the coastal environment.

To contribute to these goals, proposed mitigation actions fall under seven headings:

1. Promote sound natural resource management and biodiversity conservation.
2. Introduce less labor-intensive livelihoods.
3. Conduct behavior change communication and environmental education.
4. Provide AIDS prevention, care, and support.
5. Mainstream HIV/AIDS into local institutions and organizations.
6. Promote improved gender equality.
7. Conduct strategic communication and advocacy.

Under each of these headings, we describe general objectives, suggested actions, and indicators that can be used to help measure progress toward achieving the objectives. Suggested actions marked with a ❖ indicate a current activity initiated by the PEACE project.

PROMOTE SOUND NATURAL RESOURCE MANAGEMENT AND BIODIVERSITY CONSERVATION

For households affected by AIDS, the loss of an income earner can be economically and socially devastating to an already poor and vulnerable family. Faced with few or no alternatives, families may ignore resource management best practices and engage in unsustainable resource use practices, including poaching, excessive forest resource extraction, and dynamite fishing. Others may resort to using unsafe sources of water because they have neither the time nor energy to seek out safer, more reliable sources. By promoting biodiversity conservation and management, we can help reverse these trends.

Objectives

Slow the rate of resource extraction

- Establish resource-saving technologies for vulnerable households.
- Restore depleted natural resource stocks and degraded habitats to levels that can support sustainable use.
- Enhance protection and management of coastal biodiversity.

Action Strategies

1. With community groups, plan and implement energy-saving technologies that reduce the time needed for cooking and collecting fire wood and that decrease pressure on coastal resources. Target such activities (e.g., piloting energy-efficient stoves and more energy-efficient charcoal-making technologies) to female-headed and the lowest-income households ❖

- Identify and analyze problems related to energy needs and opportunities together with the local communities.
- Raise awareness on energy-saving technologies and their contributions to environmental conservation.
- Collect community-level baseline information on energy use.
- Prepare local energy-saving management plans and establish indicators to measure the outcomes from implementing the plans.

Promoting Energy Efficiency and Resource Management

The PEACE project is working with the Tanzania Traditional Energy Development Organization (TaTEDO) to introduce culturally acceptable and fuel-efficient stoves for domestic and commercial use. The goal is to alleviate the burden on women to collect firewood and reduce health risks from smoke emissions. Most villagers currently use a three-stone fireplace that utilizes only about 10 percent of the energy potential. It is expected that the fuel-efficient stoves and woodlots will reduce pressure on forest resources, save precious time, reduce indoor air pollution, and increase income for HIV/AIDS-affected households. Raising awareness of the linkages between HIV/AIDS, resource-use practices, and poverty—and discovering concrete ways to make people's lives better—are additional innovations with value for all Tanzanians. The cost of financing these activities will be shared. The project provides materials and technical assistance/training and villagers volunteer their labor for construction.

Among their many benefits, fuel-efficient stoves help reduce indoor air pollution.

PEACE project staff are also working with village government in two villages to set aside community-owned land, giving use rights through a Memorandum of Understanding to AIDS-affected or particularly vulnerable households (e.g., those with a female head of household). A number of farmers who have been trained on tree nursery establishment are now working together with TaTEDO staff to plant locally available trees on each plot. The established wood lots should reduce pressure on surrounding forest resources.

- Establish demonstration projects on affordable energy-saving technologies (e.g., fuel-efficient stoves) that are made from locally available materials.
- Build capacity in energy-saving technologies and business management skills so that trained individuals can start small businesses to promote energy-efficient stoves.
- Combine the introduction of energy-saving technologies with reforestation activities, such as establishing woodlots.

Expected Outcomes: Time and labor savings among vulnerable groups. Reduced pressure on resources. Improved resource use.

2. Initiate small-scale projects to promote biodiversity restoration ❖

- Work with committees to identify and analyze problems related to the degradation of coastal habitats together with the communities.
- Develop and distribute educational materials on mangroves, coral reefs, sea grasses, coastal forests, wildlife, and other critical habitats; provide information on how communities can help to restore degraded environments or depleted resources.
- Establish community-based projects, with locally-appropriate incentives when necessary, to restore and/or protect habitat (e.g., mangrove replanting, community enforcement of protected woodlands and/or fishing grounds).

Expected Outcomes: Biodiversity monitoring data showing stability, improvement, or slowing the rate of decline of resources over time.

3. Facilitate collaborative management of critical habitats that mainstream HIV/AIDS and gender issues

- Assess the principal environmental issues and their implications for the primary stakeholders, including women and AIDS-affected households.
- Document baseline conditions, preferably using participatory monitoring techniques.
- Conduct a public education program about the importance of sound natural resource management in ensuring sustainable livelihoods. These programs could use local facilitators and peer educators and involve key stakeholders—women, AIDS-affected households, fishers, youth, and community leaders.
- Design strategies to help address the community's primary concerns, ensuring inclusion of AIDS-affected households and women.
- With villagers, initiate, develop, and implement collaborative management plans and bylaws that address and integrate terrestrial and marine issues.
- Ensure adequate and competent institutional and governance structures are in place to convene all stakeholders and to implement and monitor bylaws.
- Obtain formal endorsement of collaborative management plans.
- Determine how to promote compliance with the plans—especially among those most vulnerable—and prevent benefit capture by elites, especially as yields increase and value of resources increases.
- Implement conflict resolution procedures.
- Coordinate with already-existing conservation initiatives.
- Monitor performance and biodiversity trends.

***Expected Outcomes*:** Improved management and biodiversity monitoring data showing stability, improvement, or a slowing rate of decline of resources over time.

Indicators to measure changes related to biodiversity conservation and management:

- Change in use of resource-saving technologies (number of new technology types, percent change in the number of households using the technologies)
- Number of small-scale projects initiated (number of men and women involved, physical area covered)
- Number of collaborative management plans developed
- Number of plans effectively in use
- Changes (improving, stabilizing, or decreasing rate of decline) in natural resource stocks and critical habitats (e.g., fish density, catch per unit effort)

INTRODUCE LESS LABOR-INTENSIVE LIVELIHOODS

Many Tanzanians are in some way affected by HIV/AIDS (by being sick or having a sick household member) and the economic and social impact on women is especially devastating. Introducing less labor-intensive livelihoods can improve the quality of life for women and other vulnerable groups by raising their income and freeing up time to tend to sick household members.

Objective

Address reduced labor capacity

Establish environmentally sound and low labor-intensive enterprises for women and other HIV/AIDS vulnerable groups.

Action Strategy

1. Develop sustainable natural resource-based livelihoods ❖

- Together with target groups (or whole communities), identify potential resource-based livelihoods.
- Conduct feasibility studies and value chain analyses[4] to assess if livelihoods are economically and environmentally sensible.
- Pilot test livelihood activities.
- Assess outcomes from livelihood activities (income, environmental change, impact on gender roles, etc.).
- Provide extension services, microfinance options, and education to women and other vulnerable groups to scale-up livelihood activities.

Examples of natural resource-based livelihoods:

Apiculture—The products from beekeeping—mainly honey and wax, which are in high demand in local and national markets—can serve as a source of income to coastal communities that have very limited access to other income-generating activities. Even if not undertaken as the primary livelihood, beekeeping

can be an excellent source of supplemental income, because it does not require full-time work. Beekeeping is environmentally friendly and is more likely to be successful where there is an abundance of healthy mangroves in which to place hives. This can be an additional incentive to protect and manage these important ecosystems.

Ecotourism—Handicrafts made from local materials can be sold to tourists at visitor centers in protected areas or at tourist hotels. Additionally, communities can work with local tour operators and hotels to bring tourists to nearby villages to learn about community life in coastal Tanzania.

Fish Farming—Fish farming (or shrimp and oyster farming in some areas) can provide both an income and a source of protein for HIV-vulnerable and AIDS-affected groups. Also, if productively engaged in aquaculture, men may opt to stay home instead of seasonally migrating for ocean fishing. This would limit the number of opportunities to engage in risky sexual behavior such as unprotected sex with multiple partners, thereby decreasing the likelihood of spreading HIV.

Fruit processing—Mangoes, pineapples, and oranges thrive in the coastal area. These fruits can be sliced, sun-dried, and packed for tourists and local supermarkets in Dar es Salaam. They can also be used as an important source of nutrition for children and sick adults. Fruit processing is a low-tech and low labor-intensive activity.

Paprika farming—A major problem for many farmers in Tanzania is the destruction of their crops by

PEACE and Microenterprise Development

The PEACE project has promoted four forms of microenterprises: paprika pepper farming, milkfish aquaculture, construction and sale of fuel-efficient stoves, and local, small-scale restaurants (called "Mama lishes" in Tanzania). These activities require low labor and time inputs, making them especially suitable for women, orphans, and HIV/AIDS-affected families. Paprika farming was initiated in two villages (Mkalamo and Matipwili) in 2005 with groups of 20 individuals in each village. The first year, the paprika harvest was plentiful, but the farmers failed to dry most of the product. Inexperienced farmers in combination with unexpectedly late rains made much of the paprika harvest rot. Despite this setback, the farmers were interested in learning how to improve drying techniques and continue with the paprika farming. The following year, paprika cultivation was expanded to include 20 persons from four additional villages. PEACE also conducted a feasibility study to assess if it was possible to initiate paprika farming in the villages that are located by the beach, where the soil quality might be too poor for this form of agriculture.

As part of the energy-savings component, PEACE trained 12 local technicians in building fuel-efficient stoves so that these individuals could start their own small-scale stove businesses. The stoves would be sold in the villages (for a cost of US$2 to $5 per stove) thereby increasing the biodiversity conservation benefits of the project by reducing the need for fuel wood. PEACE also trained 10 women in food nutrition and health, providing technical assistance for them to start or improve already existing "Mama lishe" restaurants. These restaurants cater to local residents as well as tourists visiting the Saadani National Park, Ushongo beaches, and the Maziwe reserve. The Mama lishe restaurant owners are "champions" of PEACE, showcasing the fuel-efficient stoves and displaying and distributing information about HIV/AIDS.

Newly harvested paprika dries in Mkalamo.

wild animals, especially wild pigs, baboons, and other destructive mammals that feed on fruits and nuts. By farming plants that these animals do not eat, such as paprika (or chili peppers in some areas), crop destruction is greatly diminished. Paprika is also a cash crop with an established export market and excellent income-generating potential.

***Expected Outcomes*:** Low-labor intensity and environmentally sound enterprises generate increased and equitable benefits from sustainable use of natural resources among women and other HIV/AIDS vulnerable groups. Women in HIV/AIDS-affected households become independent and economically secure by relying on a sustainable natural resource as a source of income.

Indicators to measure impacts of less labor-intensive livelihoods:

- Number of enterprises
- Number of men and women engaged in the enterprises
- Average income per beneficiary
- Economic value generated from livelihood activities (including income and improvements in biodiversity)

CONDUCT BEHAVIOR CHANGE COMMUNICATION AND ENVIRONMENTAL EDUCATION

Communication and education around HIV/AIDS and the potential impacts on the environment are critical to prevention and mitigation. Two target audiences for education programs are resource users, youth, and HIV/AIDS high-risk groups (women, fishers, and migrants); and community and district-level coastal resource managers and conservation practitioners, health practitioners, development planners, and policymakers. These two audiences may require a different approach to formatting, disseminating, and communicating key messages. Especially when communicating with local communities, it may be necessary—even preferable—to enlist the help of trained health workers or HIV/AIDS specialists to develop and convey effective behavior change messages.

Objectives

Prevent the spread of HIV and promote environmental stewardship

- Communicate HIV/AIDS, environment, gender, and population messages to coastal villagers, community leaders, district-level government personnel, and NGO professionals.
- Transfer intergenerational knowledge about sound environmental management.

Action Strategies

1. Communicate HIV/AIDS, environment, and equity messages to target groups at the village and district level ❖

- Develop key messages that highlight the linkages between HIV/AIDS, gender, and environment, and convey those messages in locally appropriate formats, such as on *kangas* (women's cotton wraps); at theater and dance events; on brochures, t-shirts, and posters and other art work; and on TV or radio.
- Design and present interactive educational activities (e.g., Theater for Development, described on page 15) to work with villagers to find solutions to village-based issues related to HIV/AIDS, resource use, migration, and gender relations.
- Implement outreach programs in local primary and middle schools, and integrate HIV/AIDS units into health and environmental education curricula.
- Conduct classroom and practical training with Village and Ward Multisectoral AIDS Committees (VMACs and WMACs) and Environmental Committees to provide them with basic information on HIV/AIDS; orient them on their roles and responsibilities in the local response; conduct mapping of high transmission areas and available local resources for HIV/AIDS control; and build partnerships with other stakeholders in their respective areas.
- Carry out regular follow-up visits to monitor VMAC, WMAC, and Environmental Committee activities and actions taken by communities as a response to communication activities.
- Provide technical assistance to the VMAC, WMAC, and Environmental Committees to help them provide adequate local response to limit the spread of HIV in their villages.

Expected Outcomes: Increased understanding among community members and leaders of the impacts of HIV/AIDS on the environment. Increased community support for activities designed to reduce the incidence of HIV infection (reduction in risky sexual behavior); and increased participation in conservation activities. Strengthened ability of village, ward, and district leaders to work more effectively in HIV/AIDS control.

Theater for Development

Uzima Kwa Sanaa (UZIKWASA), a locally-based nongovernmental organization and key partner in PEACE, uses art and drama to educate and convey important messages about the threats of HIV/AIDS and the linkages between the disease and population, gender, and biodiversity conservation. They use the Theatre for Development (TFD) methodology, which uses theater to raise consciousness about sensitive social problems among specific target communities.

The UZIKWASA-led performances usually begin with a traditional dance as a "crowd-puller," followed by a drama. During the performance, members of the audience are asked how they would solve the problems presented in the play.

During a Theater for Devleopment performance a wife and husband visit a doctor to talk about AIDS.

For example, one of the two plays most often performed by UZIKWASA depicts the fate of a young girl who is forced by her greedy father to marry a well-off fisherman who has come from Pemba Island for a brief stay. Since the marriage was never intended to last, the girl soon finds herself abandoned by her husband. Deprived of the opportunity to continue her education and unable to care for herself and her newborn baby, the girl continues to depend on her parents' support, thus driving the whole family deeper into poverty. Another play depicts the disturbing reality that many women fish processors—who depend on drying or frying and then selling locally-caught fish for income—are forced to have sex with fishermen before one will agree to sell his catch to her.

The first two years of TFD performances have reached around 5,000 individuals in three villages. Community members attending the shows have the opportunity to actively reflect on and discuss the HIV/AIDS situation in their respective villages. In addition, local leaders, who join in the preparation work and mobilize their constituents to participate, attend each performance.

TFD has initiated a process of active reflection by the villagers on specific HIV/AIDS-related problems. In addition, the program has fostered commitment among the village leaders to address these issues. This is important for the community-led HIV/AIDS response planning process, which is expected to result in locally relevant HIV/AIDS action plans that are widely supported and therefore more likely to be effectively implemented.

2. Educate children and youth about traditional skills, responsibilities, laws, and the environment they must sustain

- Create a discussion forum that involves young and old villagers.
- Engage young villagers in resource planning.
- Provide extension services to teach environmentally sound and technologically advanced methods of fishing and farming.

***Expected Outcomes*:** A young generation that understands and respects traditional methods of farming and fishing, but at the same time has the knowledge and resources to adopt more technologically advanced and environmentally sustainable methods.

Indicators to measure the outcomes related to communication and education:

- Number of HIV/AIDS communications strategies in use
- Number of individuals reached through community outreach that promotes HIV prevention (male and female)
- Number of local organizations provided with technical assistance for AIDS-related policy development
- Number of local organizations provided with technical assistance for HIV-related institutional capacity building
- Number of appropriate publications developed and disseminated, number of citations of the lessons learned
- Number of meetings or other forums for intergenerational transfer of knowledge
- Number of environmentally friendly technologies adopted
- Number of different types of groups involved

PROVIDE AIDS PREVENTION, CARE, AND SUPPORT

In coastal Tanzania, there is a need to strengthen and build systems to implement effective HIV/AIDS prevention, treatment, and care services (including clinic and community-based care and support), and targeted prevention strategies to improve awareness and promote behavior change. There is also a need to increase access to quality voluntary counseling and HIV testing services, increase access to home and clinic-based care with an emphasis on linkages between home and clinical services, and expand palliative care for those infected and affected by HIV, including orphans and vulnerable children (OVC).

Objectives

Reduce vulnerability to HIV infection and support AIDS-affected households

- Establish and strengthen VCT (voluntary counseling and testing) centers.
- Establish orphans and vulnerable children (OVC) programs.
- Strengthen home-based care programs (HBC) and service providers.

Action Strategies

1. Actions to prevent the spread of HIV/AIDS ❖

- Target youth (ages 13 to 19) in Behavior Change Communication (BCC) activities:
  - Develop capacity of youth to serve as peer educators/advocates.
  - Appoint youth AIDS advocates to village and ward AIDS committees.
  - Develop communication materials on adolescent sexual health.
  - Use entertaining events such as sports festivals and singing and dancing contests to educate youth about HIV/AIDS.
  - Provide condom negotiation, assertiveness, and communication skills for young women.
  - Involve youth in HBC programs.
- Implement Information, Education, and Communication (IEC) campaigns targeted at fishers and other migrant workers, with HIV prevention messages developed and delivered specifically for this group.
- Establish condom outlets in coastal villages, including at fish landing sites, markets, and bars/restaurants where fishers and youth congregate.
- Implement a peer-to-peer learning program for youth, women, and men.

***Expected Outcomes*:** Reduced risky behavior among vulnerable groups, especially youth and fishers. An increased use of condoms will help decrease the prob-

ability of transmission of HIV and will also decrease the risk of contracting other sexually transmitted diseases, such as gonorrhea and syphilis.

2. Actions to care for HIV-infected youth and adults and those caring for infected family members

- Establish outreach services, such as peer education, satellite or outpost clinics, and drop-in centers in coordination with the district health system or other health partners.
- Form support groups for people living with HIV/AIDS.
- Promote voluntary testing and counseling by establishing two-way referral systems between communities and medical facilities; provide transportation to nearest VCT services center.
- Establish home-based care (HBC) programs with help from district health system or nongovernmental organizations with experience in implementing such programs.
- Assist village and ward leaders to develop a HBC strategy and plan:
  - Provide training in basic nursing care for caregivers.
  - Promote male involvement in HBC.
  - Provide basic legal counseling or referrals to reduce incidents of discrimination and promote the rights of people living with AIDS in employment, ownership of assets, inheritance, housing, and access to resources.
  - Establish record and reporting systems for HBC programs, including monitoring and support from community health workers, nurses, and doctors.

Expected Outcomes: Increase in quality of life for those living with AIDS. Working with home-based care programs could also be an income opportunity for village women.

3. Actions to support those affected by HIV/AIDS

- Establish programs for orphans and vulnerable children, which strengthen community awareness and support for OVC and reduce stigma and discrimination. Activities might include communicating child-centered messages about HIV prevention at special events (World AIDS Day, Children's Day, etc.), sponsoring structured play groups that mix OVC with other community children to promote integration and reduce stigma, and providing financial or material support to orphans so they can remain in school.
- Establish older-people associations (OPAs) and conduct life skills educational sessions designed specifically for this age group. Develop printed materials that promote the role of older caregivers; and increase capacity of OPAs to speak out against discrimination against older people and their families affected by HIV/AIDS.
- Create a community funeral fund through a savings scheme or cooperative income-generating activity, whereby a fixed percentage of income is set aside to help reduce funeral costs for AIDS-affected households.

Expected Outcomes: Improved quality of life for orphans and vulnerable children and older caregivers. Reduced financial burdens on those dealing with loss of family members due to AIDS-related illnesses.

Indicators to measure outcomes toward HIV prevention, care, and support:

- Number of men and women who adopt appropriate HIV prevention strategies
- Number of VCT centers established and in functioning condition
- Number of men and women visiting the centers, average age of the individuals visiting the centers
- Number of condom outlets in villages
- Number of functioning HIV/AIDS clinics
- Number of visitors to clinics for testing (men and women)
- Number of ARV users (men and women)
- Number of home-based care program
- Number functioning OVC centers
- Increased contribution (number of people and/or capital) to funeral fund and number of people supported by the fund
- Number of girls/boys/orphans attending primary and secondary school

MAINSTREAM HIV/AIDS INTO LOCAL INSTITUTIONS AND ORGANIZATIONS

Community development and natural resources managers are increasingly aware of the pandemic and its impacts, but to date few have mainstreamed a consideration of HIV/AIDS into their work. It is important that these managers start building upon the linkages that exist between HIV/AIDS, poverty, gender, and natural resources management to develop multisectoral policies and programs. This could include mainstreaming HIV/AIDS, gender, and population issues into existing integrated coastal management-related policies and plans and developing HIV/AIDS workplace policies and procedures for natural resources management and conservation organizations. To achieve this, it is important for conservation managers and extension personnel to communicate effectively with their organizations' human resources departments and directors about the importance of HIV/AIDS workplace policies and to advocate for the development of such policies.

It is particularly important that organizations establish procedures for reducing HIV transmission among their employees (for example, by encouraging employees to participate in HIV/AIDS awareness sessions and by making condoms readily available to employees) and for coping with AIDS and its impacts on the organization. Efforts should also be made to train conservation and agricultural extension personnel to better address the needs of vulnerable groups, especially women and HIV/AIDS-affected households.

Objectives

Mitigate the impacts of lost management capacity

- Develop organizational policies and procedures among conservation and natural resources management organizations and projects for dealing with HIV/AIDS.
- Mainstream HIV/AIDS and gender into local conservation plans (e.g., district action plans, collaborative fisheries management plans, and the national park general management plans).

Action Strategies

1. Develop workplace policies for HIV/AIDS in conservation organizations

- Establish a social welfare committee to collect funds, or set aside a proportion of the organization's annual budget, for funerals and consoling bereaved staff members.
- Send selected staff members to a training-of-trainers course to raise awareness about HIV/AIDS in the workplace.
- Designate a trained staff member to become a desk officer/focal person for HIV/AIDS issues. The focal person may also act as a referral coordinator, directing staff to facilities that provide counseling and testing services, if desired.
- Allocate budget to enhance the fight against HIV/AIDS through publications, meetings, awareness materials, and rallies.
- Increase internal education by providing a HIV/AIDS orientation training for staff and their spouses.
- Establish a HIV/AIDS resource center in the workplace with freely available information and condoms; also place condoms in bathrooms and vehicles.
- Provide first-aid training to staff and stress the importance of using rubber gloves when administering first aid; place rubber gloves in vehicles and offices.
- Work to reduce AIDS-related stigma in the workplace and ensure confidentiality of staff.
- Establish a nondiscriminatory staff conditions policy, outlining medical benefits, sick leave, and other benefits related to the death of a member of staff, spouse, child, or dependent.
- Establish mechanisms for capturing individual knowledge and coping with capacity loss when a staff member passes away.

***Expected Outcomes*:** Increased understanding of HIV/AIDS among conservation staff. Decreased instances of HIV infection. Improved preparedness to deal with loss of staff capacity.

2. Mainstream HIV/AIDS issues into conservation plans

HIV/AIDS Workplace Policies

It is important that organizations establish procedures for coping with HIV/AIDS and the potential loss of personnel. The Wildlife and Environmental Society of Malawi has been a leader in the region, mainstreaming HIV/AIDS into the organization in 2003. Tanzania National Parks Authority (TANAPA) has recently adopted a workplace policy on HIV/AIDS with a five-year implementation plan that includes elements of awareness raising, HIV transmission prevention, HIV testing, AIDS care and treatment, workplace safety, and social support services.

- Review existing local and national plans related to natural resources and conservation.
- Engage HIV/AIDS experts to provide input in how to revise the plans to incorporate HIV/AIDS aspects into the plans.
- Revise village-based and district-level plans, indicators, and monitoring strategies to include health elements.

Expected Outcome: HIV/AIDS incorporated into district-integrated coastal management action plans and other district- and village-level environmental plans.

Indicators to measure outcomes related to mainstreaming HIV/AIDS:

- Number of operational workplace policies and procedures addressing HIV/AIDS and its impacts in place
- Percent change in HIV/AIDS prevalence rate among conservation staff
- Number of revised conservation plans that have mainstreamed HIV/AIDS

PROMOTE IMPROVED GENDER EQUALITY

The term "gender" refers to the socially determined roles and responsibilities of men and women and the relationship between them in any given society. Gender relationships are dynamic and changeable, and differ from one society to another and even within the same community. Gender affects not only patterns of access to resources, but also the ability of women and men to negotiate their interests and expand their rights within the household, community, and state.

The ability of different social groups to access, control, and strategically use natural resources has significant implications for food, nutritional, and health security, and for the capacity of resource users to manage agricultural, marine, and forest-based diversity. Recognition and integration of gender differences contributes to overall planning and increases the chance that both women and men will participate and benefit from conservation and development activities.

A gender mainstreaming strategy outlines steps to be taken to ensure that women participate fully in coastal management activities and decisionmaking. Women—as well as men—should be involved in the collection of information and identification and analysis of issues, the development of management alternatives, and the allocation of resources. An effective and comprehensive strategy also ensures that women and men have equal access to resources—including recognition and respect, secure and rewarding employment, income, education, health services, leisure, and personal security.

Objectives

Reduce inequalities between women and men

- Reduce and/or overcome gender-based barriers to resource management, education, employment, and health services.
- Increase opportunities for women to engage in income-generating activities, and to more fully participate in resource management, education, and community planning.
- Improve women's participation in and share of benefits from resource management and livelihood development.

Action Strategies

1. Establish and strengthen gender-sensitive policies and programs

- Employ gender analysis methods and participatory planning to ensure both women's and men's perspectives are incorporated into the planning process

and that project priorities are established with input from both sexes.

- Organize meetings and other events at times when both men and women can participate.
- Conduct gender sensitivity training for village, ward, and district leaders.
- Conduct women's leadership and rights training.
- Conduct literacy classes for women.
- Increase women's participation in decisionmaking by establishing minimum levels of women's participation on committees and appointing women to chair organizations.
- Build institutional capacity to implement programs for advancing gender equity through staff training and advancing women to leadership positions.
- Provide legal assistance to AIDS widows and orphans faced with land tenure issues.
- Use gender analysis methods to collect, describe, analyze, and interpret gender-disaggregated data, and to understand men's and women's different needs and priorities.
- Modify legal and regulatory frameworks that prevent women from participating in planning, decisionmaking, and economic development.
- Establish monitoring guidelines that require the collection of gender-disaggregated data at regular intervals and that include indicators of progress toward gender integration/mainstreaming.

***Expected Outcomes*:** Increased participation of women in planning—and more gender-sensitive plans.

2. Promote equal access to resource management, livelihood development, education, and reproductive health

- Ensure equal participation in resource management by not only women and men, but also young and old, village leaders, and disadvantaged groups.
- Promote equal participation of women in public positions and local committees.
- Increase funding for the education, training, and microfinance needs of girls and women.
- Encourage school attendance by providing uniforms, books, and school fees for children, especially orphans and girls.
- Collaborate with microfinance institutions to provide training for women on accounting and financial matters.
- Promote female ownership of business enterprises.
- Ensure equitable access to credit.
- Work to ensure that women can be the direct beneficiaries of land titles.
- Encourage men to establish wills so that a woman can more easily exercise her legal land and property rights in the event of her husband's death.
- Provide adequate reproductive health and counseling services for women.
- Ensure equitable participation in literacy programs.

***Expected Outcomes*:** Improved economic and educational opportunities for women.

Indicators to measure changes in gender equality:

- Percent female participation in conservation initiatives.
- Number of established gender-sensitive policies and programs.
- Evidence of the application/use of the policies or programs.
- Number of gender experts and extension officers at village and district level.
- Financial resources set aside for gender and reproductive health activities and training.
- Number of females owning business enterprises.
- Percent increase in women's income.

CONDUCT STRATEGIC COMMUNICATION AND ADVOCACY

Strategic communication and advocacy activities—such as the documentation and dissemination of lessons learned around the impact of HIV/AIDS on the environment—are targeted at national and international conservation and health NGOs, policymakers, and donors who are, or may become, interested in integrated cross-sectoral approaches to conservation and development. Secondary audiences include the media, academic institutions and researchers, professionals/policymakers in agricultural and economic development sectors, and population-health-environment project implementers and program managers. The purpose of strategic communication is to increase

understanding of the interrelationships between HIV/AIDS, gender, and the coastal environment at the policy level, and to ultimately secure increased technical support and funding for integrated population-health-environment (PHE) projects, programs, and policies that promote cross-sectoral cooperation.

Objectives

Advocate for integrated programming and cross-sectoral collaboration

- Document and disseminate lessons learned and associated program and policy implications.
- Strengthen advocacy for integrated population-health-environment (PHE) programs and policies.

Action Strategies

1. Document and disseminate lessons learned ❖

- Develop and disseminate appropriate publications, such as journal articles, newsletters, and radio and newspaper reports.
- Write and post web articles on implementing partners' websites.
- Participate in national and international conferences, workshops, and meetings.

Workshop and Study Tour for East African Journalists

The Population Reference Bureau, one of the implementing partners of the PEACE Project, conducted a four-day Population-Health-Environment training seminar for East African journalists and editors, in close collaboration with local PEACE Project staff. The training program was designed to increase knowledge, skills, and interest in reporting on population-health-environment (PHE) issues among journalists in influential news outlets, and to enhance the quality and quantity of news coverage of key PHE issues in the region.

Journalists learn from local leaders how AIDS has affected natural resource management and livelihoods in their community.

As part of the workshop program, journalists visited two of the coastal villages participating in the PEACE Project. While in the field, journalists had the opportunity to interview village leaders, health workers, HIV/AIDS and environment committee members, Saadani National Park staff, and community members to gain a better understanding of the linkages between poverty, low health status, gender inequity, food insecurity, and environmental degradation. Many of the journalists wrote and published news stories based on the information gathered during the field visit. Not only did the journalists provide media coverage of the issues of HIV/AIDS, food security, health, and coastal resource management in general terms, but they also covered how PEACE was working to address the challenges though community-based activities.

The workshop sparked journalists' interest in the issue of HIV/AIDS and its impact on the environment beyond coastal Tanzania. Journalists from the Lake Victoria region, Kenya, and Uganda have now taken up the issue in their own local and national newspapers and radio stations.

- Engage the media by issuing regular press releases and conducting workshops and study tours.

***Expected Outcomes*:** Increased understanding and support among conservation and health professionals and policymakers of the impacts of HIV/AIDS on the environment. By building on the successes of small-scale integration efforts, such as the PEACE project, the stage will be set for the development and implementation of cross-sectoral policies and programs at the national level. Furthermore, disseminating technical information in nontechnical language enables districts and local organizations to contribute to ongoing discussions around the country and around the world about the efficacy and efficiency of integrated programs.

2. Strengthen advocacy for integrated PHE programs

- Provide capacity-building opportunities for district planners, conservation and health professionals, local institutions, and the media.
- Publish journal articles and newspaper stories.
- Participate in national and international conferences, workshops, and meetings.
- Identify local and international organizations interested in integrated approaches to HIV/AIDS-gender-conservation linkages and promote collaboration.
- Coordinate and host donor visits to project sites.
- Conduct study tours for health and conservation professionals from other districts (or countries) to facilitate the sharing of experiences and lessons learned in the implementation of integrated projects and programs.

***Expected Outcomes*:** Increased stakeholder support of integrated projects and programs at the community and district levels, and within the international donor community. Disseminate nationally and globally lessons learned.

Indicators for communications and advocacy:

- Number of HIV/AIDS-conservation capacity-building seminars and forums
- Number of men and women attending the seminars
- Number of articles and stories published in local and national media that address the impacts of HIV/AIDS on the environment
- Number of lessons learned or other program documents published and disseminated to key audiences
- Adoption of natural resource management policies and/or strategies that incorporate HIV/AIDS, population, and gender

LOOKING AHEAD: HOW CAN WE IMPROVE THESE GUIDELINES?

These guidelines have illustrated linkages between, and challenges associated with HIV/AIDS, gender, migration, and coastal biodiversity; and have provided some suggestions for how to mitigate problems arising from these linkages. However, more time and experience is needed to completely disentangle the possible impacts of HIV/AIDS on local resource use and management.

We invite readers to share their suggestions and experiences to help us improve these guidelines. Please contact the Coastal Resources Center at info@crc.uri.edu or the Population Reference Bureau at phe@prb.org.

REFERENCES

[1] AIDS is an autoimmune deficiency syndrome caused by the human immunodeficiency virus (HIV), which is spread through blood, semen, vaginal secretions, and breast milk. The most common method of transmission is unprotected sexual intercourse with an HIV-positive partner.

[2] See "Additional Resources" for a short list of published studies on AIDS-food security-environment linkages.

[3] Polygyny is a form of polygamy where men (but not women) are formally allowed to have several sexual partners/wives simultaneously. Polygyny is especially common in the Muslim communities of coastal Tanzania.

[4] Value chain analysis is a method of systematically analyzing the market dynamics, players, and stakeholders, and the constraints, opportunities, and risks associated with a particular product line. Value chain analysis provides valuable information for the development of marketing, distribution, and business collaboration strategies.

BIBLIOGRAPHY

Africa Biodiversity Collaborative Group (ABCG). *HIV/AIDS and Natural Resource Management Linkages: Workshop Proceedings*. 2002. ABCG, c/o Africa Division, Conservation International, Washington, DC. 19 pp.

Ainsworth, M. and I. Semai. *Who is Most Likely to Die of AIDS: Socio-economic Correlates of Adult Deaths in Kagera Region, Tanzania*. In International conference on HIV/AIDS, 8-14 July 2000. Durban, South Africa.

Allison, E.H. and J.A. Seeley. "Another Group at High Risk for HIV." *Science*, 2004. 305(5687): p. 1104.

Allison, E.H. and J.A. Seeley. "HIV and AIDS Among Fisherfolk: A Threat to Responsible Fisheries?" *Fish and Fisheries*, 2004. 5: pp. 215-34.

Appleton, J. "'At My Age I Should be Sitting Under That Tree': The Impact of AIDS on Tanzanian Lakeshore Communities." *Gender and Development*, 2000. 8(2): pp. 19-27.

Baylies, C. "The Impact of AIDS on Rural Households in Africa: A Shock Like Any Other?" *Development and Change*, 2002. 33(4): pp. 611-32.

Bishop-Sambrook, C. and N. Tansarn. *The Susceptibility and Vulnerability of Small-scale Fishing Communities to HIV/AIDS in Uganda.* 2004, Food and Agriculture Organization (FAO): Rome. 12 pp. Bishop-Sambrook, C. *Addressing HIV/AIDS through Agriculture and Natural Resource Sectors: a Guide for Extension Workers*. 2004, Socio-economic and Gender Analysis Programme, United Nations Food and Agriculture Program: Rome. 80 pp.

Caplan, P. "'In My Office We Don't Have Closing Hours': Gendered Household Relations in a Swahili Village in Northern Mafia Island," in *Gender, Family, and Household in Tanzania*, C. Creighton and C.K. Omari, Editors. 1995, Avebury: Haunts, England. pp. 118-38.

Drimie, S. *The Impact of HIV/AIDS on Rural Households and Land Issues in Southern and Eastern Africa*. 2002, Food and Agricultural Organization, Sub-Regional Office for Southern and Eastern Africa. 31 pp.

Eckman, A., B. Huntley, and A. Bhuyan. *How to Integrate Gender into HIV/AIDS Programs*. 2004, Gender and HIV/AIDS Task Force, United States Agency for International Development: Washington DC. 47 pp.

Food and Agriculture Organization (FAO). *AIDS—A Threat to Rural Africa: Fact Sheet*. 2002, FAO: Rome.

Golder, B. and M. MacDonald. "Population and Gender Dynamics in Coastal Conservation in East Africa." *Intercoast*, 2002. Winter 2002(41): pp. 18-19, 38.

Gupta, G.R., D. Whelan, and K. Allendorf. *Integrating Gender into HIV/AIDS Programmes*. 2003, World Health Organization: Geneva. 53 pp.

Haddad, L. and S. Gillespie. "Effective Food and Nutrition Policy Responses to HIV/AIDS: What We Know and What We Need to Know." *Journal of International Development*, 2001. 13: pp. 487-511.

Hemrich, G. and D. Topouliz. "Multi-Sectoral Responses to HIV/AIDS: Constraints and Opportunities for Technical Cooperation." *Journal of International Development*, 2000. 12(1): pp. 85-99.

Kissling, E., et al. "Fisherfolk Are Among Groups Most at Risk of HIV: Cross-Country Analysis of Prevalence and Numbers Infected." *AIDS*, 2005. 19(17): pp. 1939-46.

Lamptey, P., M. Wigley, D. Carr, and Y. Collymore. "Facing the HIV/AIDS Pandemic." *Population Bulletin* 57(3). 2002, Population Reference Bureau: Washington, DC.

Loevinsohn, M. and S. Gillespie. *HIV/AIDS, Food Security, and Rural Livelihoods: Understanding and Respondin*g. 2003, RENEWAL. 40 pp.

Pickering, H., et al. "Sexual Behavior in a Fishing Community on Lake Victoria." *Health Transition Review*, 1997. 7: pp. 13-20.

Silberschmidt, M. "Disempowerment of Men in Rural and Urban East Africa: Implications for Male Identity and Sexual Behavior." *World Development*, 2001. 29(4): pp. 657-71.

Simon-Meyer, J. *AIDS Brief for Sectoral Planners and Managers: Fisheries Industry*. 2002, Health Economics and HIV/AIDS Research Division, University of Natal: Durban. 6 pp.

Smith, M.K. "Gender, Poverty, and Intergenerational Vulnerability to HIV/AIDS." *Gender and Development*, 2002. 10(3): pp. 63-70.

Tanzania Commission for AIDS (TACAIDS). *Tanzania HIV/AIDS Indicator Survey 2003-04*. 2005: Dar es Salaam. 85 pp.

Tobey, J., et al. *HIV/AIDS and Threats to Coastal Biodiversity in Tanzania: Cross-Sectoral Dimensions of HIV/AIDS, Gender, and Population Dynamics in Critical Areas*. 2005, University of Rhode Island Coastal Resources Center: Narragansett. 51 pp.

Topouzis. "The Implications of HIV/AIDS for Household Food Security in Africa." In *Women's Reproductive Health and Household Food Security in Rural Africa*. 1999. Addis Abbaba: United Nations Economic Commission for Africa, Food Security and Sustainable Development Division.

Van Ingen, T., C. Kawau, and S. Wells. *Gender Equity in Coastal Zone Management: Experiences from Tanga, Tanzania*. 2002, IUCN: The World Conservation Union: Nairobi. 26 pp.

White, J. and E. Robinson. *HIV/AIDS and Rural Livelihoods in Sub-Saharan Africa*. 1999, Natural Resources Institute, University of Greenwich: Greenwich. 63 pp.

Wobst, P. and C. Arndt. "HIV/AIDS and Labor Force Upgrading in Tanzania." *World Development*, 2004. 32(11): pp. 1831- 47.

APPENDIX: ADDITIONAL RESOURCES

Behavior Change Communication

Family Health International. *Behavior Change Communication (BCC) Handbooks*; *HIV/AIDS Prevention and Care in Resource-Constrained Settings: A Handbook for the Design and Management of Programs*; *Workplace HIV/AIDS Programs: An Action Guide for Managers*. All available online at www.fhi.org.

Pathfinder International. Articles, reports, and resources at www.pathfind.org.

Strategic Communication and Advocacy

Castro, H., F. Castro, and R. Abadia. *Designing a Communication Strategy: The 4-P Workshop* (Washington, DC: Conservation International; and Commission on Education and Communications at IUCN—the World Conservation Union, 2006). Available online at www.iucn.org/themes/cec/publications/4p_5fworkshop.pdf.

Pact Tanzania. "Civil Society and Advocacy," *Advocacy Expert Series* (Dar es Salaam, Tanzania: Pact Tanzania, 2005).

Pact Tanzania. "Media Guide," *Advocacy Expert Series* (Dar es Salaam, Tanzania: Pact Tanzania, 2005).

HIV/AIDS

Lamptey, P., M. Wigley, D. Carr, and Y. Collymore. "Facing the HIV/AIDS Pandemic," *Population Bulletin* 57(3), (Washington, DC: Population Reference Bureau, 2002). Available online at www.prb.org.

Ogden, J. and L. Nyblade. *Common at its Core: HIV-Related Stigma Across Contexts* (Washington, DC: International Center for Research on Women, 2005). Available online at www.icrw.org/docs/2005_report_stigma_synthesis.pdf.

Pathfinder International. Articles, reports, and resources at www.pathfind.org.

The Corporate Council on Africa. www.africacncl.org/HIV_AIDS/initiative_activities/guides.asp.

HIV/AIDS and Food Security

International Food Policy Research Institute. Articles, reports, and resources at www.ifpri.org.

Gillespie, S. and S. Kadiyala. *HIV/AIDS and Food and Nutrition Security: From Evidence to Action* (Washington, DC: IFPRI, 2005).

Food and Agriculture Organization of the United Nations. Articles, reports, and resources at www.fao.org.

HIV/AIDS-Environment Linkages

Africa Biodiversity Collaborative Group. Articles, reports, and resources at www.abcg.org.

Bishop-Sambrook, C. *Addressing HIV/AIDS Through Agriculture and Natural Resource Sectors: A Guide for Extension Workers* (Rome: FAO, 2004). Available online at www.fao.org/sd/dim_pe1/docs/pe1_050103d1_en.pdf.

Hunter, L. "HIV/AIDS and the Natural Environment" (Washington, DC: Population Reference Bureau, December 2006), available online at www.prb.org.

Torell, E. et al. "Examining the Linkages Between AIDS and Biodiversity Conservation in Coastal Tanzania," *Ocean & Coastal Management*, 2006. 33(11).

Gender

Pact Tanzania. "Gender Mentoring: A Guide for Strengthening Equality in Communities," *Advocacy Expert Series* (Dar es Salaam, Tanzania: Pact Tanzania, 2005).

Rodriguez Villalobos, G., M.B. Lobo, and F.A. Cascante. *Diversity Makes the Difference: Actions to guarantee gender equity in the application of the Convention on Biological Diversity* (San Jose, Costa Rica: IUCN, 2004).

Sass, J. *Women, Men, and Environmental Change: The Gender Dimensions of Environmental Policies and Programs* (Washington, DC: Population Reference Bureau, January 2002). Available online at www.prb.org.

Squillante, L.J., E.C. Torell, and N.K. Diamond (eds.). *Counting on People? Then Who Counts? Teaching Cases: the Population and Gender Dimensions of Coastal Management* (Narragansett, RI: University of Rhode Island, Coastal Resources Center, 2004).

World Conservation Union (IUCN). Toward Equity Series. A series of eight "how-to" modules on integrating gender into environment projects and programs. Available online at www.generoyambiente.org/biblioteca/documentos.php?cat=5&subcat=3&mens=0.

Participatory Data Collection and Planning Methods

Fatima Lankoande. "Understanding the Link Between Population and Environment Through Participatory Action Research," *World Neighbors in Action*, 2003. 29(2E).

Participatory Rural Appraisal Handbook (Worcester, MA: The National Environment Secretariat, Government of Kenya; and The Center for International Development and Environment of the World Resources Institute, 1994). Available for purchase online at www.clarku.edu/departments/idce/publications.shtml.

Thomas-Slayter, B. et al. *A Manual for Socio-Economic and Gender Analysis: Responding to the Development Challenge* (Worcester, MA: Clark University, 1995). Available for purchase online at www.clarku.edu/departments/idce/publications.shtml.

International Institute of Rural Reconstruction (IIRR). *Participatory Methods in Community-based Coastal Resource Man-*

agement (Silag, Cavite, the Philippines: IIRR, 1998). Available for purchase online at www.iirr.org/publicationbdate.htm.

Population, Health, and Environment

Creel, L. *Ripple Effects: Population and Coastal Regions* (Washington, DC: Population Reference Bureau, 2003). Available online at www.prb.org.

De Souza, R., J. Williams, and F. Meyerson. "Critical Links: Population, Health, and Environment," *Population Bulletin* 58(3). 2003, (Washington, DC: Population Reference Bureau, 2003). Available online at www.prb.org.

Marshall, A. (ed.). *Footprints and Milestones: Population and Environmental Change* (New York: United Nations Population Fund (UNFPA), 2001).

Sustainable Livelihoods

Apiculture:
www.ibra.org.uk
www.beekeeping.com

Aquaculture/Mariculture:
www.worldfishcenter.org
www.seafdec.org
www.acdivoca.org
www.crc.uri.edu

Smallholder Empowerment & Economic Growth through Agribusiness & Association Development (SEEGAD) Project. *Sub Sector and Value Chain Analysis for Mud Crabs Tanga Coastal Belt* (Tanga, Tanzania: ACDI/VOCA, 2005). Report available by contacting acdivoca@kaributanga.com.

Ecotourism:
www.ecotourism.org
www.nature.org/aboutus/travel/ecotourism/resources

Forest resources:
www.fao.org/forestry/site/hivaids/en/

Woodlots:
www.ifpri.org
www.tatedo.org