Healthy People, Healthy Ecosystems

A Manual on Integrating Health and Family Planning into Conservation Projects

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Cover Photo Captions

Clockwise from left

Children swimming in a river in the Terai Arc, Nepal. The health of people and ecosystems is closely linked.

Mother and baby with child growth chart at a mobile clinic in Kiunga Marine National Reserve, Kenya.

Man and woman cultivating seaweed in Roxas District, Philippines. WWF has helped fisher families develop alternative livelihoods through seaweed farming.

Modern family planning provided by a mobile clinic in Mkokoni, Kiunga Marine National Reserve, Kenya. The clinic provides regular access to basic health care and family planning.

Endangered green turtle juvenile in Mozambique, Coastal East Africa; many PHE projects work to conserve species such as this.

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Dedication

To our late friend and colleague,
Mingma Sherpa, who wanted this
manual to improve the health of people
and nature in the Eastern Himalayas

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Abbreviations and Acronyms

ADRA	Adventist Development and Relief Agency
AED	Academy for Educational Development
ABF	Arsenic-biosand filters
AMREF	African Medical and Research Foundation
APHIA	AIDS, Population, and Health Integrated Assistance Program
ARI	Acute respiratory infection
ASOS	Association Santé Organisation Secour
ASRH	Adolescent sexual and reproductive health
BTL	Bilateral tubal ligation
BUCODO	Budongo Forests Community Development Organization
CBD	Community-based distributor
CBNRM	Community-based natural resource management
CDC	Centers for Disease Control and Prevention
CHV	Community health volunteer
CHW	Community health worker
CI	Conservation International
CMP	Conservation Measures Partnership
COVAREF	Community-based Wildlife Resource Management Committee
CPR	Contraceptive prevalence rate
CRM	Coastal resource management
DA-BFAR	Department of Agriculture-Bureau of Fisheries and Aquatic Resources
DENR	Department of Environment and Natural Resources
DHS	Demographic and Health Surveys
DSW	German Foundation for World Population
EHP	Environmental Health Project
FGC	Female genital cutting
FGM	Female genital mutilation
FHI	Family Health International
FP	Family planning
FP/RH	Family planning/reproductive health
GAVI	Global Alliance for Vaccines Initiative
HIS	Health information system
HIV	Human immunodeficiency virus
IEC	Information, education and communication
IPOPCORM	Integrated Population and Coastal Resource Management
IUD	Intrauterine device
JGI	Jane Goodall Institute
KM	Kaominina Mendrika (Champion Commune)
KMNR	Kiunga Marine National Reserve
LAM	Lactational Amenorrhea Method
LGU	Local government unit
M&E	Monitoring and evaluation
MCH	Maternal and child health
MDG	Millennium Development Goal
MENTOR	Monitoring and Evaluation Network of Training Online Resources
MoH	Ministry of Health
NGO	Nongovernmental organization
NSV	Non-scalpel vasectomy
PAI	Population Action International
PERN	Population Environment Research Network
PFPI	PATH Foundation Philippines, Inc.
PHE	Population-health-environment
PVO	Private voluntary organization
RH	Reproductive health
RH/NRM	Reproductive health linked to natural resource management
SDM	Standard Days Method
STD	Sexually transmitted disease
STI	Sexually transmitted infection
TACARE	Lake Tanganyika Catchment Reforestation and Education
TNC	The Nature Conservancy
UN	United Nations
UNFPA	United Nations Population Fund
UNICEF	United Nations Children's Fund
UNAIDS	The Joint United Nations Programme on HIV/AIDS
USAID	U.S. Agency for International Development
VCCT	Voluntary confidential counseling and testing
WHO	World Health Organization
WSP	Water Sanitation Program
WWF	World Wildlife Fund/Worldwide Fund for Nature

Executive Summary

Several conservation organizations have started integrating health and family planning into conservation projects. This integration has multiple benefits. Often conservation practitioners recognize the potential value of integrated PHE (population-health-environment) projects but need guidance on **how** to effectively incorporate P and H components into their project or on **how** to create a PHE project from scratch. This manual was created as a resource for these practitioners. It reviews not only the **how**, but also the **why** and **what** of PHE projects.

We have defined PHE projects in the manual as

Projects that integrate health and/or family planning with conservation activities, thereby seeking synergistic successes and greater conservation and human welfare outcomes than if they were implemented in single-sector approaches.

Who is this manual for?

This manual provides guidance for field-based conservation practitioners in developing countries on integrating health and family planning into community conservation projects. It is designed for those who are starting work in a new area as well as those who might be adding on a health or population component to an existing conservation project. In addition, some sections are likely to be of interest to health partners, development organizations and donors.

Why PHE?

Conservation projects working in remote areas of outstanding biodiversity in developing countries often partner with local communities. These people are key guardians of this biodiversity but often suffer from ill health because they have poor access to modern health services, poor nutrition and little or no access to improved water supplies and sanitation. In addition, growing populations often put increasing pressure on land and resources. Projects often have the opportunity to help improve access to basic health care and voluntary family planning. In the health and conservation sectors, there has long been support for the idea that addressing population, health and environment needs simultaneously can add value to a project. The added value of taking an integrated approach was considered to include improving the health and well-being of communities, particularly women and children; building trust in communities and buy-in to conservation activities; decreasing the unmet need for family planning and slowing population growth of remote, underserved communities; reducing pressure on natural resources; empowering women; and reducing operational costs.

Until recently, there was only anecdotal evidence to support these ideas. A major study by PFPI (PATH Foundation Philippines, Inc.) in a coastal ecosystem has recently provided scientific evidence that the integrated PHE approach yields better results than separate single-sector approaches (Castro and D'Agnes 2008). In addition, WWF has undertaken an extensive review of PHE projects to document evidence of different types of added value of the approach for conservation. This manual incorporates the lessons learned from these studies and from practical lessons from many field PHE projects in order to help guide conservation practitioners in PHE approaches.

The **why** question is addressed in the second chapter, which gives a review of health in the developing world, population trends, how the conservation sector approaches the P in PHE and the value of PHE for conservation.

What does PHE involve?

Most practitioners working in conservation have limited experience in the health field. Chapter 3 is designed to give a general overview of the types of health and family planning activities in PHE projects. It reviews the basic information a conservation practitioner needs to know in order to start planning a project — on health topics such as water, sanitation and hygiene; community-based first aid; maternal and child health; infectious diseases; HIV/AIDS; reproductive health and family planning; and health systems.

Before beginning the section on **how** to do PHE projects, conservation organizations must evaluate whether a PHE approach is appropriate for their situation and mission. Chapter 4 poses questions designed to help project managers decide whether a PHE approach is right for them, before they carry out a full needs assessment. In some cases, for example where food security and community livelihoods are of greater concern than health, or where migration is high and fertility is low, a PHE project may not be the most effective approach.

How to do PHE?

The fifth chapter covers the **how** of PHE projects. It reviews the basic steps involved in creating and implementing a PHE project following the project cycle: *define, design, implement, analyze/adapt* and *share.* The chapter focuses on elements of project cycle management specific to PHE projects and draws on practical lessons from existing projects, including an evaluation of WWF's PHE project portfolio in eight countries. PHE projects are more complex than many conservation projects because they cover three different disciplines. This makes it particularly important in the *define* phase, to establish a very clear scope and vision statement. Because conservation organizations rarely have health capacity, they usually develop partnerships with health organizations, including the local ministry of health office; and the manual provides guidance on this. When conservation organizations are already working in these remote areas, they can facilitate entry for health partners, or vice versa, and there are often operational efficiencies, for example, through sharing facilities and resources.

For the *design* stage, this manual outlines the setting of conservation targets, followed by reviewing the needs and opportunities related to all components of the project, including an evaluation of the policy context. At this point, partner organizations need to build a PHE strategy by understanding the links among the factors in the project and using this understanding to create a vision, goals and objectives for the project. The organizations can then create results chains in order to understand the assumptions that they are making and ensure that the approach is valid. The organizations also need to determine how to engage stakeholders in the project; they can borrow implementation models from the health field to encourage participation and develop a communication plan to ensure effective communication on population, health and environment that is appropriate for the target communities and other audiences. In PHE projects, it is particularly important that stakeholders understand the project — the goals; the links between the P, H, and E; and why the integration of these links is important.

At the same stage, organizations need to plan for sustainability through activities such as capacity building and the creation of sustainable financing mechanisms in the project. Many PHE communities build capacity of community volunteers as well as health partners, with a view to ensuring that they can continue the activities when the initial project ends. Maintaining motivation for volunteers is a major factor in future success.

Organizations also need to create M&E (monitoring and evaluation) plans. M&E plans for PHE projects tend to be complex due to the different timeframes and scales at which the different sectors monitor change. All these plans must then be brought together in a work plan that includes a fundraising plan specific to PHE. Fundraising for PHE projects poses several unique advantages and disadvantages. Although organizations may have potential access to a

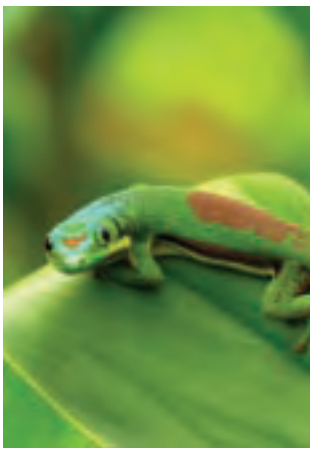
wider variety of resources — funds in conservation, health or population — in reality, many donors prefer single-sector projects, and funding can be a challenge.

Finally organizations must *analyze* the data they collect in the M&E plan in order to *adaptively* manage their project. They also need to determine how to *share* it — with the community, their donors, the PHE and scientific community and any other potential audiences. This is particularly important in PHE projects as a way to continue building the science of PHE. The manual concludes with an appendix that offers a consolidated list of tools for PHE projects.

When?

We hope that with this manual, you have the tools you need to begin your PHE project right away.

(TOP: clockwise from top left) 1) African elephant bulls; a number of PHE projects work to conserve elephants and improve human food security by reducing human-elephant conflicts. 2) Woman selling fish in Madagascar's Spiny Forest Ecoregion. 3) A mobile clinic; in Laikipia and Samburu, Kenya, the Nomadic Communities Trust operates clinics by vehicle and camel to reach remote communities. (BOTTOM: from left) 4) Endemic *Euphorbia fiha* in Madagascar's Spiny Forest, and 5) lined day gecko in eastern Madagascar. Rapid human population growth in Madagascar threatens forests and endemic species; PHE projects reduce threats and improve human welfare. 6) Health counseling in a private tent, as part of Community Health Africa Trust's Mpala mobile clinic in Kenya.



CHAPTER 1

Introduction

1.1 Why this manual?

Conservation projects often partner with communities living in remote areas with high biodiversity in the developing world. These people are key guardians of biodiversity, yet they often have poor health and nutrition and desperately want better access to health care to improve the well-being of their families. Provision of basic health support, including voluntary family planning as an integral part of conservation projects, improves the health and welfare of people in these remote places and fosters better conservation results. Working through synergistic links between human and ecosystem health and operational efficiencies by partnering with health organizations, these integrated projects improve human health and well-being, slow population growth, reduce unsustainable pressures on the environment, and promote sustainable delivery of ecosystem services. Many of them also improve community livelihoods.

The manual draws on the experiences of several pilot projects in WWF and other conservation organizations over the last decade that have integrated health and family planning. We consider that this approach offers considerable potential for achieving greater conservation results in an innovative way and want to share the findings and lessons to date. Throughout the manual, we refer to these integrated projects as PHE (population-health-environment) projects.

1.2 Who is the manual for?

The manual is written mainly for conservation field project managers in developing countries who are interested in integrating health and family planning into their conservation and natural resource management work with local communities. This includes conservation site project managers, landscape coordinators, program managers, supervisors and managers of PHE projects.

Secondary audiences are health partners, development organizations and donors.

1.3 What does the manual cover?

The manual covers the development of health and family planning components for conservation projects. Health interventions can include improved water supplies, sanitation and hygiene; community-based first aid; maternal and child health care; nutrition and food security; treatment of infectious diseases including HIV/AIDS; reproductive health care and family planning services; and improvement of health systems, including infrastructure, capacity building, and information, education and communication. For population issues, the manual covers only natural increase and not migration. Ways to reduce adverse impacts of migration on biodiversity are discussed elsewhere (Oglethorpe et al. 2007).

In practice, a few projects may only involve family planning and reproductive health or may address basic health without a family planning component, but most projects do both. There are good reasons for this, explained in Chapter 2. Projects often also include livelihood activities.

The manual can be used for

- integrating new health and family planning activities into existing community conservation projects
- refining existing population-health-environment projects
- developing health and family planning activities as an entry point for subsequent conservation activities with communities

Mother and child at a mobile clinic in Kiunga Marine National Reserve, Kenya. Improving communities' health has helped WWF gain community support for key conservation activities in several countries.

For this manual we define PHE projects as

Projects that integrate health and/or family planning with conservation activities, thereby seeking synergistic successes and greater conservation and human welfare outcomes than if they were implemented in single-sector approaches.

This approach to development recognizes the interconnectedness between people and their environment and supports multisectoral collaboration and coordination. See D'Agnes and Margoluis (2007) for further discussion of PHE definitions.

1.4 How to use this manual

If you are starting a PHE project for the first time, all sections of this manual should be useful. If you already have a PHE project running, we suggest that you pick the most relevant sections where you believe your project needs strengthening.

Boxes have been included to give you ideas from other projects — including lessons that have been learned the hard way.

Chapter 2 provides background on PHE in the conservation sector, reviews health and population trends in the developing world and outlines the evolution and value of PHE approaches for conservation. Chapter 3 outlines the health and family planning activities typically undertaken by PHE projects, and Chapter 4 provides guidance on helping decide whether a PHE approach might be appropriate for your site before you carry out a full needs assessment. Chapter 5 covers the steps of PHE projects in the project cycle: define, design, implement, analyze/adapt and share. We hope that organizing the manual this way will be useful for both new and existing PHE projects.

CHAPTER 2

Background on PHE in the Conservation Sector

Local girl collecting water from the Srepok River, Vietnam. In the developing world, many people lack access to improved water sources and sanitation, especially in rural areas.

Ba'Aka woman harvesting medicinal plants from the forest of Dzanga Sangha, Central African Republic.

It is health that is real wealth and not pieces of gold and silver. —Mahatma Gandhi

2.1 The rationale for PHE projects

Conservation field projects are usually located in very remote areas where biodiversity is relatively intact. In the developing world, local communities in remote areas often suffer from ill health because they have poor access to modern health services, including family planning, and because they have poor nutrition and lack access to improved water supplies and sanitation. These factors pose particularly serious consequences for the health of women and children. These communities are often some of the least economically prosperous (Mulangoye and Chape 2004) and are usually dependent on natural resources and small-scale agriculture for their livelihoods and well-being. Such communities are stewards of outstanding biodiversity, yet ill health may prevent community members from participating in and benefiting from conservation and natural resource management programs to their fullest potential. In addition, people may be forced to use natural resources unsustainably because of underlying causes, such as rapid population growth and health issues. For example, a fisherman with sick children may go fishing more frequently or resort to ecologically harmful fishing techniques in order to pay for treatment.

People's health also depends on the health of their environment. Natural systems provide water, food, medicines, fuelwood, building materials for shelter, and many other goods. Healthy ecosystems provide services such as water storage; purification of air and water; prevention of flooding, erosion and landslides; control of certain diseases; pollination of plants; and climate regulation. Disruption of these natural goods and

BOX 1. WHY WOULD WE HURT THE ANIMALS AND TREES?

Why would we hurt the animals and trees? God tells us to take only what we need and to help those who help us. WWF helps make us well and heals us with medicines. We are then obliged to help them protect the environment.

— Shivpad Das, village elder in Ramnagara village, Terai, India

PHE projects often accelerate conservation results. In Kiunga, Kenya, the project helped build local fishermen's trust; they then exchanged their illegal nets for new ones to improve fisheries management.

services can have severe consequences for human health (World Health Organization 2005; Chivian and Bernstein 2008). For example, deforestation can result in increased abundance of disease vectors.

PHE projects work to bring better health services and improved water and sanitation to remote communities where conservation organizations work. Healthier communities are more able to participate in conservation activities. Moreover, facilitation of health services also builds greater trust and good will for participation (e.g., Box 1). Family planning is a key component of building healthy communities by enabling couples to have the number of children they want when they want them and by improving women and children's health. Family planning also helps to slow the growth in pressure on natural resources. Beyond this, PHE projects actively work on synergies between human and ecosystem health by promoting sustainable management of natural resources; improving livelihoods, food security and nutrition; and by maintaining or restoring habitats and ecosystem functions. Thus PHE projects conserve biodiversity and at the same time improve environmental health conditions for local people.

2.2 Health in the developing world

In many parts of the developing world, disease and poor nutrition take a huge toll on human lives, well-being and productivity. Despite overall gains in health in recent years, child mortality is high and life expectancy is low compared to developed countries. And health in remote rural areas is often worse than in urban areas (with the possible exception of urban slums) because of factors such as poverty, inadequate access to health care, poor water supplies and sanitation, and low education levels of mothers (World Health Organization 2008a). Table 1 shows that mortality rates for children under age five in developing countries are higher in rural than in urban areas.

TABLE 1. MORTALITY RATE IN CHILDREN UNDER 5 (probability of dying by age 5 per 1,000 live births)

Country	Urban	Rural
Cambodia	76	111
Cameroon	119	169
Kenya	94	117
Nepal	47	84
Rwanda	122	192
Zambia	140	182

Source: World Health Organization (2008a)

A Ba'Aka family preparing a meal in a settlement in the forests of Dzanga Sangha. Malnutrition is the underlying cause of more than half of childhood deaths in developing countries.

Women collecting firewood in the Terai Arc, Nepal. Fetching firewood and water involves much time and work for women in many rural areas in the developing world.

TABLE 2. ACCESS TO IMPROVED WATER SOURCES AND SANITATION IN URBAN AND RURAL AREAS

	% of population using improved drinking-water sources			% of population using adequate sanitation facilities		
	Total	Urban	Rural	Total	Urban	Rural
Industrialized countries	100	100	100	100	100	99
Developing countries	80	92	70	50	73	33
Least developed countries	59	79	51	36	55	29

Source: UNICEF (2008)

Many childhood deaths could be prevented by avoiding common childhood illnesses such as diarrheal diseases, pneumonia, malaria, and measles and other diseases that can be prevented by vaccine.

In many less developed countries, approximately one in five child deaths is due primarily to diarrhea (Henscher et al. 2006), and an estimated 88 percent of diarrheal deaths are attributed to poor hygiene practices, unsafe drinking-water supplies and inadequate access to sanitation (Seidel 2005). In rural areas of these countries, only 51 percent of people have access to improved drinking-water sources, and only 29 percent have adequate sanitation facilities (UNICEF 2008; see Table 2).

Malnutrition is the underlying cause of more than half of childhood deaths in developing countries (USAID 2007a). Unpublished analysis by Conservation International revealed that 31 percent of children under the age of five who were underweight globally in 2000 lived in biodiversity hot spots and high biodiversity wilderness areas; this figure rises to 49 percent if India is excluded from the analysis (Center for International Earth Science Information Network 2005; Miroslav Honzak 2008). Underweight children are indicative of poor health or malnourishment.

A key cause of malnutrition is poor food security, but even if food security is good, malnutrition can result from other causes. These include inappropriate feeding and care practices, poor sanitation and hygiene (which often result in diarrheal diseases and intestinal parasites), other diseases, and poor access to health services and a healthy environment (UNICEF 2008). Many mothers in rural areas have limited time to care properly for themselves or for their infants as they are faced with many household demands, including fetching of fuelwood and water, and have to travel long distances to health care

facilities. Many women have poor knowledge of good health practices.

The risk of maternal mortality in developing countries is high due to factors such as poor access to health care and frequent pregnancies. The maternal mortality ratio, the main indicator of the safety of pregnancy and childbirth (measured as the number of maternal deaths for every 100,000 live births) in 2005 was nine in developed countries, 450 in developing countries and 900 in sub-Saharan Africa (World Health Organization 2008a). Table 3 shows that in rural areas of several developing countries, a much higher proportion of women give birth in the absence of skilled health personnel and so are at greater risk than women in urban areas.

TABLE 3. PERCENTAGE OF BIRTHS ATTENDED BY SKILLED HEALTH PERSONNEL

Country	Urban	Rural
Cambodia	70	39
Cameroon	84	44
Kenya	72	35
Nepal	52	19
Rwanda	63	35
Zambia	79	28

Source: World Health Organization (2008a)

Although infectious diseases vary by region and climatic zone, the major diseases affecting communities in remote areas of developing countries often include malaria, tuberculosis, diarrheal diseases (mentioned above), acute respiratory infections including pneumonia, and HIV/AIDS and other sexually transmitted infections. Other diseases include trachoma, diseases that pass between people and animals (zoonoses), and hemorrhagic fevers including ebola.

Malaria infects 350 to 500 million people each year globally and results in 1 million deaths. Most of those who die are children living in Africa (UNICEF 2004) where prevention and treatment often are unavailable. With regard to HIV/AIDS, in 2006 an estimated 4.3 million people became infected with HIV, and 2.9 million people died of AIDS-related illnesses. The great majority of these deaths were in sub-Saharan Africa (UNAIDS 2006). Because HIV infects mainly economically active adults, it has severe economic impacts on households and communities, with consequences for the environment (See Box 2).

In rural areas of many developing countries, people are dependent on solid fuel such as firewood, charcoal or coal for cooking, boiling water and keeping warm (see Table 4). Indoor smoke results in high levels of air pollution, thereby increasing the risk of pneumonia and

BOX 2. HIV/AIDS INCREASING PRESSURE ON NATURAL RESOURCES

When economically active adults in rural households die because of AIDS, households lose salaries and agricultural labor. They often turn to natural resources as a livelihood safety net. In Mozambique and Malawi, households that had lost family members used more forest resources, including firewood, thatch, fruits, mushrooms and materials for making mats and baskets (Barany et al. 2005). Some households turned to brewing and food vending as alternative livelihoods, and their fuelwood consumption increased for these activities. Collection of wild foods such as herbs, wild vegetables and insects increased in Bushbuckridge, South Africa, as AIDS-impacted families looked for alternative food sources (Hunter et al. 2005). In Malawi, there is increasing pressure on forests for timber due to the escalating demand for coffins because of the HIV/AIDS epidemic (Oglethorpe and Mauambeta 2008). And in many parts of Africa, medicinal plants are being harvested much more intensively to treat the opportunistic infections stemming from AIDS. This is often being done by people who have no indigenous knowledge of how to harvest without damaging the plants (Barany et al. 2005).

Source: Oglethorpe and Mauambeta (2008)

other acute respiratory infections (ARIs) among children under five years of age. Women are at greater risk of diseases such as chronic bronchitis and emphysema, and there may be greater risk of perinatal mortality and low birth weight for developing embryos. Most users of solid fuels are poor and are often unable to access health care. Even if a child is treated for pneumonia, he or she will likely return home to the same environment as before (Rehfuess et al. 2006). And in many areas with high population densities, collection of fuelwood is a major cause of deforestation and habitat fragmentation.

TABLE 4. PERCENTAGE OF POPULATION USING SOLID FUELS

Country	Urban	Rural
Cambodia	82	99
Cameroon	62	98
Kenya	17	94
Nepal	27	90
Rwanda	98	100
Zambia	68	99

Source: World Health Organization (2008a)

PHE projects work to improve the health conditions of local communities in remote rural areas through activities such as providing clean water and improved sanitation, improving food security and nutrition, and increasing access to health care for women and children. The projects often focus heavily on preventive care, with information, education and communication programs to raise awareness and promote behavior change for better health practices. These projects have an excellent opportunity to deliver integrated messages about health, population and environment — reaching nontraditional audiences with messages that encourage new stakeholders to improve health, adopt family planning and buy in to conservation activities.

2.3 Population trends

In 2007 the world's population was 6.7 billion people; it is projected to reach 9.2 billion by 2050 (United Nations Secretariat 2007, medium estimate). All but a few hundred million of this growth is projected to occur in the developing world. Natural increase — population growth due to births and deaths that does not take into account migration — often places unsustainable pressure on biodiversity. When it is available, more land is cleared for cultivation; and harvesting of natural resources increases to support the livelihoods of a growing population — unless technology interventions and education change livelihood patterns. Natural increase may also result in worsening health conditions for people. A recent British parliamentary report concludes that reversing the global loss of environmental resources cannot be achieved in the context of rapid or even moderate global population growth (All Party Parliamentary Group on Population, Development and Reproductive Health 2007).

TABLE 5. POPULATION GROWTH RATE PROJECTIONS IN SELECTED COUNTRIES (2005–10)

Country	Annual Population Growth Rate (%)	Doubling Time (years)
Cambodia	1.74	40
Dem. Republic of Congo	3.22	22
Madagascar	2.66	26
Nepal	1.97	36
Paraguay	1.80	39
Philippines	1.90	37
Uganda	3.24	22
United States	0.97	72

Notes: (1) Figures are population growth rate estimates for the period 2005-10 using the United Nation's medium variant; they do not include migration.

(2) Doubling time is the number of years it takes for a population to double in size if it were to continue growing at the current rate.

Source: United Nations Secretariat (2007)

Modern models of population growth assume that all countries will eventually experience demographic transition, a change from high rates of births and deaths to low rates of births and deaths. Populations often grow fast during the early stages of demographic transition. High mortality rates kept most populations from growing rapidly throughout most of time, but during this transition, as living conditions, nutrition, and basic health care improve, death rates start to drop. The decline in mortality usually precedes the decline in fertility, resulting in initial rapid population growth. Later in the process, the population stabilizes or even declines slightly with low birth and death rates (Haupt and Kane 2004) (see Figure 1).

Youth on Green Island, Palawan, Philippines provide family labor for seaweed farming. In many rural areas in the developing world people want large families for labor and to hedge against childhood mortality.

Developed countries have gone through the process and now have aging populations. Developing countries tend to be at earlier stages of demographic transition, and many are therefore experiencing peak levels of growth. Rural areas of developing countries tend to be further behind in demographic transition than urban areas. Natural growth is often particularly high in remote areas such as forest frontiers (Carr 2004; see Box 3). And there is a bigger lag time in remote areas before barriers to family planning use are removed— such as the lack of access to modern health care (including family planning), lower levels of women's education and lower levels of economic development (particularly women's economic opportunities).

Some developing countries, such as Kenya and Uganda, have already had initial declines in fertility but are now experiencing fertility stalls — periods of time in which the fertility rate stops declining as the demographic transition model anticipates (Bongaarts 2008). Populations in these countries continue to grow rapidly.

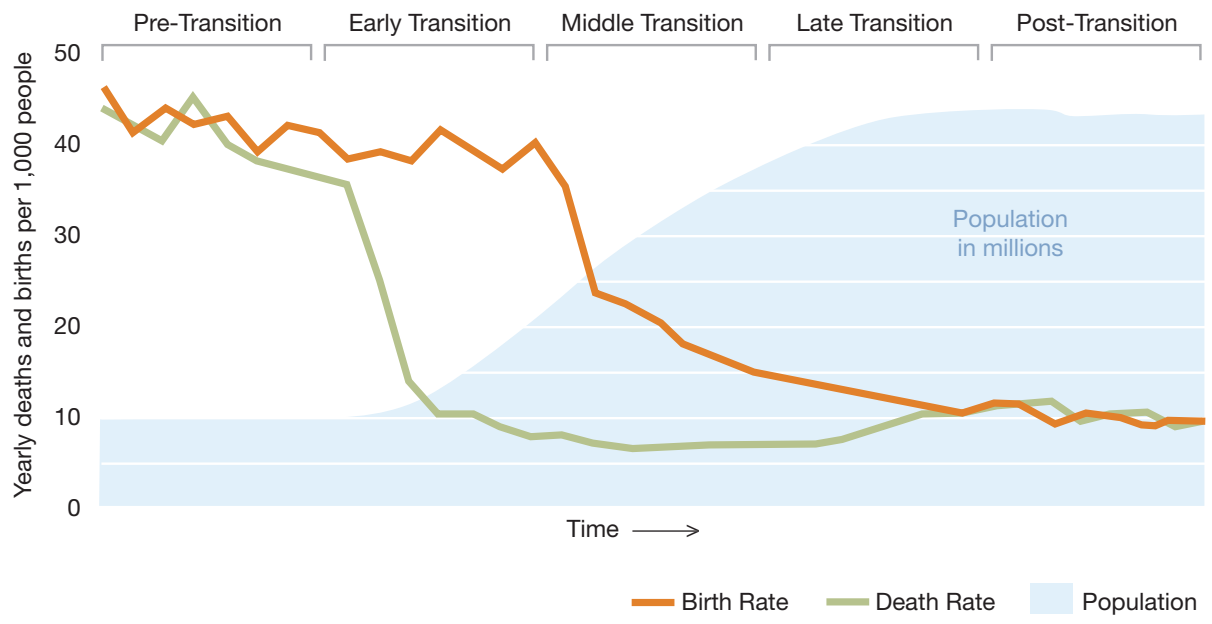
A number of factors contribute to population growth during demographic transition:

BOX 3. FERTILITY AT THE FOREST FRONTIER

When people migrate to forest frontiers in the Amazon, land is often readily available; but labor is short. Labor needs are greatest in the first few years of settlement for clearing forest and cultivating annual crops (before cattle come in), so large numbers of children are desired. In the Ecuadorian Amazon the total fertility rate was 8 in early settler families (Murphy et al., 1999). (Total fertility rate is the average number of children a woman would bear over the course of her lifetime if current age-specific fertility rates remained constant throughout her childbearing years.) Even if people want smaller families, as they may do in second-generation families who keep cattle, there is a dearth of health care facilities and contraceptive options on the frontier. Also, frontier families tend to be composed largely of rural households who justify high fertility based on traditional ethnic or religious beliefs. Because there are few chances for women's education or economic activities, there is a low opportunity cost to child rearing.

Source: Carr (2004)

FIGURE 1. DEMOGRAPHIC TRANSITION



Source: Population Action International

- **Population momentum**—Some natural population growth is inevitable in the developing world because of the large proportion of young people who have yet to have families.
- **Decline in mortality**—A larger proportion of people live to an older age, and, in particular, higher proportions of newborns survive to become parents themselves.
- **Desired large family size**—Among many poor families in rural areas, having many children can provide a hedge against childhood mortality, can provide family labor, and may help ensure support for parents when they are older.
- **Poor access to modern family planning services**—There is ample evidence that people in many developing countries increasingly want family planning services but often lack easy access to them, especially in remote areas.

Population momentum accounts for more than half of predicted global population growth between 2006 and 2050; desired large family size accounts for about 20 percent, and unwanted births account for about 20 percent (Cleland et al. 2006). Satisfying the unmet need for contraceptive services in developing countries would avert 52 million unintended pregnancies annually, which, in turn, would save more than 1.5 million lives and prevent 505,000 children from losing their mothers (Singh et al. 2003).

Table 6 shows, for selected countries in the developing world, the percentage of married women ages 15-49 who are not using contraception because they lack knowledge or access. It is clear that contraceptive use is much lower in rural than urban areas—at least partially reflecting the lower quality of health services and information in many rural areas.

TABLE 6. PERCENTAGE OF MARRIED WOMEN AGES 15–49 NOT USING CONTRACEPTION BECAUSE THEY LACK KNOWLEDGE OR ACCESS, FOR SELECTED COUNTRIES

Country	Urban Residence	Rural Residence
Bolivia	10	31
Cambodia	6	13
Cameroon	16	25
Ethiopia	5	25
Madagascar	9	26
Nepal	8	11
Philippines	9	13
Uganda	10	24

Source: Sedgh et al. (2007)

In the Philippines, Family Planning Action Sessions developed by Save the Children help couples understand the best family planning options for them, and the links between population and environment.

PHE projects almost always include interventions that improve access to family planning by providing couples with the information and services they need to have the number of children they want when they want them and to space children for the benefit of both mothers' and children's well-being. These projects therefore help to reduce unmet need for family planning and hence the birth rate. PHE projects can also reduce the birth rate by enabling couples to wait till they are older before having children. And they can help to reduce desired family size by reducing child mortality, which enables more children to survive to adulthood and thereby reduces one of the motivations to have more children.

Some PHE projects also target youth (ages 15-24 years) with adolescent reproductive and sexual health interventions which can prevent unwanted pregnancy and slow population momentum. PHE projects are well placed to work with youth because they can deliver integrated education about conservation and family planning in a way that is culturally appropriate and acceptable to both youth and their parents.

2.4 Population pressure and rights-based approaches in PHE

The historical dialogue about how family planning needs relate to demographic trends helps explain conservationists' approach to population issues today.

In the late 18th century, economist Robert Malthus observed that human population was growing faster than agricultural production and predicted that overpopulation would eventually lead to widespread disease, famine and death. By the early 1900s, Malthusian theory helped inspire family planning movements throughout the world. Grass-roots campaigns led countries like Britain and the United States to develop national family planning programs that provided improved access to contraception. At the same time, governments in China and India adopted policies that sought national control over the timing and

spacing of births. In China women were coerced into aborting second pregnancies, and in India, target-oriented programs led to couples being coerced into accepting sterilization to meet program expectations (Visaria et al. 1999).

By the mid 20th century, Malthusian theory was losing credibility. The global population continued to grow rapidly, but agricultural production was growing even more rapidly. The technology feeding this "Green Revolution" led to the development of increasingly complex models explaining the relationship between population and the environment. Despite these changes, theories about limits to human growth and Earth's carrying capacity were still widely held.

In 1994, at the International Conference on Population and Development (ICPD) in Cairo, an important transition took place. Countries like China were cited as examples of how women's rights were being violated in the name of national economic development. The relevance of arguments about limits to population growth for the family planning movement was hotly contested. Instead, participating countries adopted a *rights-based approach* that emphasized women's universal rights to receive access to quality reproductive health care, including family planning. Evidence was put forth to suggest that improving access would have a similar or better effect on increasing family planning than would national political mandates. The term "population control" became a relic of the past associated with human rights violations. The population sector urged traditional demographers and environmentalists to deemphasize the association of population pressure, limits and control with family planning programs (except in reference to individual women controlling their bodies, such as in the use of the term "birth control").

Now, more than a decade after the conference in Cairo, a new paradigm is emerging. Advocates of the rights-based approach are acknowledging that population growth arguments may be useful once again to maintain global support for family planning. Demographers and environmentalists are conceding that the reproductive rights approach does increase family planning. Population and environment specialist Robert Engelman makes the argument that the key is to give women control over procreation. "Women aren't seeking more children, but more for their children. Avoiding unintended pregnancy and childbearing is an essential strategy for achieving the dreams that women hold for their children." (Engelman 2008). In country after country, when women are empowered to take control over family size, birth rates shrink. But in order to have the family sizes they desire, women need to be empowered; and this includes having good access to family planning.

The rights-based approach is still the central guiding principle for family planning programs, but the population sector now urges the conservation sector to address reproductive rights issues simultaneously with the implications of population growth on natural resources. The population sector also strongly reminds conservationists to avoid support for efforts that may directly or indirectly exert external control over birth, women, or population. Figure 2 on page 12 shows one way to convey the complex relationships among population growth, resource consumption, technology, livelihoods and the environment, with regard to water demand.

On Calituban Island, Bohol, Philippines, a fishing community jostles for space in an area of high marine biodiversity served by IPOPCORM (Integrated Population and Coastal Resource Management Project).

2.5 The importance of including family planning in health and conservation projects

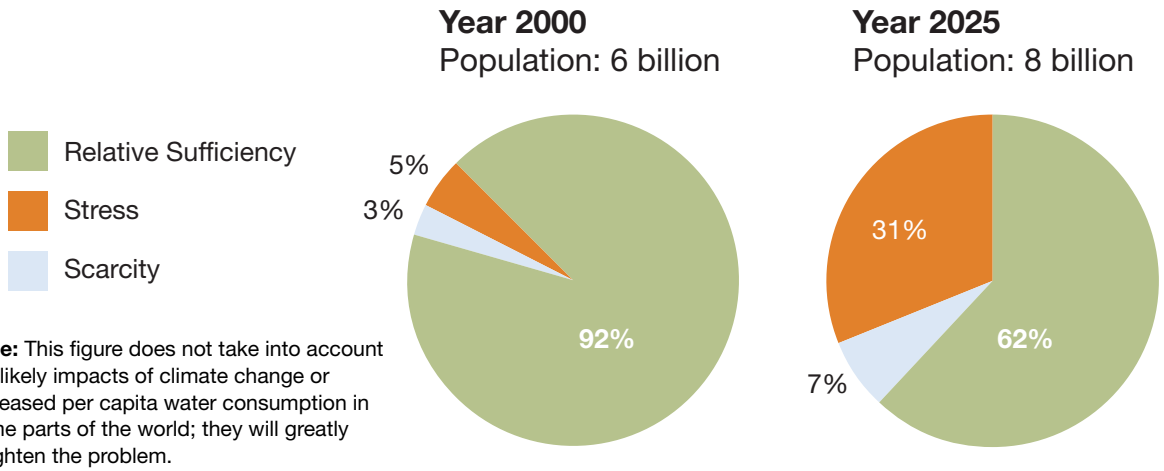
It is very important always to consider including family planning in projects in remote areas of high biodiversity in developing countries that aim to improve conservation outcomes through addressing human health. Apart from being considered a basic right by many population and conservation advocates (see discussion in section 2.4), family planning is an opportunity and often a necessity for projects that want to optimize and sustain human welfare and conservation results.

In many of the areas where conservation organizations carry out projects, if the issue of natural population growth is not tackled, in the long term the resulting increase in numbers of people may undo all the benefits and lead to deepening poverty and environmental degradation. In some of these places, human fertility rates are among the highest nationally, and yet family planning use and accessibility are low. Also, health projects that leave out family planning may be able to yield good results in the short term — reducing child mortality, improving livelihoods and strengthening natural resource management — but rapid population growth may make those gains negligible or even reverse them, in the longer term. See Box 4 for an example from Ethiopia.

Conservation organizations are already established in remote areas, often are one of the few entities working there and can facilitate family planning access for local populations with high added value for conservation. Governments and donor-funded health programs frequently overlook these populations, favoring more secure, densely populated areas with easier access. As a result, individuals in remote communities are unable to exercise their right to take control over limiting or spacing births. The conservation benefits of an integrated project strategy that includes family planning are extensive. For a full discussion of added value for conservation, see section 2.7.

Family planning is also one of the most cost-effective interventions known to prevent maternal and child mortality, prevent HIV transmission and improve family well-being (Population Action International 2006). Households affected by AIDS, maternal and child morbidity or mortality or obstetric complications often turn to natural resources or sell land to pay for emergency medical care or substitute the

FIGURE 2. WORLD POPULATION BY FRESH WATER AVAILABILITY, 2000 AND 2025



Note: This figure does not take into account the likely impacts of climate change or increased per capita water consumption in some parts of the world; they will greatly heighten the problem.

Source: Engelman, R. et al. (2000)

BOX 4. SINGLE-SECTOR HEALTH INTERVENTIONS — A CAUTIONARY TALE

The agropastoralist community of Arsi, Southern Ethiopia, suffers from acute, regular water shortages and chronic food insecurity. The villages of Hitosa and Dodota subdistricts have no free land available for new cultivation, and herding and economic opportunities are limited. This has led to the subdivision of increasingly smaller landholdings in recent years. Water scarcity means that women traditionally spend around three hours a day collecting water in clay pots and walking long distances, especially in the dry season. Between 1996 and 2000, the Hitosa Gravity Water Supply Scheme provided village-level tap stands in some villages, which reduced both the energy and time that women spent carrying water. A study compared villages with and without taps and found that in subsequent years the birth rate increased in villages with taps — probably because women diverted surplus energy into reproduction. Consequently, smaller, low birth-weight offspring could come to full term and survive critical periods of early childhood. At the same time, there was a decrease in child mortality, likely because of improved quality and quantity of water supply and greater maternal child care. Despite the time and labor saved by women because of the taps, their nutritional status did not improve significantly, and children under the age of five (those born since the start of the water project) were significantly more malnourished in villages with taps. Although this single-sector project provided a much needed health benefit, without accompanying interventions to improve livelihood productivity and provide family planning, the project is undermining the long-term well-being of the target communities.

Source: Gibson and Mace (2006)

income of sick or deceased income earners (Oglethorpe and Mauambeta 2008; Rai 2007). Full availability of voluntary family planning can reduce by 25 percent the more than 500,000 maternal deaths and 11 million infant deaths that occur annually (USAID 2007a), thus averting substantial impacts on natural resources.

Family planning interventions also produce positive outcomes more efficiently when delivered as a package with natural resource management interventions. Operations research on projects that deliver family planning and coastal resource management as a package has shown that these interventions have a significantly higher positive impact on both reproductive health and coastal resource management indicators at a lower total cost than do single-sector approaches (Castro and D'Agnes 2008). The authors point to the increased impact of integrated approaches on changing destructive health and environmental behaviors as a possible reason.

A local woman receiving family planning advice and commodities from a family planning adviser during a mobile clinic to Mkokoni, Kiunga Marine National Reserve, Kenya.

Finally, many conservation project managers hypothesize that one of the greatest benefits of including family planning is the positive effect it has on the empowerment of women — a human welfare outcome that they

consider crucial for long-term conservation success. In a study carried out by WWF, the majority of PHE project managers cited this as a key benefit of adding family planning. According to these managers, women who effectively manage the timing and spacing of their births are more motivated and better able to be stewards of natural resources. For a more complete discussion on this topic, see section 2.7.

2.6 Development of PHE by conservation organizations

In the late 1980s and early 1990s, conservation organizations began to focus on projects that combined improving the quality of life for people with the management of biodiversity and natural resources. Projects from this period addressed a wide variety of community development needs. Projects that attempted to integrate development needs with conservation of protected areas were known as ICDPs (integrated conservation and development projects). By the end of the 1990s, conservation organizations had learned that ICDPs were not achieving conservation or development goals as effectively or efficiently as anticipated. One of the lessons learned from ICDPs was that the success of the projects depended on the ability to focus on key interventions and avoid excessive complexity. Many conservation organizations continue to work with local communities but often partner with development organizations to provide

BOX 5. PHE AND THE MILLENNIUM DEVELOPMENT GOALS

PHE contributes to many of the MDGs and some of their targets (shown in parentheses) in the following areas:

- **Eradicate extreme poverty and hunger** (reduce by half the proportion of people who suffer from hunger). Many PHE projects work to improve food security and nutrition.
- **Promote gender equality and empower women.** Many PHE project managers state that women are empowered through improved health care and access to family planning.
- **Reduce child mortality** (reduce by two thirds the mortality rate among children under five). Many PHE projects work to reduce child mortality through improved nutrition, improved water and sanitation and protection from infectious diseases.
- **Improve maternal health** (reduce by three quarters the maternal mortality ratio, and achieve, by 2015, universal access to reproductive health). Most PHE projects focus on maternal health, reproductive health and family planning.
- **Combat HIV/AIDS, malaria and other diseases** (halt and begin to reverse the spread of HIV/AIDS; achieve, by 2010, universal access to treatment for HIV/AIDS for all those who need it; halt and begin to reverse the incidence of malaria and other major disease). Many PHE projects work to combat diseases including HIV/AIDS (particularly in Africa), malaria, childhood diseases, and diseases transferred among people, livestock and wildlife.
- **Ensure environmental sustainability** (integrate the principles of sustainable development into country policies and programs; reverse loss of environmental resources; reduce biodiversity loss, achieving, by 2010, a significant reduction in the rate of loss; reduce by half the proportion of people without sustainable access to safe drinking water). PHE projects contribute to this goal through a wide variety of environmental activities; many also provide access to improved water supplies.

Source for MDGs and their targets: United Nations (2008)

In parts of the Spiny Forest, Madagascar, communities are dependent on the forest for wild foods when crops fail. Here, a youth returns from the forest with edible tubers to a village that lost its rice crop during a cyclone.

support and prioritize activities more effectively.

Drawing on these lessons from early ICDPs, the conservation sector began to pilot the PHE approach during the 1990s with a new generation of integrated projects, and the approach has been strengthened in the last few years by support from donors such as USAID (the U.S. Agency for International Development), the David and Lucile Packard Foundation, Johnson & Johnson and the Summit Foundation. In 2000, the 189 member states of the United Nations agreed to the MDGs (Millennium Development Goals) (see Box 5), a global action plan that called on multiple sectors to be more focused and aggressive in addressing deteriorating trends in quality of life. The MDGs included time-limited targets that challenged all sectors to move beyond traditional models for development. The PHE approach is starting to demonstrate the kinds of synergies needed to reach these goals.

Over the last decade, dozens of international and domestic conservation organizations — including WWF (World Wildlife Fund), CI (Conservation International), and JGI (the Jane Goodall Institute) — have piloted the more targeted, yet still integrated PHE approach. A reference to a list of PHE projects implemented by conservation organizations can be found in the Appendix.

2.7 The value of PHE for conservation

After more than a decade of implementing PHE, there is much qualitative and anecdotal evidence that the integrated PHE approach yields good conservation results. A few PHE projects have managed to demonstrate this empirically, and the results of several others have now been analyzed sufficiently to provide a compelling case. Major challenges include the diversity of environments in which PHE projects are implemented, documenting the complex nature of PHE projects, distilling universally relevant lessons from them, low levels of donor support for cross-sectoral research and the long-term nature of population and conservation results relative to short project cycles.

BOX 6. FISHING FOR FAMILIES

IPOPCORM (Integrated Population and Coastal Resource Management project) aims to improve the quality of life of fishing-dependent communities while maintaining the integrity of life-sustaining coastal habitats. With operations research, IPOPCORM tested whether taking an integrated approach generates statistically significant improvements in coastal resource management outcomes and reproductive health/family planning outcomes by delivering these services in an integrated fashion, as opposed to delivering either intervention in isolation. PFPI implemented the study in three separate islands off Palawan, Philippines, applying a different approach — either an integrated approach or reproductive health/family planning intervention only or coastal resource management only — on each island in nine barangays (wards).

Results of multivariable regression analyses showed that the integrated approach had a significantly higher positive impact on several reproductive health, food security and coastal resource-management indicators compared to the stand-alone projects (Table 7). Although the integrated approach cost more to implement than either of the nonintegrated approaches, the combined cost of fielding the independent RH (reproductive health) intervention and the independent CRM (coastal resource management) intervention was greater than the cost of the integrated IPOPCORM intervention. The study concluded that integrated IPOPCORM interventions are cost efficient and yield higher impact on both human and ecosystem health outcomes compared to sectoral approaches (Castro and D'Agnes 2008). The implications of the study suggest that "it will be difficult to ensure long-term sustainability of conservation and prevent overuse of coastal resources *unless* integrated forms of coastal management that combine conservation with family planning are delivered simultaneously"(D'Agnes, L. 2008).

Source: Castro and D'Agnes (2008)

Marine sanctuary guard house used in law enforcement in the Philippines; it was erected with support from the community and IPOPCORM.

2.7.1 INTEGRATED POPULATION AND COASTAL RESOURCE MANAGEMENT PROJECT

One project that has carried out statistical analysis on its data is IPOPCORM (the Integrated Population and Coastal Resource Management project), which undertook operations research to investigate whether taking an integrated approach to PHE has any benefits over separate, single-sector approaches (see Box 6). IPOPCORM found that the integrated approach had a significantly higher positive impact on several reproductive health and food security indicators, and on certain coastal resource management indicators, at lower total cost than did single-sector approaches (Castro and D'Agnes 2008).

TABLE 7. COMPARING INTEGRATED TO NONINTEGRATED PROJECTS: IPOPCORM OPERATIONS RESEARCH, 2001–07

INDICATOR	INTERVENTION		
Statistically Significant Trends Only	**Integrated IPOPCORM**	**Reproductive Health Only**	**Coastal Resource Management Only**
Reproductive Health and Food Security Indicators			
Contraceptive use during first sexual experience	●		
Proportion of young males (15-24) that are sexually active	●		
Proportion of households solely dependent on fishing	●		
Use of dynamite in fishing	●		
Use of cyanide in fishing	●		
Coastal Resource Management Indicators			
Coral reef: condition index	●		
Reef fish: target species richness			●
Reef fish density (number per sq. meter)		●	
Mangrove volume (cu. meter per hectare)	●	■	■
Mangrove density (number per hectare)		■	■
Mangrove mean diameter at breast height (cm)	●		
Mangrove regeneration (number per hectare)	■		■

● **Trend in Desired Direction** ■ **Trend in Undesired Direction**

Source: Castro and D'Agnes (2008)

2.7.2 OTHER WORK TO DEMONSTRATE ADDED VALUE OF INTEGRATED PHE APPROACHES

Others have worked to identify many of the linkages whereby PHE interventions lead to conservation and health outcomes. Foundations of Success laid this out in 2004, based on a PHE literature review from multiple countries (Stem and Margoluis 2004). WWF used these categories to explore the question "what is the added value of integrating family planning and health for conservation?" And in 2007, with support from USAID and Johnson & Johnson, WWF conducted a literature review and an analysis of more than 50 WWF and non-WWF PHE projects in several countries that included health and population components and had biodiversity conservation as a primary end goal. Project assumptions about linkages between population and/or health interventions and their conservation results were diagrammed, and project data were reviewed.

Across the sample, WWF found strong evidence that integrated PHE interventions generate added value for conservation (See Box 7).

Population growth, health issues and increased resource use often drive the loss of natural habitats and resources and can lead to a spiral of increased poverty and environmental degradation — especially if there are no opportunities for alternative livelihoods. If poverty, natural population growth and poor health are driving environmental degradation, conservation actions alone are very unlikely to stop it because they are not tackling the root causes. Putting up barriers in protected areas and ignoring human needs will only exacerbate problems for the future. The sooner action is taken to tackle the more systemic problems, the better for both people and biodiversity. And in the remote areas where the conservation sector works, often it has to catalyze that action.

BOX 7. ADDED VALUE OF INTEGRATING POPULATION AND HEALTH INTO CONSERVATION

STRONG CONVICTION AND STRONG EVIDENCE OF ADDED VALUE

PHE integration

1. **Creates entry point for conservation organizations and their environmental partners and builds trust in communities — through general health (packaged with family planning and reproductive health) — leading to increased community involvement in conservation activities.**

   Almost two thirds of projects had evidence of how health interventions generated goodwill and trust and eased entry into project sites or improved effectiveness of conservation interventions. For many years, JGI-Tanzania experienced suspicion and rejection from communities fearful of the potential expansion of Gombe National Park. JGI staff could not even discuss chimpanzees — the focus of their conservation efforts. As a result of PHE interventions and complementary development interventions such as micro-finance and girls' scholarships, communities now collaborate in JGI's mission of conserving chimpanzee habitat. Village chiefs, other community leaders and youth openly discuss chimpanzee conservation, travel with JGI to visit the Park, and work closely with JGI to alleviate one of the biggest threats to conservation in the area: shifting cultivation (Mtiti 2006).

Women harvesting pineapples near Gombe National Park, Tanzania. The Tacare project introduced alternative livelihoods to increase family income and help reduce slash-and-burn agriculture.

2. **Decreases unmet need for family planning in remote, underserved communities, helping to reduce fertility and to slow population growth, leading to reduced pressure on natural resources in the long term.**

   In all but one project, community-based distributors of contraceptives were used to improve access to family planning. CPR (contraceptive prevalence rate, a measure of the use of contraception by the target population) in sites increased by an average of 5% per year. In a WWF Nepal project site, the PHE approach increased CPR by 26% in eighteen months.

3. **Generates cost efficiencies and effectiveness for conservation**

   IPOPCORM operations research provided strong evidence of this, showing that the integrated approach had a significantly higher positive impact at lower total cost on both reproductive health and coastal resource management indicators than did single-sector approaches, (Castro and D'Agnes 2008). The WWF review also found anecdotal evidence of efficiencies gained through sharing transport, office space, security, and program expenses; expanding target audiences; and building on community infrastructure, as well as quantitative evidence suggesting that integration was more efficient.

   An evaluation conducted by Pielemeier et al. (2007) also found that integrated PHE projects were valued by community

members "for being more efficient in use of their time (fewer community meetings, less paperwork, interaction with one implementing agency rather than two or more)" (Pielemeier et al. 2007:23).

STRONG CONVICTION BUT LIMITED EVIDENCE OF VALUE-ADDED

PHE integration

4. **Empowers women, thereby increasing conservation capacity through increasing women's involvement in natural resource management, conservation and the formal economy**

   Anecdotal evidence was found to support a wide variety of ways that women's empowerment improved conservation capacity in communities. In a CI project in the Philippines, midwives and female barangay health workers who had been cross-trained in PHE issues began reporting illegal activities, such as logging in protected forest areas, by texting information on their cell phones when they observed violations during their visits to communities (Viernes 2006).

   In a WWF project in a coastal community, three female health workers who were trained by the project to provide communities with integrated PHE education and family planning commodities later ran for public office. By improving their self esteem and confidence, their PHE training served as a key factor in helping them communicate with people. One of these women is now serving as a neighborhood councillor — a high position in local government — and all are advocates of environmentally progressive policies (Albasin 2008).

Women carrying wood to their homes near Gombe National Park, Tanzania. Through PHE approaches, the Tacare project empowers women to be stewards of the natural resources they use in their daily lives.

SOME CONVICTION BUT LIMITED EVIDENCE OF VALUE-ADDED

PHE integration

5. **Strengthens local governance, local health departments, and management of local community-based organizations to attain long-term conservation goals.**

   In a WWF PHE project in the Philippines, project staff aimed to strengthen local government. Through various strategies, WWF brought together various local government unit offices, including Municipal Planning and Development, Municipal Agriculture (which included fisheries), Municipal Environment and Natural Resources and Municipal Health. As a result, the offices are now part of the PHE Technical Working Group, which has played and continues to play a key advocacy role in the passage of several major pieces of legislation that have supported expansion of family planning and marine conservation in the municipality (Albasin 2008).

6. **Improves health and livelihoods to more effectively reduce conservation threats.**

   Through conservation activities in the Bwindi Impenetrable Forest in Uganda, local communities benefit from mountain

gorilla tourism and are very supportive of gorilla conservation. Certain diseases pass between local people and gorillas, posing a serious health threat to the gorillas and people. Conservation through Public Health is working to improve health of local communities, which reduces the risk of disease transmission to the gorillas.

Tourists and park guards observing a mountain gorilla in Virunga National Park, Democratic Republic of Congo.

Tourism and human health interventions reduce threats to mountain gorillas (Kalema-Zikusoka 2008).

7. **Empowers youth to transform attitudes and behaviors key to conservation success in the short and long term.**

   The IPOPCORM project found that integrated family planning and coastal resource management interventions were more effective in changing sexual practices among youth compared to single-sector approaches. In particular, the results of multi variable regression analysis indicate youth are more likely to use contraception at sexual debut in the IPOPCORM study area compared to their counterparts living in non-integrated study sites. Since population pressure on natural resources is a major threat in many project areas, and large proportions of population in developing countries are comprised of youth, addressing reproductive health needs of youth is critical for slowing population growth (D'Agnes et al. in prep).

8. **Increases awareness of PHE linkages among stakeholders to reduce conservation threats that are integrally linked to population and health issues.**

   In the Salonga Landscape of the Congo basin, concerted efforts are being made to communicate to local bushmeat hunters and traders the risk of emerging diseases that can jump from great apes to people. There is particular concern about ebola, as there have been outbreaks nearby. To bring the point home more strongly, the communication campaign includes a film made locally by the International Conservation and Education Fund, in the local language featuring local people. The project is also helping communities to organize to develop alternative livelihoods. Encouraging people not to hunt great apes in Salonga reduces the risk of ebola outbreaks in people and also helps conservation of the great apes, including the rare bonobo (Blom 2008).

9. **Creates synergy to reach conservation outcomes more quickly and effectively.**

   In the SAGUN (Strengthening Actions for Good Governance and Utilization of Natural Resources) Project in Nepal, project managers concluded that "integrated approaches to population, health and environment (PHE) are programmatically efficient and yield better results than single-sector programs. Moreover, they are more in tune with the way rural people lead their lives in developing countries and, as such, are more acceptable to the community" (D'Agnes et al. 2006:1).

BOX 7. INTEGRATING POPULATION AND HEALTH *Continued*

10. Reaches wider audiences with conservation messages.

PROCESS-Bohol in the Philippines found that women are more receptive to natural resource management messages when they are put together with family planning messages, meaning that the project could dramatically expand the sensitization of communities on key conservation threats (Pielemeier 2005).

11. Reduces human-wildlife conflict and civil conflict that threatens the long term health of natural resources.

An evaluation conducted by Pielemeier et al. (2007) found that "when health/FP (and sometimes livelihood) services were offered as part of environment programs, rebel militias in the Sierra Madre and DRC project areas allowed secure program access to communities, and the areas reportedly experienced less conflict."

Source: Honzak et al. (2008)

2.8 PHE integration

Within the conservation sector, there is a broad spectrum of approaches to integrating population, health and environment. Project managers select the degree and type of integration that is most effective at reaching their objectives, and this can vary across project sites. Integration strategies used by PHE projects may also vary among stakeholders and in response to changing circumstances. The subsections that follow offer a framework with project examples to help you begin thinking about PHE integration in your site.

2.8.1 A FRAMEWORK FOR CONSERVATION PRACTITIONERS

Two broad types of integration were identified by one of the first studies that synthesized lessons on health interventions in conservation (Margoluis et al. 2001): conceptual and operational linkages. **Conceptual linkages** refer to the degree to which community health priorities are directly related or dependent on biodiversity health. **Operational linkages** refer to the ways in which PHE project managers functionally link health and conservation interventions.

The level of conceptual linkage that exists in a given target community directly influences the type of relationship that a conservation organization will establish with its health or development partners, the type of integration strategy that a project chooses, the degree of integration that will be reflected in project activities and communications, the way that

A woman in Palawan, Philippines, prepares line for attaching seaweed. Seaweed farming is an alternative livelihood that has helped improve household incomes and decrease dependence on fishing.

integration will be carried out in daily operations and the level of integration that will be apparent in project results. All of these types of integration are reflected in Figure 3. Note that the figure is not intended to suggest that these categories are linear or discrete. Most projects will contain elements of integration from various categories.

This manual does not advocate any particular model of PHE integration. Instead, the manual provides guidance on selecting the most appropriate strategies to implement integrated PHE in the context of conservation.

No PHE integration model can simply be transposed from one site to another, nor has any model proved to be superior or inferior. However, there is strong evidence to suggest that when working in partnership — as conservation organizations do in PHE — it is beneficial for conservation to aim to optimize the operational efficiencies of PHE partnerships (see value added section 2.7). Such efficiencies include

1. sharing expenses, security, resources, facilities or transport with partner organizations
2. tapping into preexisting trusting relationships with target audiences that are hard to reach or engage
3. improving communication/cooperation with the health sector to expand the reach of PHE programs

2.8.2 EXAMPLES OF INTEGRATION IN PHE PROJECTS IN THE CONSERVATION SECTOR

The following examples illustrate how integration is reflected in three PHE projects implemented by conservation organizations and their partners.

EXAMPLE 1: **India—WWF and Doctors in Private Practice**

The Healthy Communities, Healthy Ecosystems Project in Lagga Bagga reflects relatively low levels of conceptual integration. Yet the project is successful in its conservation efforts in the Terai Arc Landscape, having seen a significant reduction in hunting and killing of wildlife and a substantial reduction in use of forest wood for

In Lagga Bagga, India, WWF arranges health camps conducted by highly qualified volunteer doctors in local villages. This has enabled WWF to gain the community's support for conservation.

household fuel (Carr 2008). Due to remoteness, one of the community's highest priorities was health services. WWF agreed to set up regular health camps by highly qualified volunteer doctors in exchange for receiving community buy-in to conservation efforts. During health camps, while doctors provide care and deliver messages about health, WWF delivers messages about wildlife and forest conservation, and alternative livelihoods. Most of the messages are not highly integrated in their content, but WWF has been transparent about its conservation objectives in dealing with communities. Providing villagers with basic health services and assistance with alternative livelihoods through another project has enabled WWF to gain the community's support for conservation of forest resources and wildlife. Sustainability of this PHE project is discussed in Chapter 5.

EXAMPLE 2: **Philippines—Conservation International, the MoH (Ministry of Health) and the LGU (local government unit)**

CI's PHE project in the Sierra Madre Biological Corridor of Luzon Province in the Philippines reflects medium levels of conceptual integration and high levels of operational integration. One of the key threats to conservation of the corridor's forests was high levels of slash-and-burn agriculture, strongly driven by population

FIGURE 3. A FRAMEWORK FOR PHE INTEGRATION IN CONSERVATION

ELEMENT 1: **Relationship of Conservation Organization to Health/Development Partners**

Work in: Parallel	**Coordinate Efforts**	**Integrate Efforts**

Increasing operational efficiency, assuming transaction costs of integration do not become too high

ELEMENT 2: **Relationship of Conservation Priorities to Community Health Priorities**

Barter — project addresses community health priorities in exchange for community engagement in key conservation activities	**Entry point** — project addresses community health priorities to generate community goodwill towards conservation	**Bridge** — project addresses community health priorities that are closely related to conservation priorities in hopes that later community will comprehend linkage to conservation	**Symbiotic**— project addresses health and conservation priorities that are identical for the conservation org. and community, so community goodwill towards conservation occurs organically

Increasing degree of conceptual linkage

ELEMENT 3: **Level of Integration in Activities, including Communication**

Activities separate by sector	**Separate activities with integrated messages**	**Integrated activities with integrated messages**

Increasing degree of integration

ELEMENT 4: **Level of Integration in Project Results**

Results totally separate by sector	**Results providing some benefits to each sector but not strongly linked**	**Good synergies and significant benefits in P, H and E sectors**

Increasing degree of integration

Source: adapted and developed by Honzak, C. and Oglethorpe J. in 2008 (unpublished) based on Margoluis, C. 2007; Margoluis, R. et al. 2001, Carr 2008, and Honzak et al. 2008.

pressure. Therefore, when CI first began to work in Luzon, it partnered with the health organization PROCESS-Luzon, the MoH and the LGU to deliver family planning through barangay health workers (BHWs) and to provide information and education about CBNRM (community-based natural resource management). CI brought expertise in CBNRM to the partnership. By 2005, the project had effectively built the capacity of BHWs, communities, and CI staff to carry out integrated PHE activities and messaging, and so CI phased out its formal partnership with PROCESS. Since that time, CI has managed all project activities, health and CBNRM workers and volunteers under the project, with ongoing support from the LGU and local authorities.

Training rural health workers in Baggao, Sierra Madre Biological Corridor in the Philippines, in a PHE project where Conservation International has partnered with local communities, the Ministry of Health, the Local Government Unit and PROCESS-Luzon.

In the Khata Corridor in the Terai, Nepal, the Community Forest Coordination Committee runs a community clinic on the ground floor of its headquarters. Integrated project activities improve health, restore forests and wildlife, improve livelihoods, and generate revenue.

Through the MoH and LGU, the project continues to monitor the family planning activities of the BHWs. The community has taken more ownership of the project, which is a reflection of how levels of integration change over time. Integrated PHE information drives are led by a local IEC group called *Dalaw Turo,* an integrated community group, comprising school teachers, BHWs, CBNRM committee members and other community adults. The group uses theater, lectures and quizzes to promote messages about the relationships between healthy families with well-spaced births, better livelihoods and healthy forests (Edmond 2008).

EXAMPLE 3: **Nepal—WWF, the Nepal Red Cross Society, ADRA (Adventist Development and Relief Agency), Community Forest Coordination Committee and the MoH**

This project reflects high levels of integration in almost every category. Many health priorities of communities are similar to or the same as WWF's conservation priorities. For example, one key focus of the project is to reduce the pressure of firewood collection in the forest by reducing use of firewood in homes through improved cookstoves and biogas; this promotes restoration of local forests, reduces women's work collecting firewood and improves household health because alternative sources of fuel burn cleaner, thereby reducing the number of respiratory ailments. Communities are receptive to the adoption of clean energy for their households. Integration can also be observed in the operations of the partners and implementation on the ground. For example, the Community Forest Coordination Committee runs the community clinic serving members of 32 community forest user groups, funding part of the operation from a revolving fund that receives income from a small forest fruit juice making factory. Technical assistance was initially provided by the Nepal Red Cross Society, and the MoH inspects the clinic's operations and record keeping. ADRA provides technical assistance in training community peer educators and women voluntary health workers and in PHE monitoring and reporting. WWF provides funding, technical support and transport for some of the health partners. PHE messages in training programs and outreach are well integrated.

CHAPTER 3

Types of Health and Family Planning Activities in PHE Projects

What kinds of health and family planning activities do PHE projects offer? There is no standard formula. In a participatory way, each project should design activities that are most needed by the community and appropriate given the local situation. Because PHE projects operate in remote rural areas, nearly all of them work through community health workers and community distribution programs, which are vital strategies for all categories of health and family planning work referred to in this chapter.

The sections that follow outline the most common health and family planning interventions. Because the audience for this manual is conservation practitioners we have not outlined environmental interventions in detail as you already know them. In some cases, however, the environmental component is listed in the examples because it is such an integral part of the health intervention. Since most PHE projects implemented by conservation organizations are either carried out in partnership with health organizations or by health personnel recruited to the project, this manual outlines health activities but does not provide detailed guidance on how to conduct them. There is a list of guidance materials at the end of this manual that provide more information.

3.1 Water, sanitation and hygiene

These activities help to reduce diseases such as cholera, typhoid, other diarrheal diseases, bilharzia, arsenicosis, hepatitis, river blindness and scabies, as well as worm infestations. A good source of practical guidance is Conant and Fadem (2008).

In the Kiunga Marine National Reserve in Kenya, hand pumps have been installed and wells have been covered in some villages to improve water quality.

3.1.1 ACCESS TO IMPROVED WATER SUPPLIES

Activities include improving water catchment management, bringing water supplies closer to settlements and improving water quality.

Water supplies can be provided near settlements by sinking wells and installing hand pumps, building rainwater catchments and tanks and installing gravity flow water supply systems. Wells can be expensive, particularly if the water table is deep and the wells cannot be hand dug. Water quality can be improved by filtering, purifying or boiling water in the household and by improving catchment management. Because women traditionally fetch water in many parts of the developing world, providing access to a clean, reliable water source near a settlement often

BOX 8. WATER FILTERS IN KHATA, NEPAL

In the Terai Arc Landscape in Nepal, arsenic occurs naturally in ground water and, over time, presents a serious health hazard. Drinking water obtained from surface sources such as streams and springs contains pathogens that cause diarrheal diseases. Recently developed ABFs (arsenic-biosand filters) remove bacteria and arsenic from drinking water. ABFs used in the Terai comprise a container made of plastic or concrete, one meter high and about 0.3 meters in length and width. A tap is inserted on the side, and the container is filled with a layer of gravel, then coarse sand, fine sand and finally iron nails. Water is poured in at the top, which is then kept covered with a lid. Pathogens are removed from the water as it seeps through the sand and gravel; arsenic is removed as the iron nails rust, a process that attracts and binds the arsenic.

During the 2007 monsoon flood in Khata, Terai, rigorous use of filters, boiling of drinking water, disinfecting flooded wells with bleach, use of latrines and good personal hygiene — all promoted by the PHE project — resulted in a much lower occurrence of diarrheal outbreaks after the flood than in previous years prior to the health interventions. Reduction in health problems in Khata means that people are better able to farm, have lower medical costs and are less likely to become landless. This, in turn, helps to prevent escalation of unsustainable pressure on natural resources for alternative livelihoods if people cannot farm, and reduces likelihood of landless people settling in the forest.

Sources: Massachusetts Institute of Technology News Office (2004); Treehugger (2008); Carr (2008); Rai (2007)

saves them much time and labor. This frees up more time for child care and food production. Additionally, children are sometimes kept out of school to fetch water, so provision of improved water supplies can help to improve child health and education opportunities as well as women's well-being.

Maintaining or restoring natural vegetation cover often plays a key role in protecting local water supplies, ensuring better water quality and helping to increase dry season flows and reduce flash flooding. Integrated messages on the linkages between protecting water catchments and improving human health help communities understand why integrated projects are trying to meet their development and health needs by conserving the catchment. The straightforward linkages in these messages encourage communities to engage in behaviors that improve their health, like drinking clean water or washing their hands, and improve their water catchments, like reducing slash and burn agriculture.

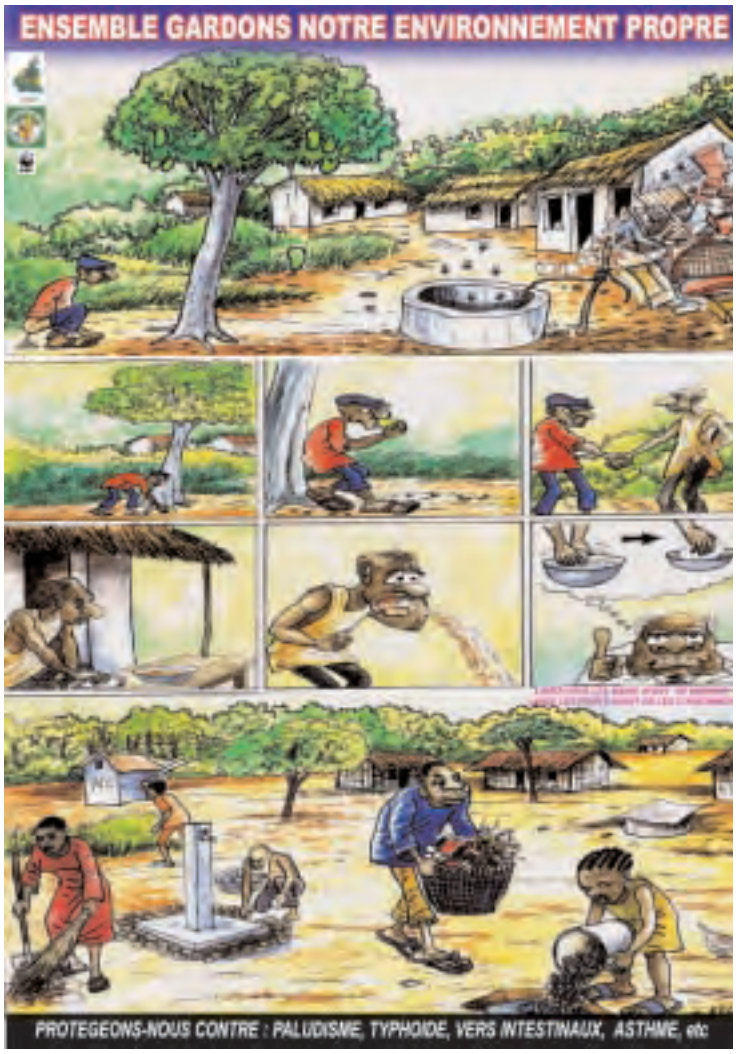
Arsenic-biosand filters made locally with plastic containers, gravel, sand and iron nails remove bacteria and arsenic from drinking water in the Khata Corridor, Nepal, thereby improving community health.

In Kiunga, Kenya, where saltwater intrusion is a problem, the WWF PHE project has helped communities to construct or repair rainwater cisterns. The rainwater is caught in a small concrete catchment area that drains to a large covered cistern.

However, there are caveats to providing improved water supplies. See Box 4 for an example of adverse health impacts. There also may be negative environmental impacts. For example, in arid and semi-arid zones where water is scarce, provision of water may attract more settlers and livestock to the area and result in increased settlement, environmental degradation and disruption of herders' traditional seasonal movement patterns. In Kenya, AMREF (the African Medical and Research Foundation) takes environmental risks very seriously and does environmental impact assessments in collaboration with the National Environment Management Authority before installing water sources (Biteyi 2007). It is important to think through the likely impacts of water provision and consider other PHE activities that are needed at the same time. USAID (2007b) provides guidance on environmental impact assessment of water supplies and sanitation.

3.1.2 IMPROVED SANITATION

Many PHE projects have worked to improve basic sanitation. The main intervention is usually promoting construction and use of latrines. This can be done very cheaply by the project providing training and tools and communities providing the labor. It is important to site latrines away from wells and streams to avoid contamination, design them properly with adequate ventilation and keep them clean. (See Conant and Fadem (2008) for further guidance.) When the WWF health project working with communities near Lobeke National Park in Cameroon piloted latrine building in a few villages, neighboring villages wanted latrines too. The project provided training and tools, and now latrine construction is expanding rapidly from village to village. Communities compete to see who has the best latrines. The Salapoumbé Private Catholic Hospital in southeastern Cameroon reported that cases of childhood diarrhea admitted to the hospital dropped significantly in the course of a few months when the latrines were introduced (Aubry 2007).



Poster designed by the WWF Lobeke health project in southeast Cameroon illustrates the consequences of poor sanitation and hygiene, and shows how to make improvements.

3.1.3 BETTER HYGIENE PRACTICES

Many PHE projects promote improved personal hygiene, including hand washing and use of soap, as well as food hygiene, such as cooking meat thoroughly, keeping food covered and reheating leftovers before serving. These simple behavior change messages can be easily integrated into any other health education messages that the

project is trying to promote. Carefully designed hygiene promotion programs that take into consideration local practices, motivation and available resources or facilities have the potential to improve hand washing and other hygiene practices which in turn stop the transmission of diarrheal diseases. Good hygiene can also prevent disease transfer among people, wildlife and livestock. (See section 3.4.2.)

3.1.4 SOLID WASTE DISPOSAL

In many sites, accumulation of garbage is a problem for human health, for wildlife and for the tourism that supports community livelihoods. In the Phobjikha Valley in Bhutan, the health project established basic waste disposal facilities, such as garbage bins and central waste pits. Trash with commercial value was collected and sold to scrap merchants for recycling. However, many sites are so remote that it is difficult to recycle, and trash is buried. Health centers and dispensaries in remote areas face the challenge of disposing of health-care waste safely. Guidance on environmental impact assessment of solid waste disposal, as well as waste from health facilities, is provided in USAID (2007b).

Many PHE projects promote composting of plant waste, along with kitchen gardening, conservation agriculture and agroforestry. (See section 3.3.3.)

Money from trash! In Kiunga, Kenya, women make handicrafts from flip-flops washed up on beaches. Beach cleanups help hatchling turtles reach the sea safely, and improve the environment for tourism.

3.2 Community-based first aid

Projects often train community health volunteers in first aid. This was a high priority at the start of the health project in Khata, Nepal, where tiger attacks were occurring. Two volunteers (one woman, one man) from each of 32 villages were trained by the Nepal Red Cross Society and given basic first-aid equipment. In practice, they most commonly treat injuries caused by farming tools.

BOX 9. INCOME FROM FLIP-FLOPS

In Kiunga, Kenya, trash is carried all the way from Asia by Indian Ocean currents and deposited on remote beaches. Here it can impede hatchling turtles from reaching the sea and, when washed into the ocean again, can be ingested by marine mammals and turtles with adverse effects. It is also bad for tourism, on which many local families depend for employment. The trash includes old flip-flops, which local women make into crafts and jewelry, providing income for women and incentives for beach cleanups by beach management units and school children. Working with fishermen's groups, women's groups and school children on cleanups and flip-flop crafts provides opportunities to integrate health and family planning messages into natural resource, education and livelihood programs and reach different groups in the community.

Source: Worldwide Fund for Nature (2008)

Monitoring the weight of babies and young children is an important part of child health care. In Kiunga, Kenya, babies were weighed under a tree during mobile clinics until a new dispensary was constructed.

3.3 Maternal and child health

3.3.1 MATERNAL HEALTH

Interventions that provide care for women during pregnancy, childbirth and postpartum aim to promote safe motherhood and reduce maternal mortality. Activities include antenatal care, immunizations for women, dietary supplements and clean and safe delivery at child birth, as well as postnatal care. Family planning, which is an important contributor to maternal and child health, is covered later in this section.

3.3.2 CHILD HEALTH

Child health, sometimes referred to as child survival, focuses on the period from birth to five years as this is the most vulnerable age. Child health activities include newborn care, immunization programs, nutrition, deworming and monitoring of growth and development. The integrated management of childhood illness approach aims to reduce child mortality and morbidity in developing countries by combining improved management of common childhood illnesses with proper nutrition and immunization. The strategy includes interventions to improve the skills of health workers, the health system and family and community practices, including improved health-seeking behaviors and preventive care in the home.

Many PHE projects include baby and child clinics conducted by trained medical staff and health education volunteers which provide vaccinations, measurement for growth monitoring and advice for mothers. Children's measurements are recorded on growth charts that indicate whether children's heights and weights are normal for their age. Signs of stunting or wasting — shown by short height for age, low weight for height and/or upper arm circumference — trigger special attention to an individual child's health and nutrition, including counseling for the mother to improve feeding practices. The cost of providing weighing scales and height measures is very small and can have a great impact in raising awareness and encouraging action. For example, in Lobeke, Cameroon, community health scouts enthusiastically weigh babies and children and work with their mothers to improve nutrition when needed. This is benefiting the indigenous Baka people as well as Bantu in the area (Aubry 2007).

3.3.3 NUTRITION AND FOOD SECURITY

Improved nutrition for women and children is an integral part of many PHE health projects. Activities include promotion of exclusive breast feeding and the proper introduction of complementary feeding for babies, ensuring adequate protein and energy in the diet, promotion of micronutrients (Vitamin A, iron, iodine and zinc) and demonstrations of sound cooking methods. See Box 10 for an example of a PHE project with a nutrition focus.

Conservation organizations are often well placed to improve nutrition by helping to increase food security and improve dietary diversity, with win-win opportunities for health and conservation. Promotion of vegetable gardening, conservation agriculture and agroforestry with organic

Preparing fodder for stall-fed livestock in Khata, Nepal. Removing cattle from the forest and keeping a small number next to homesteads provides milk for children and helps restore the forest.

Laying out contour ditches in Quirimbas National Park, Mozambique. The ditches capture runoff during storms, increasing soil moisture and reducing soil erosion, so crop yields increase.

composting can improve soil fertility, increase production per hectare and produce a wider variety of foods. This helps to improve food security and nutrition and may improve household income through sale of surplus products. Intensifying agricultural production through sustainable methods can reduce forest destruction from extensive slash-and-burn agriculture and reduce dependence on natural resources for food and livelihoods.

In the Terai Arc in India and Nepal, cattle ranging in the forests prevent regrowth by browsing and trampling young trees. Removing the cattle and keeping a smaller number of improved breed cows next to homesteads provides milk to improve children's nutrition and for sale to increase household incomes, as well as helping the forest recover.

Box 11 outlines how food security is being improved in Quirimbas in Mozambique.

BOX 10. NUTRITION AND THE BA'AKA PEOPLE IN DZANGA SANGHA, CENTRAL AFRICAN REPUBLIC

The PHE project in Dzanga Sangha, Central African Republic, works to improve the nutritional status of young children and pregnant women. It focuses particularly on the Ba'Aka indigenous people, who have poor nutrition and a high mortality rate. The Ba'Aka previously were hunter-gatherers; but over the past few decades, they have settled in the outlying villages of Dzanga Sangha for employment in the logging industry. The change to a sedentary life has brought a shift in their diet. They now cultivate cassava and maize and collect fewer foods from the forest. Women spend time farming, which means they have less time for child care. The project is assessing the nutritional status of young children to identify, support and promote traditional practices that are beneficial for their welfare. Because undernutrition during pregnancy can jeopardize child nutrition, mortality and morbidity outcomes, the project also supports access to care during pregnancy and provides iron and folic acid supplements for pregnant women. Postpartum women receive Vitamin A through UNICEF.

Source: Blaney (2008)

BOX 11. FOOD SECURITY IN QUIRIMBAS NATIONAL PARK, MOZAMBIQUE

Food security was a huge problem for people living in and around Quirimbas National Park in northern Mozambique. The fishery had declined with overfishing due to both local artisanal fishing and commercial fishing fleets coming in from outside. People were abandoning islands to seek alternative livelihoods. On the mainland, poor soils, less predictable rainfall and elephant crop raiding were leaving many farming families hungry. Child mortality rates were high, and malnutrition was rampant.

Community champions provided leadership to establish community-controlled "fish replenishment zones" with support from WWF. Fishing was banned inside these critical areas. The Mozambican navy played a key role by patrolling for illegal foreign fishing boats. Fish populations expanded rapidly, both inside and outside the replenishment zones. Fishermen have seen dramatic increases in both the size of individual fish and in their overall catch outside these zones. Their earnings have also grown. People have moved back to the islands. Many are now benefiting from recently developed tourism based on healthy corals, healthy fish populations and clean beaches. Women report that with improved food security and livelihoods, child survival has improved.

Inland, the project has been working with communities to boost agricultural productivity. Crop raiding by elephants is being tackled with several different approaches, including the use of chili pepper and other scaring methods to keep elephants out of fields, clustering of individual fields to facilitate protection, and early burning in core parts of the park to provide new growth of natural vegetation for elephants and to try to keep them away from people. New agricultural techniques are being introduced to raise soil fertility, reduce erosion, and increase soil moisture by capturing storm water in contour ditches.

Source: Carr (2008)

The PHE project in Lobeke, Cameroon, demonstrates how to use a mosquito net. Many PHE projects distribute impregnated nets to reduce malaria.

3.4 Infectious diseases

Many PHE projects work to reduce the incidence of infectious diseases among communities in project areas. They do this by improving access to health care and information and also through conservation activities that help to create or maintain environmental conditions that are less favorable to the disease organisms or their vectors.

3.4.1 MALARIA

Many projects promote malaria prevention and treatment, particularly for mothers and young children. Activities include distribution of repellant-impregnated bed nets, removal of mosquito-breeding sites around settlements and treatment of malaria patients. In Lamu District in Kenya, malaria is the biggest cause of morbidity. The Kiunga PHE project in the northern part of the district was able to tap into a large national malaria program distributing free bed nets to mothers of children under five years of age with an up-to-date vaccination card. The MoH distributed 8,500 bed nets in the district through

WWF and the Tawasal Foundation. The project also facilitates treatment of malaria cases in remote communities through local dispensaries and mobile clinics. The District Health Office reported an 8 percent decline in cases of malaria districtwide after the introduction of the program (Mwachui 2008).

Environmental management is also important. For example, deforestation has been linked to increases in malaria. Changes in mosquito species composition with deforestation almost always result in an increased abundance of species that are more effective vectors for malaria (Chivian and Bernstein 2008). In a study in the Peruvian Amazon, Vittor et al. (2006) found that *Anopheles darlingi,* the primary malaria vector in the region, had a biting rate that was more than 278 times higher in deforested areas than in areas that were predominantly forested. *A. darlingi* preferred to breed in grass/cropland with secondary growth and shrub, mainly in large ponds and fish farms surrounded by some vegetation. *A. darlingi* had low abundance in heavily forested areas, and was probably not breeding there. Avoiding deforestation or restoring natural vegetation can reduce risk of malaria and certain other diseases.

Young western lowland gorilla. In the Congo basin several diseases pass between great apes and local communities, and bushmeat hunting increases the risk of transfer to people.

3.4.2 DISEASES AT THE WILDLIFE-LIVESTOCK-HUMAN INTERFACE

Because the communities we work with are often in close contact with wildlife and livestock, many diseases and parasites pass among people, livestock, and wildlife. The importance of taking a holistic, cross-sectoral approach to the wildlife-livestock-human interface to reduce disease in all three groups is outlined by Osofsky et al. (2005). Several health and environment projects undertake activities to break parasite and pathogen lifecycles. The WWF health project in

BOX 12. SCABIES, TUBERCULOSIS AND MOUNTAIN GORILLAS

In Uganda, Conservation through Public Health is working to reduce transmission of scabies, tuberculosis and other diseases between people and mountain gorillas. Gorillas have been seriously affected by scabies (including the death of a baby gorilla), which has had an adverse impact on gorilla tourism development. Since local communities benefit from gorilla tourism, they have a strong motive to reduce scabies in gorillas and in people. The project promotes awareness of disease transmission mechanisms and ways to prevent them and improves public health in communities living in close proximity to the gorillas. Transfer of the disease can be prevented by simple hygiene measures, including clothes washing. The project also works to reduce transmission of tuberculosis to gorillas from people by providing free testing and treatment, with a community program that encourages people living near to the forest to stay the long course of treatment for tuberculosis.

Sources: Kalema-Zikusoka (2005 and 2008)

BOX 13. CONTROLLING EBOLA OUTBREAKS IN THE CONGO BASIN

The ebola virus has passed from wildlife to humans multiple times over the past seven years, leading to deadly human outbreaks. Historically, ebola outbreaks in great apes precede those in humans. In light of this, WCS (the Wildlife Conservation Society) has establish a network of stakeholders placed throughout the Congo basin to serve as sentinels to wildlife mortality, allowing WCS veterinarians to perform rapid epidemiological investigations and public health officials to launch preventive health outreach in at-risk villages.

Source: Reed (2008)

Bhutan rounded up domestic animals and corralled them to make the village area cleaner and reduce disease transfer to people. The project also sterilized dogs to reduce the stray dog population and the incidence of rabies (World Wildlife Fund 2006a).

Emerging diseases that jump the gap between people and wildlife and/or livestock are a major global public health issue. They include HIV, avian influenza and ebola. In places like the Congo basin, where both HIV and ebola jumped from great apes to people, conservation projects fighting against the bushmeat trade serve not only conservation purposes, but also an important global public health function.

In the Terai Arc, Nepal, cattle dung and human waste produce biogas used for cooking instead of firewood. This reduces respiratory infections, saves women time and work, and helps to restore forests.

3.4.3 ACUTE RESPIRATORY INFECTIONS AND FUELWOOD

Conversion to use of improved stoves or cleaner fuels (e.g. biogas) in the home reduces exposure to indoor air pollution and can lower the risk of pneumonia for all children in the household, thereby significantly reducing child morbidity and mortality. Improved access to household energy can facilitate boiling of water and thus help reduce the incidence of waterborne diseases. Increasing the number of hot meals per day can improve food safety. Moreover, use of cleaner fuels reduces the risk to infants and toddlers of burns and scalds from open fires in the kitchen. Women's health is improved, not only through reduced exposure to smoke, but also because of reduced workload. Carrying heavy loads of firewood may be associated with an increased risk of prolapse (Rehfuess 2006). Time saved can be spent on child care or income-generating activities. Forest degradation can be slowed, and in some cases pressure can be reduced enough for forests to regenerate.

BOX 14. ACUTE RESPIRATORY INFECTIONS, FUEL EFFICIENCY, WOMEN'S TIME AND FOREST RESTORATION — PHE SYNERGIES AT WORK

In Khata, Nepal, the WWF PHE project has promoted fuel-efficient stoves and biogas to help relieve the problem of ARIs (acute respiratory infections) in women and young children, at the same time relieving pressure on the forests and reducing the amount of time and labor women spend collecting firewood. Biogas digesters are connected to household latrines. Human waste, along with cattle dung, produces biogas in the digester, and this is piped to the nearby kitchen and used for cooking. By March 2008, 14.8 percent of households were using either biogas or improved cookstoves, saving an estimated 1,298 metric tons of firewood annually (WWF-Nepal 2008). Women report a great saving in time and work — enhanced in some cases when their husbands take on cooking chores with the clean biogas stoves. ARIs are further reduced through a revolving fund that provides households with loans to buy solar-powered lights. Having electric light in the evenings enables children to study and women to do evening chores without needing kerosene lamps, which also aggravate ARIs. At the same time, the project has trained female community health volunteers to recognize the signs of ARIs, and these volunteers now refer serious cases to the health center for treatment.

The combined interventions of restoring the forest, reducing and treating ARIs, reducing women's work and supporting girls' education demonstrate well the opportunities for integration and synergy in PHE projects.

Sources: World Wildlife Fund-Nepal (2008) and Carr (2008)

3.5 HIV/AIDS

The HIV/AIDS epidemic has devastating and tragic impacts on families and communities. It is affecting local and national economies, development programs, social structures and institutions (UNAIDS 2006). It is also affecting the environment through impacts on human capacity, natural resource management, and land use. There are very close linkages among HIV/AIDS, rural livelihoods, gender, human capacity and conservation. Many of these linkages are becoming better recognized, and there are greater efforts to mainstream HIV/AIDS into development (International HIV/AIDS Alliance 2008).

Community Health Africa Trust's mobile clinic vehicle in Laikipia District, Kenya. Monthly clinics provide remote communities with health services and education, HIV diagnostic counseling and testing, and family planning.

Many PHE projects, particularly in Africa, are working on HIV/AIDS awareness and prevention. Increasingly, projects are also providing counseling and testing, and accessing treatment for poor, underserved, and remote communities. HIV/AIDS is often covered in combination with other reproductive health issues. For example, the Community Health Africa Trust (CHAT) in Kenya has brought in family planning combined with HIV diagnostic counseling and testing (the latter is offered when clients have symptoms possibly associated with HIV). Other projects have awareness campaigns to encourage community members to go for VCCT (voluntary confidential

Poster designed by the Lobeke health project, Cameroon, demonstrating the risk of HIV transmission along logging transport routes in the region.

counseling and testing). NACSO (the Namibia Association of Community-based Natural Resource Management Support Organizations) has a large HIV/AIDS program that is operating through the communal conservancy movement, promoting awareness, prevention, VCCT, treatment and some support to AIDS affected households. It is cascading its HIV/AIDS program down through its support organizations to conservancies and hence to local communities, using the conservancy governance structures to roll the program out. It has the potential to reach over a tenth of Namibia's population living in some of the most remote parts of the country.

PHE projects often work to promote alternative livelihood activities for AIDS-affected households by identifying activities that require little labor and can be done by older people, youth and children. For example, the Wildlife and Environmental Society of Malawi has developed guinea fowl farming, fruit juice making and beekeeping in AIDS-affected communities. Guinea fowl farming raised the annual income of some households in Mzanza district from $43 to $500 (Mauambeta 2003).

Staff of conservation projects are also at risk of contracting HIV, and conservation organizations have lost much capacity in the last decade or so to AIDS (Gelman et al. 2005). It is important to increase awareness and provide prevention and care for them, and PHE projects are well placed to do this. In addition, a few conservation organizations, such as the African Wildlife Foundation and NACSO members, have developed HIV/AIDS workplace policies. Guidance for conservation organizations on ways to reduce the impacts of HIV/AIDS on their own capacity, on communities and on the environment is being documented in a sister manual to this one (Oglethorpe et al. in prep.).

3.6 Reproductive health and family planning

A family planning and reproductive health component is included in almost all PHE projects implemented by conservation organizations. The rationale is that improving health without addressing family planning is likely to lead to increased population pressure on the environment. Family planning is often already wanted and needed by the remote communities where conservation organizations work. Family planning is one of the most efficient health interventions for conservation organizations to undertake. (See Chapter 2 for further discussion.)

Family planning interventions aim to reduce barriers to accessing modern contraception. Barriers include factors such as lack of access to family planning, lack of information about family planning, male opposition to family planning, high prices or long distances to services and lack of

Women and their babies attending a Family Planning Action Session in Palawan, Philippines. Couples identified as having an unmet need for family planning are invited to attend these educational sessions.

BOX 15. DECIDING TO INTEGRATE FAMILY PLANNING

A number of conservation organizations have questioned integrating family planning when it does not appear to be a priority for communities. For example, some PHE projects have experienced initial resistance to family planning from male community leaders. Some conservation practitioners have observed that when communities still have high child mortality rates, couples seem to want more children, so practitioners feel insensitive discussing family planning. Still others have found that in communities that are in the earliest stages of demographic transition, the project costs relative to the low levels of family planning uptake have been so high that they questioned the investment of time and money in family planning versus other interventions.

Three sisters in a densely populated coastal village of the Philippines. Birth spacing gives families more time to plan for the future.

In such cases, due to high population pressure, it may still make sense for you to undertake family planning although it is relevant to consider the potential cost-to-benefit ratio versus other types of interventions that you could undertake. With an experienced family planning partner and/or quality technical support, you can have a substantial impact on the rate of natural increase. First, family planning is one of the most cost-effective interventions for improving child survival. Messages for communities with high levels of child mortality can focus on maternal and child health benefits of birth spacing, including improved child survival (rather than limiting the number of children). PHE projects in the conservation sector have found that these messages are highly effective. Also increasing birth spacing is important to improving human welfare and slowing population growth.

Second, there is a large body of evidence suggesting that family planning use can and does increase in areas with low levels of female education and economic development (Campbell 2006) — factors that are often associated with earlier stages of the demographic transition. Campbell's research suggests that introduction of family planning is like the introduction of new technologies, such as cell phones or photocopying machines; women may not realize they need family planning until it becomes more available. Finally, experience from several PHE projects suggests that community resistance, such as male opposition, can be overcome — sometimes quite easily. Strategies to this end include separate sensitization techniques for men and women; integrated PHE messages (one of the advantages of delivering family planning through a PHE project); engagement of supportive community leaders and elders early in the project; and motivational messaging from early family planning adopters, sometimes called "innovators" because their influence can be so strong.

Conservation organizations that are hesitant to include family planning in their PHE projects but who observe that high fertility and lack of access or use of family planning is problematic for the area's biodiversity and human welfare are therefore encouraged to include at least a small component on family planning or to make plans to integrate family planning in the future. In the meantime, such organizations may want to conduct integrated health and environmental sensitization and build strong relationships with community leaders to set the stage for introducing family planning once they think that they and the communities are ready.

choice of methods. Reducing barriers has been shown to increase family planning use by meeting existing unmet demand and spontaneously generating new demand (Campbell et al. 2006). Any family planning intervention is made significantly more effective through the addition of reproductive or maternal and child health activities (see respective sections for activity ideas). Women are more likely to be willing and able to visit clinics when a more complete set of services is provided. As a package, such interventions help couples postpone first births until the mother has reached an age appropriate for childbearing, better space births by at least two years, limit the total number of births in their lifetimes and maintain good health and nutritional status for themselves and their children. Family planning therefore increases women's capacity to work and manage many other aspects of their lives and their environments.

In areas with a large number of people under age 15 ("youth bulge"), it is equally important to increase youth's access to ASRH (adolescent sexual and reproductive health) information and services. In most project areas, these family planning and ASRH interventions should dramatically slow the rate of natural increase in the population (in the absence of high in-migration), although populations with a "youth bulge" will continue to grow for many years due to the large number of young people entering the reproductive age group. Some PHE projects operating in areas with strong religious or cultural prejudices to talking to youth about family planning have found that focusing on delaying sexual debut or first marriage and bundling those messages with youth-friendly conservation messages and activities (like beach cleanups) has been a successful initial approach to working with youth.

Reproductive health, as defined by WHO (World Health Organization 2008b), implies that people are able to have a responsible, satisfying and safe sex life and that they have the capability to reproduce and the freedom to decide if, when, and how often to do so. Implicit in this are the right of men and women to be informed of and to have access to safe, effective, affordable and acceptable methods of fertility regulation of their choice and the right of access to appropriate health care services that will enable women to go safely through pregnancy and childbirth and provide couples with the best chance of having a healthy infant.

Reproductive health programs include such activities as the prevention of female genital mutilation/cutting, and sexual and gender-based violence, reducing the practice of unsafe abortion, providing post-abortion care, treating reproductive tract infections and sexually transmitted infections, promoting safe motherhood/postpartum care and providing youth friendly services.

3.6.1 FAMILY PLANNING

Many projects work to make family planning more accessible to different groups within the community, including women of reproductive age, men and youth. Activities include

- improving transport, logistics and infrastructure for delivery of family planning and reproductive health commodities and services and ensuring a continuous supply of these commodities and services
- establishing a system of CBDs (community based distributors) of modern contraceptives. CBDs may be stationary or mobile and sometimes include traditional birth attendants. They also require motivation (see the Tools section of this manual under Family Planning and Reproductive Health) to ensure that contraceptive supplies are always available, particularly in remote communities where transport to health facilities can be difficult
- expanding the availability of different family planning methods at the community level through CBDs and through educating CBDs about how to refer clients for other methods. (Note that increasing the availability of methods has been shown to increase the number of new and continuing family planning users.)
- training education agents — often peer educators, health volunteers or traditional birth attendants — to increase access to accurate

information about family planning and its benefits

- increasing capacity of existing health service staff for improved quality of care
- developing special communications and services to meet the unique reproductive health needs of large youth populations (particularly in traditional communities where this is more challenging)

Most PHE projects improve direct access to two to three modern contraceptive methods for target communities, often through community-based distribution carried out by project-trained health workers and volunteers or mobile clinics staffed with nurses. The most common methods distributed are condoms and pills, and next, the injectable — a method preferred by women in many PHE project sites. In at least two projects we know about, women choose injectables because they do not want their husbands to know they are using modern contraception. Also, in some project areas, natural family planning is quite commonly used and may be a culturally or logistically sensible option due to high levels of disruption in supply flows. There are methods of natural family planning that are now considered modern due to their high levels of reliability when users are properly educated and methods are properly used. (Those methods include SDM, the Standard Days Method and LAM, the Lactational Amenorrhea Method. For information on these methods, see Tools under Family Planning and Reproductive Health.)

Note that if your project decides to undertake community-based distribution of injectables, there are a number of special considerations that need to be taken into account. For example, you may need to start with advocacy efforts so that the government will allow nonmedical staff (such as project-trained health volunteers) to provide this service at the community level (see Tools under Family Planning and Reproductive Health). Also, you can minimize risks that could be associated with gender differences in attitudes toward family planning by ensuring that your project includes a family planning education campaign targeted at men. Projects also train health workers and volunteers to provide clients with information on a full range of other methods and refer them to health facilities and private service providers as

Community based distributor with her records and family planning commodities on Hilutangan Island, Philippines (left). CBDs counsel clients in the range of family planning methods available to them; the photo shows oral contraceptives, injectable contraceptive, IUD, condom, and CycleBeads for natural family planning (right).

BOX 16. REGIONAL PREFERENCES FOR CONTRACEPTIVE METHODS

There is substantial variation in the preferred methods of contraception across WWF's PHE sites, probably related to issues such as religion, culture, tradition, population density in relation to land and resources, and levels of child mortality. In the Spiny Forest in Madagascar, pills and injectables are preferred although injectables are still not widely available. In Roxas, Philippines, the pill is the preferred method, but a number of men and women have requested permanent methods. This is the only WWF project where there is demand for vasectomies. In the Terai in India, tubal ligation is the preferred method after women have had two or three children. In Khata, Nepal, women also use tubal ligation; but since the project started, there has been a large increase in the use of pills and condoms (largely responsible for the remarkable increase in contraceptive prevalence rate from 43 percent in late 2006 to 69 percent in early 2008). In Lobeke, Cameroon, condoms are very popular with youth as a result of vigorous outreach by the project; they are used to prevent HIV transmission as well as pregnancy. In the Muslim society in Kiunga, Kenya, women prefer injectables, which they can get when they attend baby clinics. It is important to cater to local desire for different methods but also to provide education about other methods that may be new to the community, which might be more appropriate for some people (e.g., emergency contraception). Expanding method choice is also likely to increase the number of new and continuing users of family planning.

appropriate. Some projects also facilitate access to long-term methods such as IUDs (intrauterine devices) and permanent methods (vasectomy and tubal ligation), including organizing medical missions to travel to remote populations to deliver these services or subsidizing transport to health facilities. These efforts require particular care in ensuring that clients are fully informed and that all participation and choice is voluntary.

If your organization is receiving funding from USAID — one of the major funders of PHE programs — you will probably need to comply with legislative requirements to ensure voluntarism (depending on the status of current legislation). Even if not funded by USAID, the guidelines provided by USAID on voluntarism are helpful to follow as they represent good practice in ensuring that your programs respect reproductive rights. (See the USAID website outlining guidelines on voluntarism and informed choice: http://www.usaid.gov/our_work/ global_health/ pop/voluntarism.html.)

3.6.2 FEMALE GENITAL CUTTING

FGC (female genital cutting) is also called FGM (female genital mutilation) or circumcision.[1] When undertaking FGC interventions, you should consider which terminology will be acceptable to your target audience. The practice has been outlawed by numerous national governments but is still practiced in many places throughout the world, particularly in certain parts of Africa and the Middle East, and can be found among isolated ethnic groups in Indonesia, India and South America.

Due to the high level of sensitivity to the issue in some communities and to donor restrictions on funding to reduce the impacts of FGC, only a small number of PHE projects with conservation objectives have integrated FGC interventions. These efforts have focused on educating communities about the potential adverse side effects of the practice and the legal and ethical aspects of the issue. Such efforts have usually been integrated into family planning or maternal

[1] FGC refers to "all procedures involving partial or total removal of the external female genitalia or other injury to the female genital organs for cultural, religious or other nontherapeutic reasons" (Wikipedia 2008).

Health dispensary constructed by the community before the PHE project in the hope of attracting a nurse to Mkokoni village in Kiunga Marine National Reserve, Kenya. The building was used for mobile clinics at the start of the project.

New Mkokoni dispensary conforming to MoH standards, funded by the project with labor contributed by the community. A ministry nurse has recently been posted to this remote area.

and child health interventions as part of larger efforts to promote women's empowerment. In Laikipia District in Northern Kenya, where 91 percent of target communities circumcise girls and boys, the Community Health Africa Trust (CHAT) Mpala mobile clinic has used videos shown at the back of the clinic vehicle to promote awareness of FGC/FGM and to educate children in schools along the mobile clinic's route (PREMESE 2005).

3.6.3 SEXUALLY TRANSMITTED INFECTIONS

STIs (sexually transmitted infections) are also known as STDs (sexually transmitted diseases), but STI is the preferred term because it encompasses both the early and full-blown stage of the illness. STIs include HIV, syphilis, gonorrhea, chlamydia, hepatitis B, human papilloma virus and genital herpes. STI-focused activities are relevant to men, women and youth, regardless of marital status. Gonorrhea and other non-HIV sexually transmitted infections are highly associated with reproductive complications (i.e., stillbirth) and up to a five-fold increase in the rate of HIV. Individuals with STIs may show no visible signs of infection, putting their partners at high risk. Providing preventive testing, treatment, and information about STIs is an effective means of reducing reproductive morbidity and can substantially contribute to reducing HIV infection.

PHE projects that address STIs usually integrate treatment and prevention seamlessly into family planning and HIV-specific interventions by providing information and services at the same time. Although it is common for PHE projects carried out by conservation organizations to integrate STI messages into PHE messages and provide condoms to target populations, few projects are able to provide the level of clinical service for STIs that is needed. Projects that are more successful at this are those with mandates to provide general health medications and service, often through health centers or mobile clinics.

For example, the PHE project in Kiunga, Kenya, helps facilitate a mobile clinic in which MoH-trained nurses and supplies from clinics are brought to remote populations, thereby providing men and women with a much better level of service than they customarily received. However, to provide a full range of STI testing and treatment, clients must be referred to distant

Pharmacy of the Health Center in Bayanga town, Dzanga Sangha, Central African Republic. This health center and its satellite health posts serve over 6,000 people.

Refresher course for CBDs in Khata Corridor, Nepal. These women provide family planning advice and commodities to community members, obtaining supplies from MoH health camps and the community health clinic.

stationary clinics because exam rooms and testing kits are necessary.

3.7 Strengthening health systems

Many PHE projects invest heavily in health resources — infrastructure, capacity, supply chains, service delivery, information systems and a trained health workforce. Further information about health systems is contained in World Health Organization (2000).

3.7.1 INFRASTRUCTURE

Often there is demand to build or upgrade health facilities such as health centers, health posts and dispensaries in remote areas. Sometimes communities and projects believe that if a building is constructed, the MoH will staff it and take over the running costs. Construction can be a convenient intervention for a donor-funded PHE project because it is a one-off cost. However, there are many health facilities in rural areas of the developing world that are not adequately staffed and used because of lack of funding for running costs, inadequate government support or unwillingness of qualified health staff to live in remote rural areas (World Bank 1993). WWF's pilot PHE projects show mixed results: three constructed or improved health buildings; the one that is working best is a community-run clinic. The MoH has been slow to fully staff the others at the time of writing, and they have been underused. Operating as they do in remote rural areas, it may be more effective for PHE projects to promote preventive health delivered via low-cost outreach service delivery mechanisms, rather than constructing expensive buildings.

3.7.2 TRAINING OF THE HEALTH WORKFORCE

Many projects in remote areas are faced with a lack of trained health personnel. These areas are often unpopular postings for qualified health staff. One solution is to train local community members and facilitate linkages between them and the nearest government health service point. Many projects train CHWs (community health workers) or CHVs (community health volunteers), who may work voluntarily or receive payment. Besides general CHWs, projects often work with traditional birth attendants, providing training and equipment

Many PHE projects operate mobile clinics and health camps to reach remote communities that have no health facilities. In both Laikipia and Samburu Districts, Kenya, the Nomadic Communities Trust operates clinics by vehicle and camel to reach remote Samburu herding communities.

to promote better practices including hygiene. Community volunteers are often trained as CBDs of family planning commodities, such as pills and condoms, and other basic health supplies including oral rehydration tablets, basic medicines and mosquito nets. Ways to motivate community volunteers are covered in section 5.2.8.

It is also useful to provide cross-training for health and conservation personnel on PHE projects, so that they understand the issues in each sector and the linkages between the sectors, know each others' language, and can provide integrated messages in PHE education and communication. This was done successfully by WWF-Madagascar and its health partner ASOS (Association Santé Organisation Secour), which greatly facilitated mutual understanding and collaboration. This also enabled both organizations to use integrated PHE messages in their communications with local communities and decision makers.

3.7.3 SUPPLY CHAIN MANAGEMENT

Supply chains are the ways that medical commodities get from suppliers to the places they are dispensed to members of the public — hospitals, clinics, health centers, pharmacies and private distributors. Good supply chains and their effective management are essential to ensure reliable supplies of commodities. Supply chains can be particularly challenging for PHE projects in remote areas where transportation opportunities are limited and if commodities are in short supply in the country. Ensuring reliable delivery of commodities and determining where the supply chain has broken down is often the first task facing a PHE project in a remote area. In the early stages, conservation organizations often have to facilitate transport of commodities to the sites if no distribution system already exists there. Sometimes this means bringing boxes of commodities out to communities when doing a routine visits for conservation purposes. However, the project should work to put in place a distribution system that will supply commodities into the future after the project finishes. The best types of systems are those that make use of national or local distribution systems operated by longer term players like government, commercial-sector or social marketing groups, and many PHE projects tap into these. In Kiunga, Kenya, the PHE project taps into the national distribution system but when a large-scale stock-out of family planning commodities occurred in 2007, the

In the Lagga Bagga area of the Indian Terai, WWF organizes health camps and transports medical doctors and supplies by vehicle. In the Roxas area of Palawan, Philippines, WWF and the Local Government Unit use boats to transport staff and volunteers when they conduct PHE sessions on small islands.

project was able to purchase contraceptives privately until the national system restocked supplies.

3.7.4 DELIVERY OF SERVICES

Some PHE projects operate mobile clinics to reach remote rural communities, particularly when projects first start. These clinics often run on a monthly basis. In Kenya, the Kiunga mobile clinics operate by vehicle on the mainland and boat to the islands and offer such services as immunizations, family planning, HIV/AIDS VCCT and outreach. In Laikipia and Samburu, the Nomadic Communities Trust operates clinics by vehicle and camel to reach remote Samburu herders and communities. In India, WWF brings highly qualified volunteer medical doctors out to community health camps in remote villages in Lagga Bagga. In Khata, Nepal, the Community Forest Coordination Committee runs a project-constructed clinic, in conjunction with MoH monthly outreach camps, to provide improved health services.

Stationary and mobile clinic services are often difficult to sustain, however, because of constraints such as high recurring costs, shortage of staff, weak supervision and inadequate supplies and equipment (Hanson et al. 2003). For this reason, some PHE projects hire and deploy outreach workers who travel by foot, bicycle or public transport to the target area to deliver a limited number of preventive health services — particularly family planning, STI and HIV prevention education, counseling and referral services. The same community health outreach workers also resupply CBDs and provide technical backstopping and support for trained peer educators in the community.

Projects should always seek ways to make the provision of these services sustainable — for example, by facilitating the arrival of government services or ensuring that local NGOs (nongovernmental organizations) will carry the services forward once the project ends. Conservation International's PHE partner in Cambodia, CARE Cambodia, has provided health services, the first in the area, to remote villages since 2004. With the PHE project ending, CARE Cambodia agreed, with MoH support, to continue to provide health services under the country's health systems strengthening project (Edmond 2008). Ensuring ongoing service delivery is

important for community welfare and for conservation outcomes. If communities suddenly stop receiving health services that they have come to depend on, there may be a backlash against conservation activities; and relationships between communities and conservation organizations may suffer.

3.7.5 HEALTH INFORMATION SYSTEMS

HIS (health information systems) document ongoing health care provision, morbidity, births, deaths, administration and financing. They are a critical part of effective health services. Sometimes this is a challenge for PHE projects in remote areas with high levels of illiteracy because it is difficult to find and retain staff who can keep records. However, it is very important to have HIS, not only to keep individual patient records for more effective care, but also to feed results into the broader regional or national health information system and help to keep health center staff engaged in the project. The information system also is an important source of data for the project's own monitoring and evaluation as a way to demonstrate the project's health impact.

Health education, behavior change communication and social marketing are a key part of any PHE project. These topics are covered in section 5.2.7.

CHAPTER 4

Deciding Whether to Integrate Health and Family Planning into Conservation Activities

Before designing a PHE project or adding on a population and/or health component to an existing conservation project, it is important to determine if a PHE approach is appropriate for your site.

The following questions will help you do some initial thinking on this. The questions are not intended to take the place of a full needs assessment. Instead, they should help you decide whether it makes sense to invest more time in pursuing the PHE approach, including conducting a full needs assessment on PHE.

The conditions under which PHE interventions are appropriate and effective vary from site to site, so there are no hard and fast rules. You don't have to get a high score on each of the following questions to justify starting a PHE project. The questions are intended more to help guide your thinking. If, after doing this preliminary analysis with these questions, you decide that PHE would be appropriate for your project, Chapter 5 provides more detailed guidance on how to conceptualize and design it.

1. Are health services a high priority for the community?

What are the community's most urgent priorities? Would the community be open to a PHE approach? In cases of extreme poverty, people are likely to prioritize food security and livelihoods over health. When asking about priorities, men and women may have very different answers; so it is important to ask both groups. Women tend to be more concerned about child and maternal health than men.

High / Medium / Low priority

2. Is there a strong need for a health intervention to address a vital unmet need?

Is there a serious (life-threatening) health problem in the area that is not being adequately addressed by the existing health system, e.g. malaria or cholera? What is current access to basic health services like? Are there geographical, cultural or economic barriers that are precluding some groups from gaining access to health care and family planning? How far do people have to travel for services? Do people have access to affordable health products (for example, mosquito nets, contraceptives), improved water supplies and sanitation? Are there health problems that are strongly affecting the potential success of any conservation or development project in the area? (for example, high rates of AIDS-related mortality driving people to use natural resources unsustainably for sustenance and livelihoods).

High / Medium / Low need

3. Is there a strong need for a family planning component?

Is population growth an issue? If so, what is driving it: high fertility or immigration or both? If growth is due to immigration, other activities may be more appropriate (see Oglethorpe et al. 2007) — although immigrants may need family planning services. If population growth is due to high fertility, then determine what is causing this high fertility. What is the contraceptive prevalence rate — is it low compared to similar areas in the rest of the country/region? It would be advisable for you to consult with the local department of health or an international family planning agency such as UNFPA (United Nations Population Fund) to learn about the determinants of high

fertility in your particular area — e.g., is it due to lack of access to family planning? Or are contraceptives available in principle, but stocks are often missing at the health center, so community members do not use them? Or is there a low level of family planning knowledge? Or fear of side-effects? Or do couples want to have more children to help with farm labor? Most likely the DOH and/or UNFPA have already developed a strategy for overcoming the barriers to family planning acceptance in your region. Your project can use this information to determine if there is a local need for family planning support and a role that a conservation organization can play in meeting that need. It is also important to do some research into what the country's population policy and FP/RH (family planning/reproductive health) strategy is, so you can make sure you are tying into nationally sanctioned approaches.

High / Medium / Low need

4. Are there good links between health/family planning and conservation?

Is there a good rationale for integrating health and family planning into your project? Will there be linked benefits, for example, in terms of increased community capacity to participate in conservation and natural resource management? Will there be greater community goodwill toward conservation? Are there health and population linkages that will result in improved conservation (such as improved cook stoves resulting in reduced respiratory disease and less forest destruction for firewood)?

High / Medium / Low benefits and links

5. Does the community have capacity to work with you on PHE?

Community capacity is important for success. Is there a community-based organization, association, or institution that can work on health (such as a village development committee, health committee or women's group)? What is the level of education, including of women? Many successful PHE projects rely on mobilizing community health workers. A high level of illiteracy can be a barrier to PHE, and incorporation of girls' education and adult literacy may yield valuable results.

High / Medium / Low capacity

6. Are there health or development partners with whom you can work?

The first step is to decide if you want to partner with another organization to do the health interventions, or recruit health staff in your own organization. Most conservation organizations opt for partnerships with health organizations. If this is the best option for you, decide who your partner will be. Is the MoH open to working with you, even if it is not currently operating in the area? Are there NGOs that can provide technical assistance or implement health activities, if you bring them into the community? What level of organizational capacity do local NGOs have to implement projects and manage funds? Are there private-sector doctors or others who could help? Are there possible synergies from sharing logistics with a health organization (e.g. transport, office space)?

High / Medium / Low opportunities for partnering with health organizations

7. Do you have funding opportunities?

What are the chances of obtaining funds for a PHE project? Note that some donors may only fund one aspect of the project — for example the health interventions — rather than funding the entire integrated package. If this is the case, you will need to determine how the health interventions can best be integrated into your ongoing conservation interventions even when your funding sources are not integrated.

High / Medium / Low funding opportunities

If, after working through these questions, you are convinced that PHE would be a good approach for your site, Chapter 5 can help you with the next stages.

CHAPTER 5

Practical Steps for Integrating Health and Family Planning into Conservation Projects

This chapter goes through the basic steps in a project cycle of a conservation project that aims to incorporate population and health. Although some of the steps mentioned pertain to all types of projects, the goal is to highlight the issues that are particularly important in conservation projects that incorporate population and health.

In 2007, the CMP[2] (Conservation Measures Partnership) first created a set of standards that aims to help the conservation community understand the impacts of their efforts — in other words, to determine whether their projects are achieving their objectives. The goal of these standards, referred to as the Open Standards, is to "bring together common concepts, approaches and terminology in conservation project design, management and monitoring in order to help practitioners improve the practice of conservation" (Conservation Measures Partnership 2008:ii). This chapter follows the general steps of the Open Standards by outlining the basic steps that you should take once you have decided to start a PHE project or perhaps refine an existing one. **If you are starting a PHE project for the first time,** all sections of this chapter should be useful. **If you already have a conservation project running and are interested in adding on a population and/or health component,** we suggest that you pick the most relevant sections where you think your project needs strengthening.

There are five main steps (known by a variety of names) that make up the project management cycle:

1. **Define.** Conceptualizing the project vision and context;
2. **Design.** Planning actions and planning monitoring;
3. **Implement.** Implementing actions and implementing monitoring;
4. **Analyze/adapt.** Analyzing data, using the results and adapting the project; and
5. **Share.** Capturing and sharing learning (Conservation Measures Partnerhsip 2008, Worldwild Fund for Nature 2007)

PHE project cycle management is often difficult to standardize because it covers three different disciplines. The five steps should help you integrate these disciplines by demonstrating where and when the PHE approach requires specific considerations. Keep in mind that these are the general steps a project goes through and that they are not necessarily discrete or linear. Often projects go back and forth between steps throughout the life of the project cycle (see figure 4). Applying adaptive management standards means that you will continue to revisit steps in the cycle to continue learning and integrating what you have learned into your project strategy.

Note that this manual only covers the first two steps because these are the main steps that differ substantially from other conservation projects.

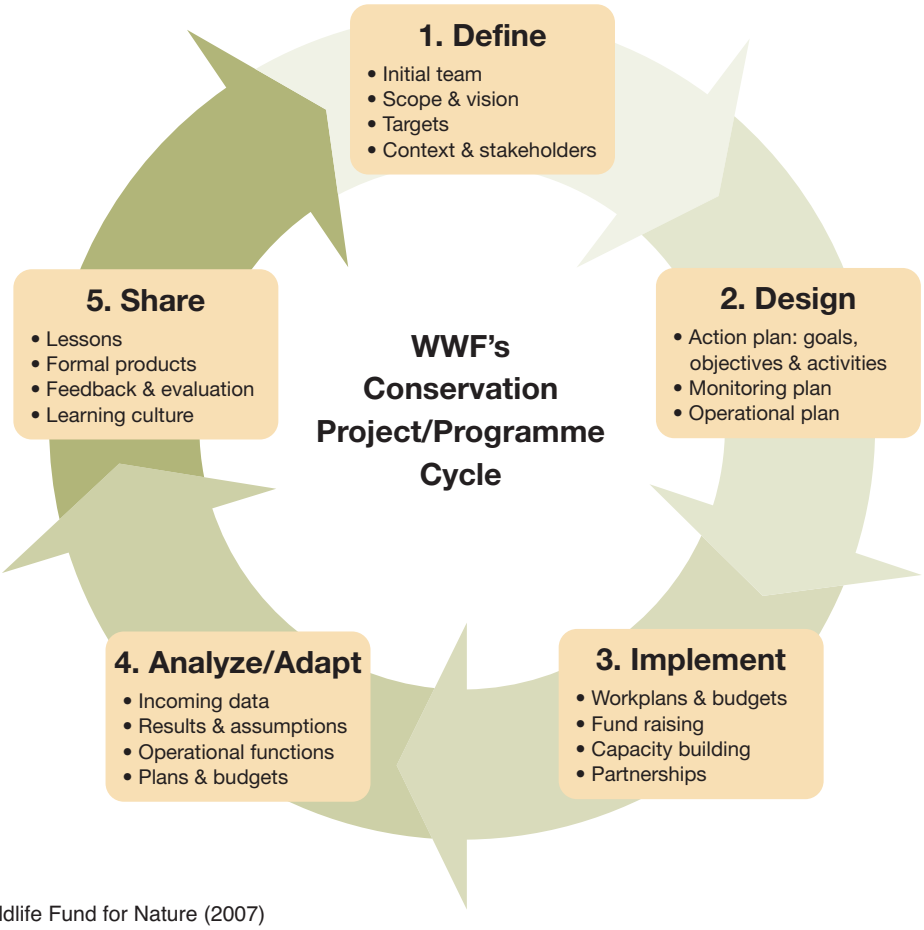
5.1 Step 1: Define the project

5.1.1 DEFINE SCOPE AND VISION

One of the first tasks in beginning any type of project is to define the scope and vision of the project. A project's scope is generally a broad

[2] CMP comprises the African Wildlife Foundation, The Nature Conservancy, the Wildlife Conservation Society and the World Wide Fund for Nature/World Wildlife Fund. Collaborators include The Cambridge Conservation Forum, Conservation International, Enterprise Works/VITA, Foundations of Success, The National Fish and Wildlife Foundation, Rare, the World Commission on Protected Areas and the World Conservation Union/IUCN.

FIGURE 4. GENERAL PROJECT CYCLE



Source: World Wildlife Fund for Nature (2007)

statement of the parameters within which the project will work. These parameters are often related to a geographic area or thematic approach.

In the following pages, we use the WWF Khata PHE project in Terai, Nepal, as a case study. Where possible, we have used existing statements from WWF-Nepal's strategic plans and project documents and have worked with staff to retrofit and refine statements when necessary.

The scope for the Khata project:

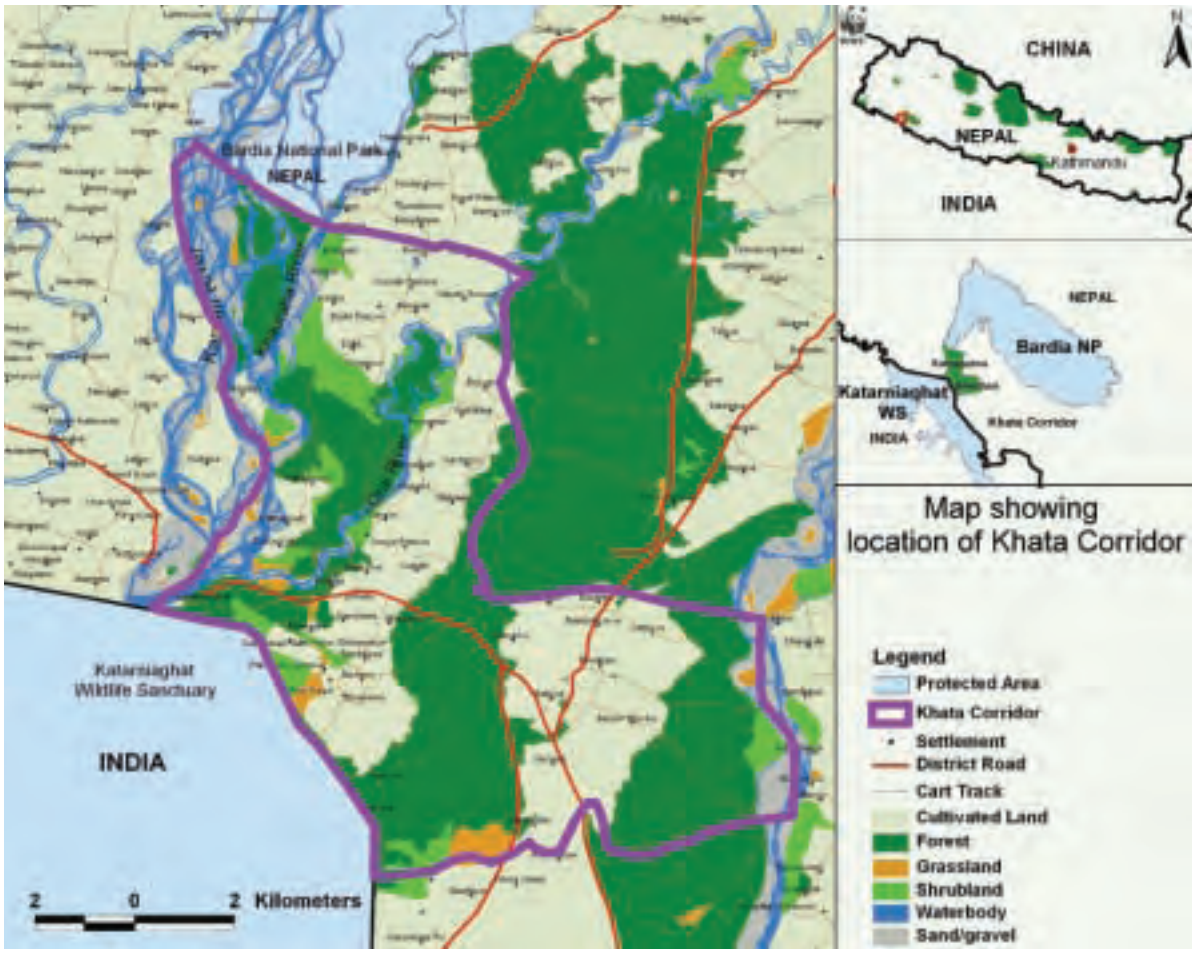
- Biodiversity conservation, community health, population and livelihoods in the Khata corridor of the Terai Arc

The vision for the project is the desired "condition that the project is working to achieve" (Morrison 2006:1). A vision should fit within your organizational mission statement and should be relatively general, visionary and brief.

The vision statement from the same Khata PHE project:

- A globally unique landscape where biodiversity is conserved, ecological integrity is safeguarded and sustainable livelihoods of people are secured.

In PHE projects, it is particularly important to create a clear scope and vision statement from the beginning. The projects often involve partner organizations from different sectors and very different organizational missions. Therefore the vision and scope of the project must be defined very clearly and continually revisited in order to keep all organizations on task.



Source: World Wildlife Fund-Nepal

5.1.2 IDENTIFY POTENTIAL PARTNERS

Once you have an idea of what you want to achieve, you need to think about who will help you do it. You will want to partner with a health organization to ensure that you have the necessary health-specific skills. An evaluation of WWF's PHE projects in eight countries found that a common denominator of success in all sites was effective collaboration with health partners (Carr 2008). Where possible, you should build a partnership with the local MoH office (or equivalent). Working with the MoH not only brings health-specific skills to the project, but also increases the likelihood of sustainability of project activities and helps integrate the project into the national health framework. Indeed, in some countries health work can only be done by working in collaboration with the MoH. It is important, however, when creating a partnership with the MoH, to determine its organizational capacity first. The MoH may not have the skills or resources, including funding, to implement the activities in your proposed project. In such cases, you may need to look for an additional health partner who can help build the capacity of the

In Kiunga, Kenya, WWF has partnered with MoH (in the photo), local government, AMREF (regional NGO), Family Health International (international NGO) and local community organizations.

The PHE project in Lobeke, southeast Cameroon, partners with health and environment clubs in local schools. Students pass on new PHE messages to fellow students and their own families.

MoH and implement the project in the interim (D'Agnes, H. 2008).

You may also want to partner with one or more other organizations that can bring specific skills, resources, networks or access to the project. (See Box 17 for an example.) You need to consider the advantages and disadvantages of each of the different types of potential partners (see Table 8). You also have to consider the operational costs of successfully coordinating among a variety of partners and if this coordination cost will help or hinder the project's ultimate outcomes.

More organizations in a partnership may mean more skill sets and resources but may also mean more cumbersome decision making, less flexibility and reduced ability to adapt to the site conditions. (See Margoluis (2007) for more information on the advantages and disadvantages of different partnership structures.) It is important to clearly structure the roles and responsibilities of the organizations, particularly with larger partnerships. Partnerships for PHE projects have additional challenges when the organizations are

BOX 17. DIFFERENT PARTNERS BRING DIFFERENT RESOURCES: PHE PARTNERS IN LOBEKE, CAMEROON

The WWF PHE project in Lobeke, Cameroon, works with a wide variety of partners, each of whom brings different skills and resources to the project:

- **District Health Office (under the MOH) —** advises on priority interventions for the project and provides training for the project's Community Health Scouts
- **Salapoumbé Private Catholic Hospital —** advises and provides training on key community-level interventions in preventive health through the project's Community Health Scouts
- **Association L'Auto-promotion des Populations en l'Est Cameroon —** contributes to the implementation of activities, especially in indigenous Baka communities
- **Traditional birth attendants —** bring specific skills; the project provides them with additional training and equipment
- **Traditional healers —** have specific community-level health skills; the project helped them increase their effectiveness by helping them to form an association and join a national network of traditional healers. With training that the project facilitated through the district Health Officer, traditional healers now collaborate on prevention of certain diseases
- **COVAREF (Community-Based Wildlife Resource Management Committee),** consisting of about 15 villages and a population of 2000 people) — provides the Community Health Scouts and may eventually be a source of funding for community health activities through safari hunting revenues
- **Health Clubs in primary and secondary schools —** help get PHE messages to youth and their families.

Source: Defo (2008)

TABLE 8. GENERAL ADVANTAGES AND DISADVANTAGES OF POTENTIAL PARTNERS

Partner	Potential Advantages	Potential Disadvantages	Examples
Local Organization	■ Contribute to sustainability ■ High level of local knowledge, social ties ■ High level of commitment to area ■ Possibility of leveraging local resources (human and financial)	■ Greater need for capacity building ■ Greater need for continuous oversight and monitoring	■ BUCUDO (Budongo Forests Community Development Organization) partnered with the German Foundation for World Population in Uganda *(Budongo Integrated Forest Conservation and Reproductive Health Project)*
National Organizations	■ Access to greater funding sources & networking ■ Provide greater technical support ■ Can replicate project in other areas	■ Less knowledgeable about local conditions ■ Fewer local social connections ■ May have many projects and therefore less focused ■ May be difficult to persuade them to work in remote areas with low population density	■ CEMOPLAF (Center for Medical Guidance and Family Planning) partnered with World Neighbors in Ecuador *(Integration of Population and Environment)*
International Organizations	■ Access to greater funding sources & networking ■ Provide greater technical support ■ Can bring in successful experiences, approaches and tools from other countries	■ Less knowledgeable about local conditions ■ Fewer local social connections ■ May have many projects and therefore be less focused ■ More expensive	■ Save the Children (international NGO) partnered with WWF Philippines *(Healthy Communities from Ridge to Reef Project)*
Government Offices, such as MoH	■ Increase sustainability ■ Access government funding ■ Facilitate working within policy framework ■ May know local organizations, can help find local partner ■ Provide additional technical assistance ■ Lend legal support if needed	■ Communities may be weary of working with government offices ■ Government funds may have restrictions ■ Government funding may be limited or delayed ■ MoH may not be willing to increase activities in remote areas with low population density	■ The National Family Planning Program and District Health Office in Tanzania partnered with the JGI *(Tacare project)*

— continued

TABLE 8. GENERAL ADVANTAGES AND DISADVANTAGES OF POTENTIAL PARTNERS continued

Partner	Potential Advantages	Potential Disadvantages	Examples
Private sector	■ Access to greater funding or leveraging of physical facilities/ resources ■ Access to additional technologies and expertise (often specialized) ■ Opportunity to work with volunteers and enhance their capacity through assistance on medical procedures	■ Different organizational structure, approach & mission ■ Logistics often have to be organized by the conservation partner ■ May not have the funds to travel to remote sites to conduct medical missions	■ WWF-India partnered with highly qualified volunteer medical doctors in Lagga Bagga, Terai, India to do health camps for villages *(Healthy Communities, Healthy Ecosystems project)*
Universities	■ Access to specific technical skills ■ Often work on short term contract basis ■ Provide assistance on monitoring and evaluation	■ May not be able to provide additional support	■ Path Foundation, Philippines, partnered with University of the Philippines Marine Science Institute to conduct and analyze biophysical surveys of coral reefs *(IPOPCORM project)*

Source: Margoluis (2007)

from different disciplines. They may experience difficulties due to the differing priorities of each organization due to separate missions, differences in the vocabulary and technical terms the organizations use, the timelines and methods for monitoring and evaluation and problem-solving approaches. In addition, organizations with different sets of expertise may not have the time to develop trust that facilitates mutual understanding.

A recent WWF study (see Margoluis 2007) on PHE partnerships offered these suggestions specifically for organizations interested in creating a PHE partnership:

- **Partnership structure:** Work with organizations that have complementary inputs. Be aware of how the size and scale of your partner organizations will affect the project.
- **Fundraising:** Fundraise jointly when possible and increase the capacity of smaller organizations to raise their own funds. Look for multiple sources of funding that can provide flexibility for project functioning and sustainability for project continuity.
- **Joint planning:** Organizations should work together to establish a common vision, mission and activities for the project. This should be done in the planning phase and then jointly revisited throughout the project cycle in order to adapt it as needed. Joint planning can contribute to the creation of an integrated project, rather than the creation of a project with parallel activities.
- **Capacity building:** Budget time and resources for capacity building for all partners. Make the training realistic according to the local resources. Create opportunities for staff members to learn about all aspects of PHE projects. If possible, arrange for staff from each discipline to visit field sites with ongoing integrated PHE activities to ensure understanding of PHE linkages.

- **Staff:** Pay attention to the personal dynamics among staff members and facilitate the development of constructive personal relationships. Offer work incentives to staff as much as possible. Find out what kind of benefits are most appreciated and fundraise to make those possible.
- **Communications:** Budget resources for start-up partnership meetings for all members. Establish regular, frequent meetings with all organizations in the partnership and field trips to the project sites to observe issues in the field first hand. This is particularly important to create cross-sector learning, which is necessary for the integration of the project. Be flexible about the timing and attendance of meetings. Develop mechanisms to maintain transparency about the project and its funding among partner organizations and stakeholders.
- **Support:** Make local government agencies a champion for the cause and build the capacity of the community to be their own spokespeople. Work to build support for the PHE approach and the individual project from inside the organizations to outside in the field.

Structuring the implementation team

After you create your partnership, decide how to structure your implementation team. PHE projects generally follow one of two structures:

WWF staff and highly qualified volunteer medical doctors meet to discuss project progress in Lagga Bagga, India. A few PHE projects have partnered with the private sector to deliver health services.

1. **Sector-specific teams.** Teams comprising individuals with similar skill sets — for example, one team of individuals skilled in maternal health, a different team with skills in water management. The separate teams coordinate when working on a project together.
2. **Multidisciplinary teams.** The other option is to create a multidisciplinary team with all the skill sets working together on a single team. Under this structure, the individual with maternal health skills and the individual with the water management skills, even if from different organizations, would work on the same team.

BOX 18. BUYING INTO PHE IN THE PHILIPPINES

In Roxas municipality on the island of Palawan, Philippines, WWF partnered with the Local Government Unit (LGU) in its PHE work, with technical assistance from Save the Children. The project started slowly but rapidly accelerated after a visit to Save the Children and PATH Foundation Philippines PHE project sites in Iloilo, Cebu and Bohol. This visit provided valuable insights and inspiration on PHE linkages and activities for Roxas officials, community members and project staff. After the visit, the project quickly gained momentum with the creation of a Roxas PHE technical working group, passing of several local ordinances focused on family planning and reproductive health and funding for coastal resources management by the Municipal Government of Roxas (World Wildlife Fund 2006b). Elsewhere in the Philippines, the IPOPCORM project took mayors to Thailand for PHE leadership training at the Thai Population and Community Development Association. This was a very important component of IPOPCORM's success at getting municipal level policy change in favor of PHE and created several PHE champions among the mayors.

Source: De Souza (2008); D'Agnes, L. (2008)

Logo of the PHE project in Roxas, Philippines. The project vision "Philippines environmentally-aware communities and families with quality health services for meaningful progress" was developed by project stakeholders.

Community meeting in Tsimelahy, Ankarera Bevilany District in the Spiny Forest of Madagascar to discuss their PHE project. It is important to meet regularly with community stakeholders.

Regardless of how you choose to create a partnership, it is important to create a structure that allows for learning within the partnership itself. If you choose to have separate teams managing different sectors of the project, you need to be aware that you may create two parallel projects rather than one integrated one. You should begin your partnership by jointly planning the project activities, even if the project is already under way and you are adding another component. You then need to ensure that the staff members of each component coordinate their activities. This can be facilitated through regular meetings for the staff, particularly those working in different sectors. You should also enable cross-sector site visits. These visits allow the health staff to see the natural resource management activities and vice versa, for example. All staff members should understand each component of the project. When integration itself is a goal, it is particularly important to ensure that the staff can communicate the message of integration. Even when integration itself is not a goal, however, it is still important to create a well-coordinated project. It also helps to have one person coordinating the activities from the different sectors to continue to ensure crossover learning (D'Agnes, H. 2008). However, different models have been used in PHE projects — each with advantages and disadvantages (Kleinau et al. 2005). You have to decide what is best for your specific project.

5.1.3 CONDUCT STAKEHOLDER REVIEW

Part of the planning process involves determining who will have an interest in the project or may be affected by it. One way to do this is to conduct a stakeholder review. Stakeholders are those "individuals, groups or institutions that have an interest in or will be affected by your project's activities" (Conservation Measures Partnership 2008:11). See Schmeer (1999) for further information on how to conduct a stakeholder review and analysis.

Because PHE projects often have components from several disciplines, there may be stakeholder groups with very different interests, playing very different roles in the project (see Table 9 for an example of the different stakeholder groups and the roles they can play). For example, the women in a community may be interested in the reproductive health component of the project while the men could be more interested in the natural resource component. Or you may find the MoH very interested in working on the project to

TABLE 9. COMPARING STAKEHOLDERS IN "SUCCESSFUL COMMUNITIES FROM RIDGE TO REEF" PROJECTS IN KENYA AND MADAGASCAR

Kenya Stakeholders & Roles	Type	Madagascar Stakeholders & Roles
Community Members: Main targets of project; receive health services & PHE outreach **Community Health Groups:** Receive and disseminate health services & information **Traditional Birth Attendants:** Offer reproductive health services	Community	**Community members, particularly those that are source of environmental threats (e.g. miners). This includes men, women, youth:** Main targets of project, receive health services and natural resource management opportunities. To be successful & sustainable, need to have their involvement & support
District Health Office: Provides health services, sanitation, health education, regulatory services. **Lamu District Hospital:** Clinical health care, management & preventive education **District Development Committee:** Reviews & coordinates development proposals in the district	Government	**Ministry of Environment, Water and Forests (regional level), Ministry of Health and Family Planning (commune, district, region levels):** Emphasize the legal aspect of PHE activities at the level of community, ensure sustainability & give technical support to PHE activities
AIDS, Population, and Health Integrated Assistance Program (APHIA II), Coast Province: Provides integrated health services as part of a national program	Large-scale related programs & projects	**Other environmental or health stakeholders (e.g. Projet Ankilimanika Couloir Antseva) and other projects & programs (e.g. SanteNet):** Give support to project in achieving the PHE vision, in the face of field level challenges (e.g., lack of infrastructure). Also involved in joint field mission and cost-sharing activities
African Medical Research Foundation (AMREF): Provided family planning services & health education provision in first three years of project. **Family Health International (FHI):** Promotes prevention of HIV/AIDS, STIs, cares for those affected. Improves access to quality reproductive health services and health of women & children	Nonprofit organizations	**ASOS (Action Santé Organisation Secours):** Implements some of the project PHE activities & sells PHE vision at grassroot level. Sends out PHE field team. Provides field data for communication of the project results & impacts
Lamu County Council: Coordinates, channels development in the county **Heads of Villages:** Advocate for community issues and rights & marshal communities toward supporting or opposing projects	Local civic authority (local government)	**Local authorities (e.g. village chiefs) and leaders:** Key elements in term of support to dissemination of PHE messages & implementation of activities

Source: Weru (2008), Rasoarinoro (2008), Carr (2008)

expand its coverage into an area. You need to consider the wide range of potential stakeholders, how many there are and the power and influence each group wields and how these will change throughout the different stages of the project. The relationships among the stakeholder groups and to your organization will affect the way that the stakeholder groups will be involved in the project. You also need to be mindful of any groups that may oppose the project. For example, are there any groups that will be worse off as a result of the project? Are there groups who oppose it on religious or cultural grounds? See Box 19 on religion and family planning.

5.2 Step 2: Design the project

Once you have determined that a PHE project is an appropriate intervention at the proposed project site, you need to design the project in more detail.

One-horned rhinoceros in the Terai Arc, Nepal. One of the conservation impacts expected from the WWF PHE project in the Terai is the stabilization of tiger, rhino and elephant populations.

5.2.1 DETERMINE PROJECT IMPACTS ON TARGETS

During the evaluation of WWF PHE projects, we found that most had developed clear statements about how their projects would measurably improve conservation targets, but had not done the same for their health targets. These projects found that most key conservation results took a long time to achieve, whereas key health results could be reached more quickly. This creates a challenge when determining project goals. WWF is just beginning to pilot methods for dealing with this challenge. Until proven methodologies are developed, we suggest that you consider determining the long-term changes that you expect in your project's conservation targets (as already done by most projects), and two shorter-term changes that you expect in your project's conservation and health targets (with population included as part of health).

Project impacts on conservation targets for the ongoing example project, the Khata PHE project in Nepal:

- Restoration of the forest of the Khata corridor
- Stable populations of tiger, rhino and elephant

Possible shorter-term project impacts on health targets:

- Improvement in the livelihoods and well-being of local communities, particularly community health

5.2.2 DEFINE NEEDS, OPPORTUNITIES AND THREATS

It is important to understand the conservation threats at the proposed project site, as well as the health and population needs, to determine what interventions would be most appropriate. (For more detail on how to determine conservation threats, see Morrison 2005). In order to evaluate the health and population needs, you should collect socioeconomic data for the communities in the project area. Some of this information may have been collected already, for example, by a local MoH office for the district or via the most recent DHS (Demographic and Health Survey). (See the Appendix for more information on potential data sources.) It is also important to gather population and health data specific to your project site, which may have different geographical boundaries than sites for which data are already collected for other purposes, such as the DHS. Also, if you plan to undertake family planning, several of the key indicators you will want to measure require that you conduct a household survey of women of reproductive age, which should be specific to your target area. Project site information is generally collected via surveys, focus groups and interviews. This

BOX 19. RELIGION AND FAMILY PLANNING

In many countries, there is opposition to family planning on religious grounds. In addition, religious leaders are often male and represent the elite; women's private interests and thoughts are often quite at odds with those of male religious leaders (Engelman 2008). But while some religious groups oppose family planning, others are tolerant of it and are sometimes very supportive. Communicating to people about family planning through faith networks can be a powerful way to promote acceptance of family planning.

Projects that work in areas that are strongly Catholic often offer fertility awareness methods as an option. The major method under this approach is the standard days method which is made easier by the cyclebead, which helps women to identify the days when they are likely to be fertile. For women who are breastfeeding, the lactational amenorrhea method is also an option. The Appendix provides references on these methods.

Working with church-run health programs can be especially important where they have a wide network of clinics and hospitals. For example, in the North Kivu area of Democratic Republic of Congo, JGI's PHE project works closely with clinics run by the Catholic church. The clinic staff understand the need to improve the health of mothers through child spacing and willingly support and participate in family planning initiatives. Nuns provide information on all family planning methods to clients but provide access only to the traditional methods. Clients who request nontraditional methods are referred to a government-run clinic. This ensures that women are able to access the methods they want while maintaining good relationships with the church (Macharia 2008).

Islamic scholars have interpreted the Quran in light of family planning. In *Family Planning in the Legacy of Islam,* the late Dr. Abdel Rahim Omran concluded that Islam would be sympathetic to family planning if spacing pregnancies and limiting their number made the mother more physically fit, the father more financially at ease, and children more healthy and better raised, particularly as these actions do not violate any prohibition in the Quran or in the Prophet's tradition *(Sunnah)* (Roudi-Fahimi 2004). Training materials have been prepared for use with Muslim leaders (for example, Mason et al. undated). In the Philippines, a fatwah was developed on family planning that helped promote the use of modern and traditional methods (Assembly of the Darul-Ifrah of the Philippines, 2003).

information can then serve as the baseline data for your project. Information collected generally includes the following data:

- **Household demographic and socioeconomic information.** This includes such information as the number of people per household, their sex and their ages. It also includes their occupations, earnings and assets. You will probably have to develop a village and household sampling strategy.
- **Population/health information.** This is very specific to your project objectives but can give you baseline information on what services already exist, if any; what the main health issues are in the area; and what local health and family planning needs are. For example, it can tell you how many people are using family planning, what barriers exist, and why people may choose not to use it. In Kiunga, Kenya, focus-group meetings in a pre-project survey revealed that family planning was women's number one health need. It is important to assess needs of all major sectors of the community, including women, youth, children, any indigenous groups and disadvantaged groups, such as landless people.

Socioeconomic survey in Kiunga Marine National Reserve, Kenya. Socioeconomic surveys provide data on health, family planning and livelihood needs, all of which are important for planning PHE projects.

- **Attitudes/knowledge on health, environment, population.** This information will also be specific to your project target area, and it can give you an idea of how people may receive project services and the level of resources you need to devote to education and social mobilization. The information also includes cultural and religious beliefs about health and family planning — especially if the area is strongly Muslim or Catholic. (See the Appendix for resources on religion and PHE projects.)

5.2.3 ASSESS THE POLITICAL ENVIRONMENT

In addition to understanding the threats to the project, you should also understand the political and policy context in which the project operates. This includes policies operating at the local, national, regional and international level that are related to the goals of your project or could affect the ability of the project to achieve these goals. Policies can provide opportunities for the project, but they may also be barriers. In addition, opinions of politicians can strongly influence projects, particularly for family planning.

Ideally, a PHE project should try to fit within the framework of an existing policy, rather than trying to create something new. It is important to make sure you are tying into nationally sanctioned approaches. In addition, working within an existing framework offers a number of benefits: It allows the project to access financial and political support and build on existing policies, thereby potentially having an impact at a greater scale. If the policy environment is not conducive to a PHE project at one level, it may be possible to use the approach at another level (see Box 21). And in some cases PHE projects have contributed to creation of effective new policies — some single-sector and some integrated.

Finding an appropriate policy framework can be challenging as PHE projects rarely fall into just one policy realm. But many projects have been able to use this to their advantage and employ a variety of frameworks to support their efforts. For example, the PATH Foundation Philippines was able to fit within an existing food security framework developed by the government and then link IPOPCORM to an existing integrated coastal management agenda promoted by DENR (the Philippines Department of Environment and Natural Resources) and DA-BFAR (the Department of Agriculture-Bureau of Fisheries and Aquatic Resources) (D'Agnes and Margoluis 2007). Policy areas that PHE projects may be able to work within include

- Environment: agriculture, natural resources, fisheries, resource governance, protected areas, land, water, conservation

The Third National PHE Conference in Tagaytay, Philippines, in 2008 held many discussions on ways to scale up PHE through policy interventions at different levels.

BOX 20. HOW MANY PEOPLE DO PHE PROJECTS GENERALLY SERVE?

There is no ideal population size. In most of the eight projects in WWF's evaluation, the size of the population ranged from 12,000 to 22,000 people, though the Mozambique project was much larger with 125,000 people (Carr 2008:65). The number of people you serve depends greatly on your level of funding. Be cautious about the amount of funding you accept for the population and health components if you don't have the capacity to manage the funds and implement the project at a larger scale. If you are starting a PHE project, we recommend that 25,000 people is a good upper limit at the beginning; you can scale up later once you have built some experience.

BOX 21. THE POLICY AND POLITICAL ENVIRONMENT FOR PHE IN MADAGASCAR AND THE PHILIPPINES—TWO CONTRASTS

In Madagascar, President Marc Ravalomanana takes a personal interest in population, poverty and environmental issues. He has supported the creation of new protected areas through the "Madagascar Naturally" vision that acknowledges Madagascar's rich biodiversity and its critical role in the country's future economic growth. Madagascar's Poverty Reduction Strategy emphasizes public/private partnerships in which good governance, economic growth at a larger scale and expansion and improvements of social services are key. The President has also made a commitment to ensuring improved access to family planning. The Madagascar Action Plan contains goals for achieving both conservation and health, including family planning. It is considered one of the best platforms in Madagascar for adopting PHE as an integrated approach. The National Family Planning Program for 2005-2009 spells out how reductions in the total fertility rate to balance demographic increases contribute to more effective national economic development. Madagascar has also recently started a major decentralization process (Gaffikin 2007). There are good pilot PHE programs. Conditions are ripe for very significant scaling up of PHE if integration can be achieved at the regional level from which implementation will be driven.

In the Philippines, the Catholic church exerts strong influence, and at a central level there is vigorous opposition to family planning from both the central government and the President. There are no family planning laws, although legislation is pending: The Responsible Parenting and Population Control Act of 2005 would make it the policy of the state to "guarantee universal access to safe, affordable and quality reproductive health care services," including family planning. The law is controversial and vigorously opposed by the Philippine Catholic church. Yet the Philippines has strong decentralization of power to LGUs (local government units). After observing PHE issues on the ground, many LGUs have become strong PHE supporters, providing funding, staff and political support for PHE at the community level (De Souza 2008). LGUs are able to do this because of their decentralized decision-making and funding allocation powers. PHE is also expanding in the Philippines through people power movements with support from NGOs.

Both countries have faced strong challenges but have also had good enabling environments at certain levels and have been able to move forward on PHE by taking advantage of opportunities.

- Health: HIV/AIDS, malaria prevention, child nutrition, maternal health, family planning, water and sanitation, food security
- Other: poverty, education, indigenous rights, disaster mitigation, migration, climate change

5.2.4 BUILD PHE STRATEGY

Once you have an idea of the factors that influence your project's target and the potential stakeholders of your project, you need to understand the relationships among them. One way to do this is to create a conceptual model, a visual representation of the relationships. (See Margoluis and Salafsky (1998) for more information on conceptual models.) A conceptual model is usually created through a group process that includes project staff and a predetermined group of stakeholders. Some projects choose to involve entire communities in this process, while others choose to limit it to select groups of stakeholders.

Creating a conceptual model for a PHE project can be fairly complicated as there are generally many more links involved than in a single-sector project. For the same reason, it is important to have a very clear conceptual model, showing only relevant information. Creating a model can help you to create an integrated project, rather than a project with parallel activities, by helping demonstrate the relationships among different factors. For this reason, a model can also be an important educational tool for the project, particularly to demonstrate these links to stakeholders. It is often easier to understand the integration among population, health and the environment when it is visually demonstrated.

Figure 5 shows the conceptual model for the Khata project in Nepal. The targets that the project is aiming to affect are listed on the far right of the model: livelihoods and well-being of local people, forest and species. You can see the different factors that affect the targets by following the lines from each target back to the initial driving factors on the left side of the model.

5.2.5 CARRY OUT AN ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT

As conservationists, we do not normally do environmental impact assessments of our own projects: We assume they will always have positive impacts on the environment. But as we have seen, there is potential for PHE projects to have negative social and environmental impacts (for example, in the water provision case in Ethiopia where children under the age of five were significantly more malnourished). A social and environmental impact assessment should therefore be carried out. Tools such as USAID (2007b) are useful for this. The assessment should not only identify positive and negative risk factors and potential impacts, it should also help to identify ways to mitigate any potential negative effects. The assessment may indicate, for example, that family planning is an essential element of the project to empower women and avoid accelerating pressure on natural resources; or it may help determine appropriate locations for wells to avoid overgrazing.

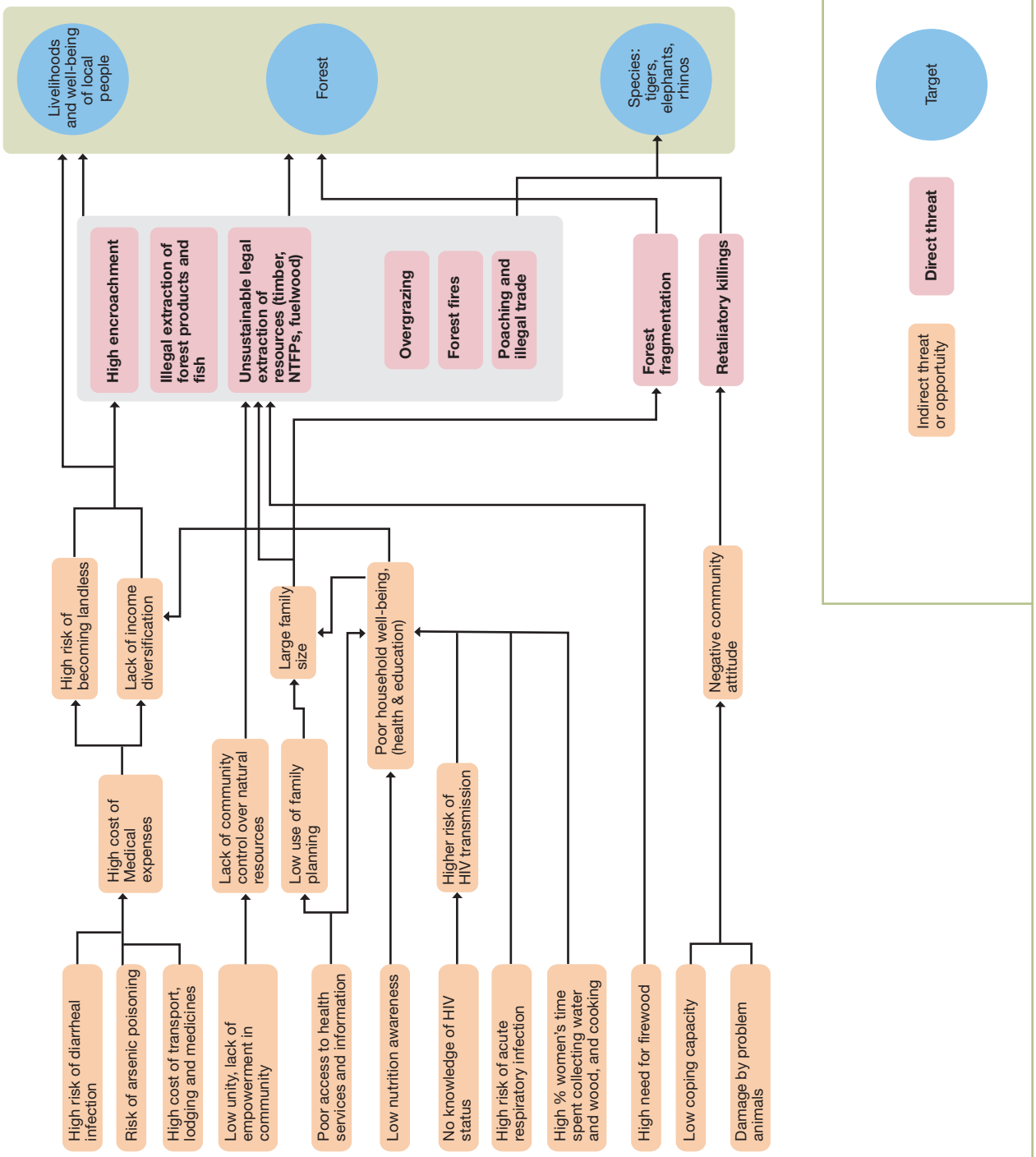
5.2.6 DEVELOP THE ACTION PLAN

Create goals and objectives

After conducting a threat assessment and environmental impact assessment, collecting socioeconomic data and creating a conceptual model, you should have a more complete picture of the population, health and environmental site conditions and, therefore, more accurately determine how your organization could have a positive impact. The next step is to create an action plan for your project that incorporates the project's specific goals and objectives.

Goals are statements that encompass what you hope to achieve in the long term through the project. They are linked to your conservation targets and reflect the impacts you would like to achieve. Goal statements should be linked to targets, impact-oriented, measurable, time limited and specific (Conservative Measures Partnership 2008: 32).

FIGURE 5. EXAMPLE OF A SIMPLIFIED CONCEPTUAL MODEL: KHATA PHE PROJECT, NEPAL



Source: Wor d W d fe Fund-Nepa

The Goal for the Khata PHE project in Nepal

- By 2020, conserve the ecological connectivity of the Khata corridor and its wildlife and improve the health and livelihoods of the Khata communities who manage the corridor through the improvement of health facilities and increased access to family planning services in the community.

You then need to create objectives that detail how you are going to achieve these goals. Objectives reflect the change in direct and indirect threats (and opportunities) that your project will achieve. Objectives should be specific, measurable, appropriate, realistic and timely. (See Mentor Training Resources (2007) for more information on creating objectives.)

In Quirimbas National Park, Mozambique, one project objective is to improve food security by reducing crop damage; here rope fences are treated with chili powder to deter elephants.

To ensure clarity of purpose in your integrated project, it is helpful to develop at least one objective for each of the core pillars of PHE that your project will undertake. In the following Khata example, you will see one objective for each of the main issues the project is trying to address: basic health, HIV/AIDS, family planning and reproductive health, natural resource management and livelihoods and habitat restoration.

Objectives for the Khata Project:

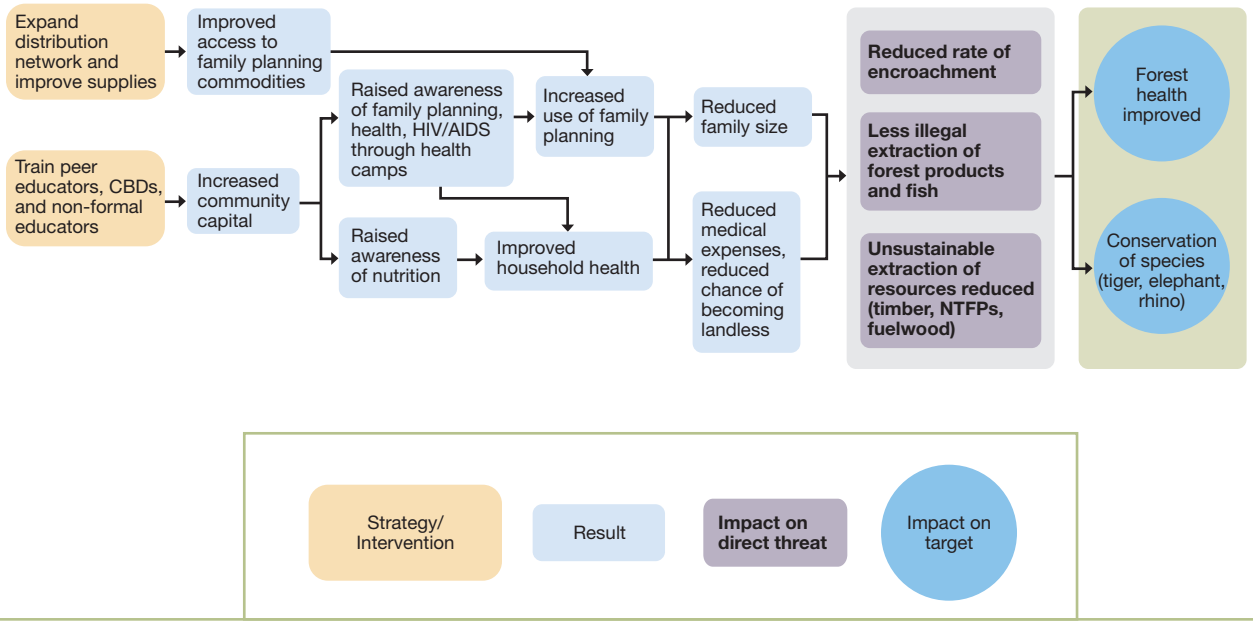
- By 2008, to improve the quality of health services for communities of the Khata corridor and reduce health costs through the provision of antenatal care and immunizations in the health clinic and increased health outreach.
- By 2012, to create an HIV/AIDS awareness campaign and host at least five different community events highlighting HIV/AIDS awareness.
- By 2010, to improve access to family planning products and information through the training of 30 female community health volunteers and improving the community-level commodity distribution system.
- By 2015, to improve community-based natural resource management and livelihood outcomes in Khata communities through the introduction of a community-managed, nontimber forest product livelihood enterprise.
- By 2020, to ensure restoration of the Khata forest corridor by community forest user groups through the reduction of firewood collection and removal of cattle from the forest.

You should also consider creating integrated objectives to allow you to strive toward integration where it matters most and to measure key benefits of integration for your project. Integrated objectives allow you to demonstrate to your organization, donors and partners that applying the PHE approach can lead to outcomes that are more than the sum of their parts by improving opportunities for leveraging funds for your project, building new partnerships and ensuring the sustainability of your project. In practice, it can be challenging to include an integration objective because it tends to make work plans more complex. Donors or partners may be resistant to inclusion of such objectives because they are funding or operationalizing sector-specific objectives of the work plan. We encourage you to discuss the idea with your partners and donors.

Some examples of integrated objectives are given below; the type of integration reflected by each objective is indicated in parentheses. (To see definitions of these terms, see section 2.8.1 of this manual.)

- Increase the involvement of local stakeholders in WWF's priority conservation activities through integrated PHE communications and visible

FIGURE 6. A RESULTS CHAIN FROM THE KHATA PROJECT IN NEPAL



Source: World Wildlife Fund-Nepal

partnerships on addressing stakeholders' high priority health concerns. (entry point)

- Develop a sustainable PHE partnership that decreases the per capita cost of health service delivery to the remote communities of X Reserve. (other operational efficiencies/ partnerships)
- Improve human nutrition while decreasing human-wildlife conflict through agricultural improvements and improved land management. (conceptual linkage)

Integration should also be addressed through factors such as clearly conceptualizing how the factors are integrated in the project, developing a communications plan that reflects this integration, selecting activities, developing partnership agreements, selecting the implementation team and planning daily operations of staff.

Determine activities

Once you have developed clear goals and objectives, you need to determine what activities you will implement to achieve them. (See Chapter 3 for types of health and population activities.) One way to think through the impacts of your proposed activities and determine if they can achieve your objectives is to create results chains. Results chains look similar to conceptual models but focus on a single chain in the model. These chains visually depict how people believe their interventions will lead to the desired change. PHE projects are highly complex in their assumptions about the linkages between each of the sectors. Results chains are an effective tool for evaluating the assumptions that you are making in your project plan by allowing you to see the assumptions between each link and ensure that they lead clearly to longer-term objectives related to reducing threats to your conservation target.

Figure 6 shows a results chain from the Khata project in Nepal. In the chain, the project assumes that by training peer educators, it will build community capital, which will allow it to raise awareness of family planning, health and HIV/AIDS, which it assumes will lead to an increase in the use of family planning methods and reduce family size. The project also assumes that building community capital through the training of peer educators will raise awareness on nutritional requirements, which it assumes will

BOX 22. THE LINK BETWEEN GIRLS' EDUCATION AND POPULATION

Research shows that the more education women receive, the fewer children they have on average and the healthier and better educated those children are (Population Council and Rockefeller Foundation 2005). First pregnancies also occur at an older age. All of these factors contribute to a reduction in population growth. Yet girls in remote areas often have very poor access to secondary education, and sometimes even primary education. This is one of the reasons why natural population increase is often very high in remote areas with high biodiversity. Some PHE projects also have girls' education projects that enable girls from poor families to go to school (JGI's project in Gombe, Tanzania; and WWF's projects in Kiunga, Kenya; Bardia, Nepal; Spiny Forest, Madagascar; and Quirimbas, Mozambique). In addition to their impact on population growth, girls' education projects are extremely popular with communities. They often change community attitudes in favor of conservation, provide a communication channel for PHE messages and help empower girls and women in the management of natural resources.

A WWF girls education project on Mafia Island, Tanzania, helps girls go to secondary school and learn about PHE linkages. Girls education results in smaller families with healthier and better educated children.

increase household well-being, which it assumes will reduce family size and also lead to income diversification. And finally the project assumes that reducing family size and diversifying income will lead to the desired changes in threats (and opportunities) that affect the project's targets: reduced encroachment, less illegal extraction of forest products and fish and reduction of unsustainable extraction of resources. If any one of these assumptions along the chain does not hold true, the activities may not have the desired effects.

Being able to visualize the linkages among factors in a results chain will also help you select an activity that will maximize the added value of combining conservation, health and population. (See section 2.5 on adding value in PHE projects.) You should consider activities that are not necessarily directly related to health or environment but could increase the impact of your activities. For example, livelihood or income-generating activities can improve the general well-being of a family, can contribute to the sustainability of the project and may directly be linked to the success of the PHE intervention (Carr 2008). Literacy messages and programs for young girls and women can also have a positive impact on project outcomes by empowering and creating more opportunities for women. For example, in a WWF project in Lagga Bagga, India, one of the project messages, "a healthy mind means a healthy body," has resulted in more children going to school.

Build capacity

One of the most important activities in a PHE project is building the capacity of your organizational partners and individuals in the community in which you work. Capacity building plays an important role in PHE projects because of the range of activities that are generally involved. Rarely does one organization have the full capacity to manage and implement all the

BOX 23. THE IMPORTANCE OF LIVELIHOOD AND FOOD SECURITY ACTIVITIES

It has become clear to many in the PHE community that we cannot do health, family planning and environment activities in isolation, if communities do not have reliable livelihoods and food security. People cannot be healthy and care for their environment if they do not have enough to eat. This was a major theme that emerged at a 2007 Population, Health and Environment for Development International Conference in Ethiopia. Many projects that have integrated health and family planning also have livelihood and/or food security components. For example, the WWF project in Lagga Bagga, India, which used health services to barter community buy-in to conservation activities, introduced a revolving fund for those dependent on forest resources for their livelihood, so that they could develop alternative economic activities. In Nepal, the Khata project promotes several livelihood activities including rearing of stall-fed livestock, fish farming and commercial production of fruit juice made from forest plants by community forest user groups. In the Philippines, Mozambique and Kenya, WWF is working with fishermen to create marine no-take zones to replenish fish stocks; and in Kenya women earn income by making handicrafts from flip-flops washed up on the beach. The Mozambique project has a major focus on improving agricultural production through problem animal control and improved farming techniques. In Madagascar income-generating activities have included vegetable gardening, mat making and sculpture carving. In Dzanga Sangha, Central African Republic, the Ba'Aka people generate income by taking tourists net hunting and demonstrating medicinal plants in the forest. And in Cameroon, the Community Based Wildlife Resource Management Committee is generating revenue through controlled sport-hunting.

population, health and environment components of the project. And while each organization does not necessarily need to be able to implement each component, the individuals in each organization must understand the role of each component in the project. This is a key component to creating an integrated project, rather than a project with parallel conservation and health/population activities. Organizations need to ensure that individuals from the different sectors have the opportunity to learn about the different sectors and why integration is important. This can be achieved through activities such as cross-sector site visits; joint visioning, planning, and project design; and regular staff meetings. Building capacity, both in organizations and in individuals, increases the chances that project activities can continue even when outside support declines. See D'Agnes and Margoluis (2007) and Jugnarain (2006), for more information on capacity building.

In Dzanga Sangha, Central African Republic, the Ba'Aka people generate income by taking tourists to see traditional net hunting and demonstrating medicinal plants in the forest.

Family Planning Action Session on Green Island, Roxas, Philippines, demonstrates linkages among marine resources, land and population growth.

To emphasize the links, a volunteer is asked to stand on a paper representing an island. Another joins him, followed by others. Eventually they are crowded out. The sessions are participatory and fun, helping break down inhibitions around sensitive subjects.

5.2.7 ENCOURAGE PARTICIPATION AND COMMUNICATE YOUR MESSAGE

In addition to participating in the project, you also want stakeholders to *understand* the project — the goals; the links between the P, H and E; and why the integration of these links is important. A greater understanding of these links can increase participation in the project. For example, in Cambodia, in the Cardamoms Conservation Landscape, land-use teams for the CI project were made up of peer educators for the project's health interventions. These volunteers, often community leaders, had a more holistic perspective on the project. They understood the importance of land-use planning, including setting aside important conservation areas, in terms of community health because they were involved in both aspects. This increased understanding also led to increased participation by the community members (D'Agnes, H. 2008).

In addition, the more people who are participating in the project and understanding how their environment affects and is affected by health and population factors in the community, the more likely the project activities will be sustainable. An evaluation of PHE projects found that one of the major ingredients for project sustainability was "[a] broad-based understanding of PHE linkages shared by WWF staff, partners and locals that leads to changes in behavior commensurate with the PHE message" (Carr 2008:11). An integrated message may also encourage people to participate who might not otherwise participate in a conservation project.

The first step is to develop an integrated communication concept that creates a simple and locally appropriate communications theme around which that all your messages revolve. This should be done in collaboration with your key partners so that it is owned by all implementers in the project (D'Agnes, H. 2008). Also, if you are working with local organizations, this will ensure that the message is locally appropriate. Once this overarching message is developed, you can start developing the strategy and the discrete messages that you will use on P, H and E.

Many projects employ social marketing to encourage participation in the project. They "sell" ideas, behaviors and attitudes to benefit the target audience or community. For example, in the Budongo Integrated Forest Conservation and Reproductive Health Project in Uganda, video shows and radio programs increased awareness of family planning methods and increased demand for commodities. You can also use strategic communication to promote positive health outcomes. For example, the IPOPCORM project in the Philippines trained outreach worker/extension agents, who were then able to identify and mentor community leaders to serve

In the Spiny Forest, Madagascar, WWF partnered with the Andrew Lees Trust and ASOS to produce radio programs on local PHE issues. Communities listen to the programs on solar-powered radios.

In Khata, Nepal, people were too inhibited to ask about sensitive health subjects in outreach sessions. The project posted suggestion boxes in villages so that people could ask anonymously.

as role models, peer educators and change agents for desired improvements in health, agriculture and conservation practice (D'Agnes and Margoluis 2007).

How your PHE message is received will depend greatly on several factors. An evaluation of PHE projects by Carr (2008) found that the PHE messages that were the most effective were

- Interactive (for example, the family planning action seminars that Save the Children runs for couples before they marry in the Philippines are very interactive and fun and generate good participation from men as well as women)
- Appropriate for education level (for example, the soap operas in the local dialect in the Spiny Forest in Madagascar, where ASOS and WWF partnered with the Andrew Lees Trust to make radio programs around real-life PHE issues by distributing solar powered radios in villages with low literacy levels, where communities formed listening groups)
- Interesting (for example, people being able to see themselves in a video, as was done by the JGI in the Tacare Project in Tanzania on HIV/AIDS and for the Ba'Aka people in Dzanga Sangha, Central African Republic, where videos were made on malaria and sand fleas)
- Appropriately targeted to their audience (for example, a family planning message for mothers about immunizing their children)

You may need to create innovative ways to communicate. In a WWF project in Palawan, the Philippines, after staff invited the wife of the mayor to go on a tour of other PHE projects, they gained access to more political support. In the PHE project in Khata, Nepal, project staff asked community members what health topics they would like the program to cover in outreach sessions. But people were often too inhibited to ask about issues that concerned them, particularly for sensitive subjects such as reproductive health and STIs. The staff therefore installed suggestion boxes in villages, where people could request topics anonymously. This served a very useful purpose at the beginning. Now the project has removed much of this stigma, and people are speaking out much more freely; so the suggestion boxes are no longer used much. Box 24 outlines how integrated messages helped to communicate with fishermen about famiy planning in Kiunga, Kenya.

5.2.8 DEVELOP A SUSTAINABILITY PLAN

In order to increase the sustainability of the project, you should follow guidelines for general sustainability of conservation projects, such as planning for sustainability from the beginning of

the project. But for PHE projects, it is also important to

Involve and build capacity of local government offices. Local government offices, such as the MoH, can often take over some of the roles and responsibilities of outside organizations in the project. For example, you need to ensure regular delivery of commodities like contraceptives, and medical supplies like vaccinations. The local MoH office may be able to take over some of these roles, but you need to ensure that they have the capacity to do so See Box 26.

Create local partnerships. Local organizations can offer support in a variety of different ways in the project. For example, in the Philippines, the IPOPCORM project worked with sari-sari stores (small, privately owned convenience shops or kiosks) to distribute family planning information and products.

Create cost recovery mechanisms within the project. Many projects have enterprises that can

BOX 24. COMMUNICATING FAMILY PLANNING TO MUSLIM FISHERMEN IN KIUNGA, KENYA

In this remote area on the northern coast of Kenya, many Muslim men are opposed to family planning. Yet during project design, many women stated that family planning was their number one health need. The project has found that the most effective way to communicate with the men about family planning is to use messages linking economic activities with family size. A male MoH nurse on the mobile clinics reports that he talks to fishermen about trends in the size of the fish catch now and when their fathers were fishing. He asks how many sons they want and what this will do to fish stocks if they are all fishermen. They also discuss the importance of children's education and then the value of child spacing and smaller families for education and economic reasons. He reports significant changes in men's attitudes after these sessions.

Source: Mwau (2005)

BOX 25. THE POWER OF COMMUNITY HEALTH VOLUNTEERS

Community volunteers — men, women and youth — play a huge role in most PHE projects. In Khata, Nepal, the project started by training a man and a woman from each village in first aid because of tiger attacks. The project went on to train enthusiastic youth peer educators from 32 villages in family planning and reproductive health, and they conduct sessions with their peers in villages. Their training covers the links between family planning and forest management, so they can deliver integrated messages to members of community forest user groups. Many projects train CBDs who dispense contraceptive pills and condoms in villages. In Madagascar some CBDs also maintain village pharmacies where they sell basic medicines — an important service in these remote communities. In many PHE projects in the Philippines, CBDs run local sari sari stores, selling condoms and pills and offering advice to clients. They also participate in fisheries management committees and other natural resource management activities such as beach cleanups. Community midwives already play an important role in remote communities. Many projects provide them with additional training and equipment to improve their knowledge and practices, and they often act as CBDs. In Cameroon, the PHE project works with the local schools' health and environment clubs, and student volunteers organize workshops on health issues such as HIV/AIDS. In all these projects, community volunteers are critical for project success and sustainability.

BOX 26. BUILDING SUPPORT IN UGANDA

In Uganda, Conservation Through Public Health worked closely with the district medical officer to sensitize him on the importance of integrating family planning using the PHE approach, and also on the gaps in service provision in the local health centers, where there were not enough staff to provide services to the women who were coming for family planning. The district medical officer was supportive of this effort. With regular contact and by involving him in the project (for example, inviting him and members of his staff to participate as trainers for CBDs, and by involving him in the project's stakeholder meetings), he has now become a supporter of the approach as a more cost-effective way to mobilize resources for family planning in his district. It is hoped that in a few more years he will be able to staff the health centers fully.

Source: Kalema-Zikusoka (2008)

financially contribute to the projects, such as small-scale community loan systems or a nontimber forest product enterprise that reinvests a certain percentage of profits. In the WWF Khata project in Nepal for example, forest user groups were already well established with a revolving fund. Revenue from use of forest resources is deposited in the revolving fund and used to pay operating costs for the community-run health clinic (Carr 2008).

Create as simple a project as possible (minimize complexity). As far as possible, create a project that will not be dependent on outside resources once the initial phase ends. The communities should have the necessary capacity to continue the project without extensive outside consulting or expertise. For example, if you are introducing a livelihood enterprise, be sure it is either a simple project or an activity with which the communities are already familiar. This is why it is generally better for environmental NGOs to focus on community-based family planning (which is preventive) rather than getting involved in curative health service delivery which is more complicated, expensive and difficult to sustain both in terms of quality and time frame.

Find multiple suppliers of health/family planning products. In many PHE projects, the supply of family planning products and other medicines is inconsistent. But in order to be sustainable, people must have constant access to these products. For example, in Roxas, the Philippines, the community demand for family planning products is high, but delivery has been irregular. The project recently found another supplier that may help solve this issue (Carr 2008). In Lagga Bagga, India, communities find that they often only receive a few days of medicine and are unable to continue treatments because of lack of supplies at local shops and pharmacies (Carr 2008).

Motivate volunteers. Motivating people to work on activities after the project has ended is vitally important. Most PHE projects do not pay CHVs (community health volunteers) because sustainability beyond the life of the project would be an issue. Instead, they often look for other incentives for CHVs. These include

In Khata, Nepal, community forest user groups contribute revenue from sustainable use of forest products to a revolving fund. The fund helps cover the costs of the community clinic.

- **Equipment,** such as bicycles, backpacks, tee shirts and other clothing (for example, in the Spiny Forest in Madagascar, WWF and ASOS have provided CBDs with backpacks and sandals).
- **Sale of contraceptive commodities** for a small fee by CBDs, usually introduced through a social marketing program. (See the Appendix for resources on social marketing and behavior change.) This could be a challenge if the national policy is to provide commodities free of charge. However, even when this occurs (as it has in Madagascar) the CBD can still charge a small fee to clients that only covers transportation costs but still provides the CBD with an incentive. (This has been approved by the government in Madagascar, and is currently the approach being taken by all social marketing projects in that country.)
- **Access to other income-generating activities.** When Madagascar introduced a free family planning commodity policy, the Spiny Forest project worked with CBDs to develop other activities, including vegetable gardening, village pharmacies and small businesses to sell basic products like sugar, rice, soap, salt and oil.

BOX 27. MODELS OF SUSTAINABILITY

PHE projects in the WWF portfolio have used different models to increase their sustainability:

Community-generated funds and empowered institutions in Nepal. In Nepal, the project is using existing community institutions (the Community Forestry Coordination Committee and its member community forest user groups); building capacity in communities for health and family planning as CBDs, first aiders, peer educators, improved cookstove technicians, etc.; and using community generated funds from natural resource use to run the clinic with an existing revolving fund. (WWF plans to phase its support out in the next few years, leaving the health program self-sustaining.) WWF also tapped into the MoH system (e.g. paying fees for an official health inspector to inspect the community clinic on Saturdays to ensure that it is meeting standards; building on and complementing existing MoH services, rather than setting up duplicative processes from scratch (e.g. supplementing family planning commodity supplies if CBDs run out, but not replacing the delivery service of the MoH).

Trust funds in Cameroon and Central African Republic. Currently these programs are heavily dependent on donor funds, but a trust fund is being established for the Sangha Trinational Landscape which in five years may be able to take over the costs of running the health programs on a sustainable basis (Blom 2008).

Local government resources and enabling policies in the Philippines. The project is working with the LGU to enhance family planning outreach and services (the LGU has allocated increased funding for family planning and passed local ordinances); training community volunteers; catalyzing establishment of marine sanctuaries; and providing technical support and training for management (the LGU has passed an ordinance for the declaration of these marine protected areas and has also allocated budget for the implementation of the management plans).

Volunteer doctors in India. WWF's project in India focused on bringing in volunteer doctors to conduct health camps in Lagga Bagga. Although this health program was very popular with the communities and catalyzed much community buy-in to conservation, WWF did not have an exit strategy. Now it is partnering with the MoH, which is participating in the health camps. The hope is to hand more responsibilities over to MoH in the next couple of years so that WWF can move on to other activities.

- **Status and recognition within the community for their knowledge and responsibility.** Elevated status can provide strong motivation for women and men. Providing CBD agents with training and refresher training often can confer this status, as can community celebrations for CBDs. The IPOPCORM project organized yearly competitions among CBDs for the best decorated outlet. The community voted; and at the end of the competition (which lasted several days), there was a celebration for the top three winners.
- **Refresher training.** It is important for community workers to receive refresher training from time to time in order to remotivate them, ensure they are still following correct procedures, and update them with any new developments.

  It is also important to bring in new volunteers from time to time if previous ones drop out. For this reason and to help maintain the motivation of volunteers, it is important to have a health partner in place.

5.2.9 DEVELOP A MONITORING AND EVALUATION PLAN

An important part of designing a project is developing an M&E (monitoring and evaluation) plan. This plan will help you determine the impacts of your project, whether or not it is achieving its objectives and, if not, how to adapt it appropriately. Although the M&E plan often is created later, it is better to create one during the design phase so that you can gather appropriate data throughout the project and adapt it as necessary. See Margoluis and Salafsky (1998) for more detailed instruction on how to create an M&E plan.

Monitoring and evaluation for PHE projects can be fairly complicated for several reasons. The scale at which the data must be collected and the timeframes to reflect change in the data are often very different for biological and health data. Biological data tend to cover a larger geographical area and require a longer time period in which to show actual change. The system that you design will need to reflect these different data types. Yet creating a good PHE project M&E plan is imperative for three reasons:

- Due to the complexity of PHE projects, understanding how factors affect each other over time is key to helping you continuously refine your strategy and attain project goals;
- Current and potential donors need to see your strategy working and how their funds are spent; and
- Although PHE projects have been implemented for several decades, conservation practitioners and PHE donors are still hesitant to support integrated projects and PHE interventions; but strong monitoring and evaluation will help promote further support and interest in PHE.

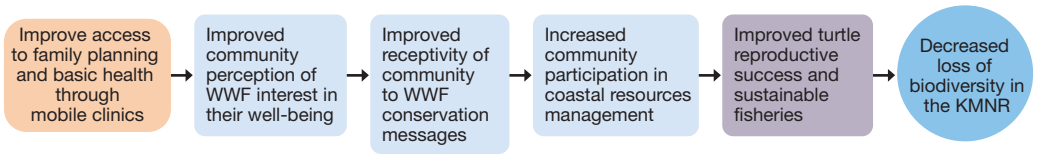
There are a number of lessons that the conservation community has learned that should be kept in mind when designing a PHE M&E plan:

- **All project partners need to agree on the monitoring plan —** even if partners are informal or indirect recipients of project funding (such as a local government health partner). Creating a cross-sectoral M&E plan is likely to be one of your greatest challenges. The plan is time-consuming and must be revised regularly, such as when government health policies and practices change.
- **Selecting several standardized indicators will help you learn lessons from beyond your project site and contribute to the growing body of knowledge about PHE.** The health and population sectors are highly advanced in the development of standardized indicators, while the conservation sector is still in the early stages of standardization. The Guide to Monitoring Population-Health-Environment Programs (Measure Evaluation 2007) provides technical guidance on standard indicators for PHE and is available online.
- **Integrated indicators are not necessary, but without them, strong conceptual models and results chains are critical.** Over the last decade, PHE practitioners have held intense discussions about the value of integrated indicators; organizations have experimented with integrated indicators; and reports have

BOX 28. WHEN INTEGRATED INDICATORS WORK—WWF-KIUNGA, KENYA

The experience of the World Wildlife Fund's PHE Project in the KMNR (Kiunga Marine National Reserve), Kenya, provides a good example of how a single-sector indicator can be transformed into an integrated indicator that helps to measure the added value for conservation of the integrated PHE approach. In 2005 WWF-Kiunga developed a conceptual framework that demonstrated its assumptions about the linkages between PHE interventions and conservation outcomes. A single results chain in the framework showed the following assumptions:

FIGURE 7. A RESULTS CHAIN FROM KIUNGA MARINE NATIONAL RESERVE



After identifying the assumptions, WWF realized that a useful indicator for measuring integration would be "percent of marine turtle nests reported by community members." In the three years following the implementation of the integrated strategy, WWF saw this new indicator increase from 50 to 72 percent, thereby helping to support the theory that the integrated strategy helped WWF achieve conservation results.

To produce even stronger evidence of the value of an integrated approach, WWF also could have compared this indicator from one community where it used an integrated strategy to another community where it only used a single-sector approach. Alternatively, WWF could have done a low-cost qualitative review to determine how community members who had received benefits from the health components had changed their attitude and behavior toward specific conservation efforts.

attempted to resolve whether or not such indicators need to be used. Agreement has not been reached on whether integrated indicators are vital or useful. WWF has found that the most effective way to measure integration is to carefully document assumptions about PHE linkages through building conceptual models and results chains from the beginning of a project, attaching relevant indicators to results and then, through project implementation and good monitoring, testing the results chains (like hypothesis testing) that are most relevant to core assumptions and priority conservation threats. At the same time, we encourage PHE projects to pilot one or two integrated indicators. You may find that in your local context this helps you better monitor your efforts, and you will be contributing to the larger body of learning on integrated indicators in PHE.

- **Select PHE "value-added" indicators to help you demonstrate to local stakeholder and donors the unique benefits of your approach —** particularly community development and social benefits. This new category of indicators, having recently emerged in PHE, is documented in Guide to Monitoring Population-Health-Environment Programs (Measure Evaluation 2007). Depending on the assumptions behind your project and your intervention choices, these indicators may, for

example, demonstrate the unique benefits of targeting women, men and youth through PHE integration. Example indicators include the "average household consumption of firewood in target area" and the "percent of men who support the use of modern contraception for themselves or partners."

- **Set aside a relatively larger budget for M&E than you would for other projects** due to the complexity of PHE projects and the fact that the PHE field needs to build more evidence to institutionalize support for PHE. Up to 10 percent of your total budget is a standard amount to spend on M&E. Consider spending at least 5 to 10 percent or more.

5.2.10 DEVELOP AN OPERATIONS PLAN: WORK PLAN, BUDGETING AND FUNDING

Work plan

After you have determined what you are going to do, you need to create a work plan to lay out a general timeline for your activities and the proposed budget that you will need for these activities. A work plan is essentially a fairly detailed calendar of several months of project activities. See Mikov et al. (2007) for more information on how to create a work plan.

There are two important things that a conservation organization should keep in mind when developing a PHE work plan. The first is that annual PHE work plans and budget must be developed jointly with formal and informal partners and before the start of the year. A WWF study on PHE partnerships found that in several projects staff members noted that a joint work plan was one of the major factors that led to a successful project. However, it was very common for project partners to skip this step or delay the step for many months after a work year started due to challenges in matching schedules, communication issues and the logistical problems associated with the remote locations of many project sites.

The second thing to keep in mind is that a practical annual work plan must be developed by coordinators at the field level where it will be used. This plan must include notes that help partners and field coordinators communicate with each other and with donors.

Given the diversity of sectors involved in PHE and the often politicized dialogue about population issues, it is common for PHE donors to have unique formatting preferences, requirements for special wording or requests that a specific language be used in drafting reports. A work plan generated under these restrictions may not be so useful in this format for the staff who rely on it for technical guidance. A separate work plan may help meet these needs but requires that careful notes are kept showing how the two plans relate to one another.

In addition, it is common for a conservation organization undertaking PHE to be simultaneously engaged in multiple projects in a given target area. In such a case, the conservation organization usually maintains a master work plan to ensure good coordination. The PHE work plan is just one subcomponent of this plan. This can be managed by keeping careful notes on how the more detailed PHE work plan fits into the master plan.

Woman gathering seaweed on the coast of a small island in Palawan, Philippines. Often PHE projects need to incorporate livel hood activities as well as health care and family planning.

Finally, considering the wide variety of sectors involved in PHE, partners are likely to use different timelines for their annual project cycles. This big hurdle must be overcome through logistical planning among partners during the work planning stage, development of a shared schedule of deadlines and note-taking on key dates by each partner.

Flexibility is important in PHE funding, since needs vary between communities. In Lagga Bagga, India, additional funding was found for handicraft making, in parallel with health and environment activities.

Budget

Once a work plan is completed, you need to prepare a budget with the estimated costs for each activity. Both the work plan and the budget should be reviewed on a regular basis. PHE projects should plan on spending more on communications among partner organizations and for monitoring and evaluation, than they would on a single-sector project. In addition, they need to sufficiently plan for technical support of the project.

Funding

Once you have determined how much money you will need to fund the project, you need to think about how you will raise the funds. Fundraising for PHE projects poses several unique advantages and disadvantages. Although organizations may have potential access to a wider variety of resources — funds in conservation, in health and in population — in reality, many donors prefer single-sector projects.

Working in an alliance may be helpful to organizations trying to fundraise for PHE projects for several reasons. The first is simply due to the variety of organizations in the alliance. Having a conservation organization in an alliance, for example, may strengthen the argument in a proposal for funds from a conservation donor. Equally, having a health organization may lend credence to an application to a health donor. In addition, organizations in an alliance can use their connections in the alliance to leverage additional funds. For example Carr (2008) notes that in the Philippines the WWF PHE project leveraged an additional $21,638 in the form of money, time, labor and equipment from partners. In Madagascar, PHE funding from USAID helped WWF's partner organization ASOS acquire $26,350 from national and international sources for its work in the Spiny Forest (Carr 2008). This leveraging is particularly important and useful for small organizations working with larger, international organizations that may have access to greater financial sources. Improved monitoring, to demonstrate impacts of the projects, may improve the ability of the organization to leverage funds.

One of the most important characteristics for PHE funds is flexibility. In his study of WWF projects, Carr (2008) noted that the flexibility and level of support of the funding was directly related to the success of the project. The needs at the project site may vary according to site and may change over time. If the funding is restricted to activities based on a narrow definition of family planning, for example, you may not be able to address the important root factors at the site, such as high child mortality rates.

We hope that this manual is helpful to you, whether you are starting up a PHE project or refining an existing one. We encourage you to share your results and lessons with others so they can learn from them and so that we can continue to build up a body of knowledge about effective PHE approaches. By undertaking a PHE project, you are helping to improve people's well-being and conserve biodiversity while contributing toward solving some of the world's biggest human and environmental challenges.

APPENDIX

A Selection of PHE Information and Tools

The following is a list of information that conservation organizations may find useful in creating and implementing PHE projects. Please note that the categories are not necessarily discrete. Many of the resources, particularly the web pages, have information on a range of information related to population, health and the environment. If the resource has information related to a specific sector, such as water and sanitation, we have listed it under that section rather than under the general PHE information sector. You should read through the entire listing to determine what resources may be relevant to your need and explore the websites to ensure that you find all related resources. They are listed in alphabetical order within each section.

General PHE information

ARD and USAID. September 2005. Biodiversity conservation: A guide for USAID staff and partners. USAID, Washington, D.C.
http://www.usaid.gov/our_work/environment/biodiversity/usaid_pubs.html
This is a guide on principles for effective biodiversity conservation that should be integrated into USAID programs. Chapter 22 includes information on human population and health, including HIV/AIDS and how to link health interventions to biodiversity conservation.

D'Agnes, L. and C. Margoluis. 2007. Integrating population, health and environment projects: A programming manual. USAID, Washington, D.C.
This manual aims to guide project designers through the steps essential to an integrated project. It is aimed at those individuals who are interested in designing projects that use integrated PHE approaches to promote balanced and sustainable development. It was designed with such a need in mind using evidence from programs in Madagascar, the Philippines and other countries where integrated approaches to development have been explored and brought to scale over the past decade.

Environmental Health Project
http://www.ehproject.org/phe/phe_toolkit.html
This toolkit website for the Environmental Health Project (sponsored by USAID) has information on design/planning tools, implementation tools, monitoring and evaluation tools and advocacy and networking tools. Many of the PHE resources that are on the Internet are listed on this site.

Environmentally sound design and management capacity building for partners and programs in Africa: Environmental guidelines for small-scale activities in Africa, 2nd edition. USAID, Washington, D.C.
http://www.encapafrica.org/egssaa.htm
These guidelines were developed to help USAID and its partners meet the challenges posed by the need for ESD (environmentally sound design) in small-scale activities. The book is intended to be an introduction to ESD, both in general and specific sector activities. It covers small-scale activities at the community level, longer-term development activities, integrated conservation and development activities and emergency relief and disaster rehabilitation activities. It has sector-specific guidelines on: agriculture and irrigation, community-based natural resource management, construction and ecotourism, among many others.

The Hesperian Foundation
http://hesperian.org/publications_download_EHB.php
The Hesperian Foundation is a nonprofit publisher of books and educational materials that help people take the lead in their own health care and organize to improve health conditions in their communities. Hesperian books cover a range of different health topics in a variety of different languages.

Margoluis R., S. Myers, J. Allen, J. Roca, M. Melnyk, and J. Swanson. 2001. An ounce of prevention: Making the link between health and conservation. Biodiversity Support Program, Washington, D.C.
http://www.worldwildlife.org/bsp/publications
This document discusses the integration of population and health into conservation projects by creating a framework for integration and a review of the major integrated projects.

Mogelgaard, K. and H. D'Agnes. 2007. Global health e-learning course on population, health, environment.
http://www.globalhealthlearning.org
This is an online course on PHE within USAID that is available for all audiences, including those outside of USAID staff. There are also a number of courses available on topics such as antenatal care course, HIV basics and tuberculosis basics, among others.

Population Action International
http://www.populationaction.org/Publications/Index.shtml
PAI (Population Action International) is an independent policy advocacy group working to strengthen political and financial support worldwide for population programs grounded in individual rights. PAI's website hosts numerous publications on topics related to population.

Population and Health InfoShare
http://www.phishare.org/
Population and Health InfoShare is an electronic library of material supplied by partner organizations working in reproductive and child health, HIV/AIDS and population.

UNICEF
http://www.unicef.org/ffl/index.html
UNICEF. n.d. "Facts for Life." UNICEF, New York, N.Y.
This fact sheet has updated information on the major causes of childhood illnesses and death, including HIV/AIDs, emergencies and accidents.

U. S. Agency for International Development
http://www.usaid.gov/our_work/global_health/
This is the webpage for the USAID Global Health page. This program supports "field health programs, advances research and innovation in selected areas relevant to overall agency health objectives and transfers new technologies to the field through its own staff work, coordination with other donors and a portfolio of grants and contracts with an annual budget in excess of $1.6 billion."

Family planning and reproductive health

Bhattacharyya, K., P. Winch, K. LeBan, and M. Tien. 2001. Community health worker incentives and disincentives: How they affect motivation, retention, and sustainability. Basic Support for Institutionalizing Child Survival Project (BASICS II) for the U.S. Agency for International Development, Arlington, Virginia.
http://pdf.dec.org/pdf_docs/PNACQ722.pdf
This document reviews the experience with different incentives for CHWs (community health workers) and the effect of these incentives on retention of CHWs and the sustainability of CHW programs. The document reviews the types of incentives that are needed to motivate involvement, to retain CHWs once they have been trained and to sustain their performance at acceptable levels.

Community-Based Family Planning
http://www.communitybasedfp.org/start.cfm
The USAID Office of Population and Reproductive Health (PRH) through its PVO/NGO Flexible Fund, has compiled a virtual collection of resources and the best practical tools available for community-based family planning programs.

Cyclebeads
http://www.cyclebeads.com/
The Standard Days Method of family planning is made easier by the tool Cyclebeads. This webpage reviews information related to the Cyclebeads, including how to use the product.

Engender Health
http://www.engenderhealth.orgs/pubs
Engender Health aims to ensure that individuals have access to high quality reproductive health care and can make informed choices. This website provides references and resources on family planning, maternal health, counseling, informed choice and informed consent, improving clinical quality and promoting gender quality.

Extending Service Delivery
http://www.esdproj.org/site/PageServer
This program, funded by USAID, works to extend the delivery of reproductive health and family planning services to those most in need. This website offers information about best practices in integrated projects, community based programs and capacity building.

Family Health International
http://www.fhi.org/en/RH/Pubs/booksReports/CBD_DMPA_imp.htm
"The Provision of Injectable Contraception Services through Community-Based Distr bution: Implementation Handbook" can be downloaded at this website. It is a step-by-step guide that explains how to introduce injectable contraceptives, such as Depo Provera (or DMPA), into an existing community-based distribution program. Also from the organization's *Network* magazine is an article titled "Motivating Community-based Workers". Network: Vol. 19, No. 3, Spring 1999.
http://www.fhi.org/en/RH/Pubs/Network/v19_3/motivating.htm.

Information & Knowledge for Optimal Health (INFO) Project
http://www.infoforhealth.org
This web page is a "knowledge-sharing resource on family planning and reproductive health." It has links to products and services, publications, databases, e-learning, networks and communities and knowledge management. It also links to an excellent toolkit on the IUD at http://www.maqweb.org/iudtoolkit.

INFO Project. 2007 Family planning: A global handbook for providers. World Health Organization, Department of Reproductive Health and Research, Geneva, Switzerland and Johns Hopkins Bloomberg School of Public Health/ Center for Communication Programs, Baltimore, Md.
http://www.infoforhealth.org/globalhandbook
This is a comprehensive family planning reference for all levels of health care workers. It is the successor to *The Essentials of Contraceptive Technology,* first published in 1997 by the Center for Communication Programs at Johns Hopkins Bloomberg School of Public Health. In format and organization, it resembles the earlier handbook.

INFO Project. Population reports. 2005. Series M Number 19, special topics. Center for Communication Programs, the Johns Hopkins Bloomberg School of Public Health, Maryland.
http://www.infoforhealth.org/pr/m19/
This report reviews "selected innovations in contraceptives that are more effective, have fewer side effects, are less costly to manufacture and are easier to deliver than many current options," such as such as transdermal contraception, combined injectables and contraceptive implants.

Institute for Reproductive Health
http://www.irh.org/
The Institute of Reproductive Health aims to expand family planning options by making fertility-awareness methods readily available through high quality services and information. This website provides complete information on fertility-based family planning methods.

Institute for Reproductive Health
http://www.irh.org/SDM_Implementation/pdfs/SDM%20Factsheet.pdf
This fact sheet reviews two natural family planning methods — the Standard Days Method and the use of Cyclebeads. Also see http://www.usaid.gov/our_work/global_health/pop/techareas/familyplanning/standarddays.pdf for all the materials that you can order related to the Standard Days Method.

Intact Network
http://intact-network.net/
The International Network to Analyze, Communicate and Transform the Campaign against Female Genital Cutting/Female Genital Mutilation/Female Circumcision promotes research on the impact of interventions to reduce its prevalence, and facilitates the use of research findings to guide policies and programs. The website contains publications and tools.

The IUD toolkit
http://www.maqweb.org/iudtoolkit/
This webpage has "up-to-date evidence and best practices related to the IUD." The toolkit provides comprehensive, standardized, scientifically accurate and evidence-based information on the IUD. It has links to different documents, essential knowledge, policies and guidelines and service delivery related to the IUD.

JHPIEGO
http://www.jhpiego.org/resources/pubs/index.asp
JHPIEGO is an international nonprofit health organization affiliated with Johns Hopkins University that works with health workers by designing and implementing low-cost, hands-on solutions to strengthen the delivery of health care services for women and their families. JHPIEGO has a number of resources available on its website, in a variety of languages.

Population Council. 2008. The Balanced counseling strategy: A toolkit for family planning service providers. Population Council, New York, N.Y.
http://www.jhuccp.org/fpsuccess/resource/977
The balanced counseling strategy was developed to improve client—provider interaction in family planning provision. The toolkit includes a brief user's guide, a training manual, and three job aids or memory tools for use by the provider and client: (1) an algorithm; (2) palm-sized method cards with basic information about 16 family planning method options; and (3) method brochures for clients with more detailed information for the provider to use during the consultation and to give to the client at the end of the session.

Population Reference Bureau
http://www.prb.org/Articles/2006/StrategiesforSustainableDevelopmentCaseStudiesofCommunityBasedPopulationHealthandEnvironmentProjects.aspx
In partnership with NGOs in the Philippines, the Population Reference Bureau has produced five case studies that document approaches to the implementation of integrated PHE projects.

Reproline Family Planning
http://www.reproline.jhu.edu/english/1fp/1fp.htm
This webpage lists information on contraceptive methods, contraceptive advances, contraception for special circumstances and related family planning topics.

USAID: Deliver Project
http://deliver.jsi.com/dhome/resources/publications
This USAID webpage is the resource section for the Deliver Project. The resources section includes project publications and software tools, links to other organizations involved with logistics and public health, glossaries of terms and information for alumni of the Deliver Project's logistics training programs.

USAID Private Voluntary Fund PVO/NGO Flexible Fund
http://www.flexfund.org/
The USAID PVO/NGO Flexible Fund promotes the development of, interest in, and quality of community-based family planning and reproductive health services worldwide. This website has information on the current community-based family planning projects funded by the Flexible Fund and guidance on grantees. The resources section of the website also includes men's and women's survey questionnaires for community-based family planning projects.

Methods in PHE

MEASURE Evaluation
http://www.cpc.unc.edu/measure/publications/index.php
On this website you can find the "Guide to monitoring and evaluating population health, environment programs," which reviews the major potential indicators used in PHE projects and how to use them.

MENTOR Training Resources. Monitoring and evaluation network of training online resources.
http://www.cpc.unc.edu/measure/training/mentor
Through MENTOR (Monitoring and Evaluation Network of Training Online Resources), MEASURE Evaluation makes available free training materials and tools on M&E topics for use by researchers, program managers, trainers, policy makers, students and other public health professionals.

United Nations Statistics Division
http://unstats.un.org/unsd/demographic/sources/surveys/default.htm
This United Nations web page has links to a number of handbooks on how to conduct demographic and social surveys, such as "Designing household survey samples: Practical guidelines."

Country-level information

Demographic and Health Surveys
http://www.measuredhs.com/
The DHS (Demographic and Health Surveys) program has collected, analyzed and disseminated accurate and representative data on population, health, HIV/AIDS and nutrition in countries around the world, often over multiple years. Printed reports containing the results of these surveys can be obtained by contacting Measure DHS. This webpage also links to the DHS STATcompiler, an online database tool that allows users to select numerous countries and hundreds of indicators to create customized tables that serve specific data needs. STATcompiler accesses nearly all of the population and health indicators that are published in DHS final reports.

Ministry of Health
You can find out about local health conditions in your project area by consulting with local MoH (Ministry of Health) officials.

Population Reference Bureau
http://www.prb.org/datafinder.aspx
This Population Reference Bureau web page, data finder, accesses a database with hundreds of variables for countries throughout the world on topics such as health, environment, reproductive health and education.

United Nations Environment Programme — World Conservation Monitoring Center
http://www.unep-wcmc.org/capacity_building/index.html
This United Nations website has environmental data and additional information on where to access data for countries worldwide.

Water, sanitation and hygiene

Academy for Educational Development
http://www.aed.org/Publications/upload/Why-Sanitation-Matters-World-Water-Day-AED-2.pdf
This document by the Academy for Educational Development reviews information on sanitation as part of UNICEF's declaration of 2008 as the International Year of Sanitation.

Centers for Disease Control and Prevention
http://www.cdc.gov/safewater/
The webpage by the CDC has links to information about the agency's water quality intervention, the Safe Water System. The intervention consists of point-of-use treatment, safe water storage and behavior change techniques.

Conant, J. and P. Fadem. 2008. A Community guide to environmental health. Hesperian Foundation, Berkeley, Calif.
This illustrated guide aims to help health promoters, development workers, environmental activists and community leaders take charge of their environmental health. The chapters cover topics such as preventing and reducing harm from toxic pollution; forestry, restoring land, and planting trees; and food security.

Kar, K. and R. Chambers. 2008. Handbook on community-led sanitation. Institute of Development Studies, U.K.
http://sociolingo.wordpress.com/2008/06/25/free-resource-handbook-on-community-led-total-sanitation/
This handbook has been compiled as a source of ideas and experiences that can be used for CLTS (community led total sanitation) orientation workshops, advocacy to stakeholders, training facilitators and natural leaders and implementing CLTS activities. It is a resource book especially for field staff, facilitators and trainers for planning, implementation and follow-up for CLTS.

USAID: Hygiene Improvement Project
http://www.hip.watsan.net/page/107
This webpage reviews information regarding the Hygiene Improvement Project, a USAID-funded program that works to improve and sustain hygiene practices. The webpage has information regarding specific country programs and resources related to hygiene.

Water and Sanitation Program. 2007. Community-led total sanitation in rural areas: An approach that works. Water and Sanitation Program, New Delhi, India.
This document reviews CLTS (community-led total sanitation) endeavors in South Asia using an approach to sanitation problems based on the principle of triggering collective behavior change.

World Bank. n.d. The handwashing handbook: A guide for developing a hygiene promotion program to increase handwashing with soap. The World Bank, Washington, D.C.
http://www.globalhandwashing.org/Publications/Handwashing_Handbook.pdf
The goal of the handbook is to review what has been learned in the global public-private partnership for hand washing with soap. The book is intended for staff in government and development organizations charged with carrying out hand washing programs.

World Health Organization
http://www.who.int/household_water/en/
This webpage, by WHO, has information on household water treatment and the safe storage of water. This page has a link to the network that the WHO started in order to "accelerate health gains to those without reliable access to safe drinking water" and other water resources.

IEC

Academy for Educational Development
http://www.aed.org/
AED (Academy for Educational Development) is a nonprofit organization working globally to improve education, health, civil society and economic development. AED's website lists resources for social marketing and behavior change, among other things. This webpage has links to a new manual called "Going to SCALE". SCALE (System-wide Collaborative Action

for Livelihoods and the Environment) is currently being used in AED's longest-running environmental project, GreenCOM.

Family Health International
http://www.fhi.org/en/HIVAIDS/pub/fact/bcchiv.htm
This website, by Family Health International, discusses behavior change communication for HIV/AIDS, a tool for promoting and sustaining risk-reducing behavior change in individuals and communities by distributing tailored health messages in a variety of communication channels.

Johns Hopkins Bloomberg School of Public Health, Center for Communication Programs
http://www.jhuccp.org/
This website has links to a wide range of resources and publications related to health communication and behavior change. Most publications are free to individuals in developing countries. This webpage has links to information about religion and family planning as well as information specifically for the Near East.

Immunizations

The BASICS project
http://www.basics.org/publication.htm
The BASICS Project is a USAID-funded project directed toward preventing childhood deaths in the developing world and supporting activities to increase the use of child health and nutrition interventions by families, communities and health systems. The project's website provides resources on immunizations, acute respiratory infections, malaria and diarrheal diseases, among other topics.

Global Alliance for Vaccines Initiative
http://www.gavialliance.org/about/in_partnership/index.php
The Global Alliance is a partnership of public and private-sector resources that focuses on improving child health in the poorest countries by extending the reach and quality of immunization coverage within strengthened health services. Their website has information for organizations looking to receive support from them.

World Health Organization
http://www.who.int/mediacentre/factsheets/fs288/en/index.html
This World Health Organization site reviews basic immunization information, including the history and benefits of vaccines. There is also a fact sheet on sexually transmitted diseases.

Infectious disease, sexually transmitted disease and HIV/AIDs

Disease Control Priorities Project
http://www.dcp2.org/main/Home.html
The Disease Control Priorities Project is an ongoing effort to assess disease control priorities and produce evidence-based analysis and resource materials to inform health policy making in developing countries. This website gives access to a number of publications related to health throughout the world.

International HIV/AIDS Alliance. 2008. Mainstreaming towards universal access: What international policy-makers and donors can do to increase and improve AIDS mainstreaming. International AIDS Alliance, U.K.
http://www.aidsalliance.org/custom_asp/publications/view.asp?publication_id=309
This report deals with how policy and funding systems at national and international levels help or hinder mainstreaming at the community level. The report is based on qualitative research conducted in Burkina Faso, Cambodia, India and Zambia and involves interviews with more than 100 people from more than 80 organizations.

Oglethorpe, J. and N. Gelman. 2007. Fact sheet on HIV/AIDS and the environment: Impacts of AIDS and ways to reduce them. World Wildlife Fund, Washington, D.C.
http://www.ehproject.org/PDF/phe/hiv_environment-factsheet2007.pdf
This fact sheet explains the effects of AIDS on the environment and what projects can do to reduce them.

UNAIDS. 2008. 2007 UNAIDS annual report: Knowing your epidemic. UNAIDS, Geneva.
http://data.unaids.org/pub/Report/2008/jc1535_annual_report07_en.pdf
This document reviews the status of the AIDS epidemic in 2007. The goal of the document is to enable professionals working in this field to know the current status of the epidemic and the programmatic response, which they consider critical to understanding where the epidemic is going and whether programs are achieving their desired impact

World Health Organization
http://www.who.int/topics/infectious_diseases/factsheets/en/index.html and
http://www.who.int/mediacentre/factsheets/fs110/en/index.html
These World Health Organization sites offers fact sheets on major infectious diseases, such as dengue and cholera, and on common sexually transmitted diseases.

Migration

Oglethorpe, J., J. Ericson, R.E. Bilsborrow, and J. Edmond. 2007. People on the move: Reducing the impact of human migration on biodiversity. World Wildlife Fund and Conservation International Foundation, Washington D.C.
http://worldwildlife.org
This document reviews the impacts of migration on biodiversity. Specifically, it discusses the patterns of migration that affect biodiversity, the causes of migration, future trends of migration, whether a conservation organization should intervene in a migration situation and, if so, potential interventions.

Listserv resources

Environmental Change and Security Program, Woodrow Wilson International Center for Scholars. PHE Policy & Practice Listserv
http://wilsoncenter.org/index.cfm?topic_id=1413&fuseaction=topics.item&news_id=404371
The PHE Policy and Practice Listserv is a new forum for sharing news, best practices, lessons learned and policy developments within the international PHE community. Membership is open to anyone working on PHE issues around the world, including field practitioners, policy makers, advocates and researchers.

Population Environment Research Network
http://www.populationenvironmentresearch.org/seminars.jsp
This research network has, among other resources, a listserve on PE issues.

Population Health, Environment Network
http://www.phenetwork.ph/
This site has information on conferences, resources, activities, campaigns and committees related to PHE.

Funding

Population Action International
http://www.populationaction.org/Publications/Reports/U.S._Government_Funding_for_Community-Based_Projects/Summary.shtml
This document is titled "What you need to know to apply for U.S. government funding for community-based projects linking reproductive health and natural resources management: An unofficial guide."

Religion and population

Faith-Based Family Life Education Curricula
http://www.fhi.org/en/Youth/YouthNet/Publications/FLE/index.htm#CFLEhandbook
This webpage links to several documents related to family planning and religion, such as "Teaching Youth about Reproductive Health and HIV/AIDS from a Christian Perspective," "Family Life Education: A Handbook for Adults Working with Youth from a Christian Perspective," "Teaching Adults to Communicate with Youth from a Christian Perspective," with a participant handbook, and "Teaching Adults to Communicate with Youth from a Muslim Perspective," with a participant handbook.

Family Health International. 2006. Family life education: Teaching youth about reproductive health and HIV/AIDS from a Christian perspective. Family Health International, Va.
http://www.fhi.org/NR/rdonlyres/evc2sgi7flmsvkyu2uzxbzyqh5uuv4zjpsdtpbwtudhcschxrzjp3i4vootttxsmdp6i62exsq2bwh/CFLEYenyt.pdf
This manual was created to address the needs of faith-based organizations to reach youth with reproductive health and HIV/AIDS training materials. It has two purposes: to educate youth about reproductive health and HIV/AIDS issues; and to provide adult facilitators with an evidence-based training resource that helps them to communicate more effectively with youth about these issues within the context of shared faith. The manual contains 12 sections on topics such as building healthy relationships, and sex and sexuality.

Johns Hopkins Bloomberg School of Public Health, Center for Communication Programs
http://www.jhuccp.org/
This website has links to a wide range of resources and publications related to health communication and behavior change. This webpage has links to information about religion and family planning.

Ndifuna, I., editor. 2005. Family planning: policy and practice: A simple guide for family planning champions, communicators and users in the Muslim community in Uganda. The UMSC Population Committee, Kampala, Uganda.
This handbook is intended to explain the permissibility of family planning in Islam. It translates Uganda's national policy guidelines and services standards for reproductive health services into language that is user friendly and culturally appropriate for use by the Muslim community in Uganda.

Population Council
http://www.popcouncil.org/frontiers/orsummaries/ors73.html
The document, "Kenya: Islamic scholars find no religious justification for FGM/C," can be found on this website. It is based on a study by FRONTIERS on the cultural basis of female genital mutilation/cutting in Kenya's Somali community.

USAID: Extending Service Delivery
http://www.esdproj.org/site/PageNavigator/Best_Practices_Religious_Leaders
This USAID page, titled "Best Practices: Mobilizing Religious Resources," links to the document "Mobilizing Muslim religious leaders for RH/FP at the community level: a training manual." This document is a training curriculum designed to equip Muslim religious leaders with the necessary information and skills to better understand, accept and support the provision of maternal and child health, reproductive health and family planning information and services at the community level.

Health systems and management

John Snow Inc./DELIVER. 2004. The logistics handbook: A practical guide for supply chain managers in family planning and health programs. John Snow Inc./USAID. Arlington, Va.
http://deliver.jsi.com/dlvr_content/resources/allpubs/guidelines/LogiHand.pdf
The logistics handbook explains the major aspects of logistics management with an emphasis on contraceptive supplies. It is intended to help managers who work with supplies every day, as well as managers who assess and design logistics systems for entire programs.

World Health Organization. 2000. The world health report 2000: Health systems — improving performance. World Health Organization, Geneva, Switzerland.
http://www.who.int/whr/2000/en/whr00_en.pdf
This report presents an index of national health systems' performance. It evaluates progress toward goals by how nations carry out the four vital functions of service provision, resource generation, financing and stewardship.

Organizations working in PHE

For a list of past and present PHE projects, see the USAID Population, Health and Environment website at: http://www.ehproject.org/phe/phe_projects.html

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Blaney, S. 2008. Personal communication.

Blom, A. 2008. Personal communication.

Bongaarts, J. 2007. Population growth and policy options in the developing world. Population Council, New York, N.Y.

Bongaarts, J. 2008. Fertility transitions in developing countries: Progress or stagnation? Poverty, Gender, and Youth working paper no. 7. Population Council, New York, N.Y.

Campbell, M. 2006. Consumer behavior and contraceptive decisions: Resolving a decades-long puzzle. J Fam Plann Reprod Health Care: 33(4).

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