InterAction
A UNITED VOICE FOR GLOBAL CHANGE

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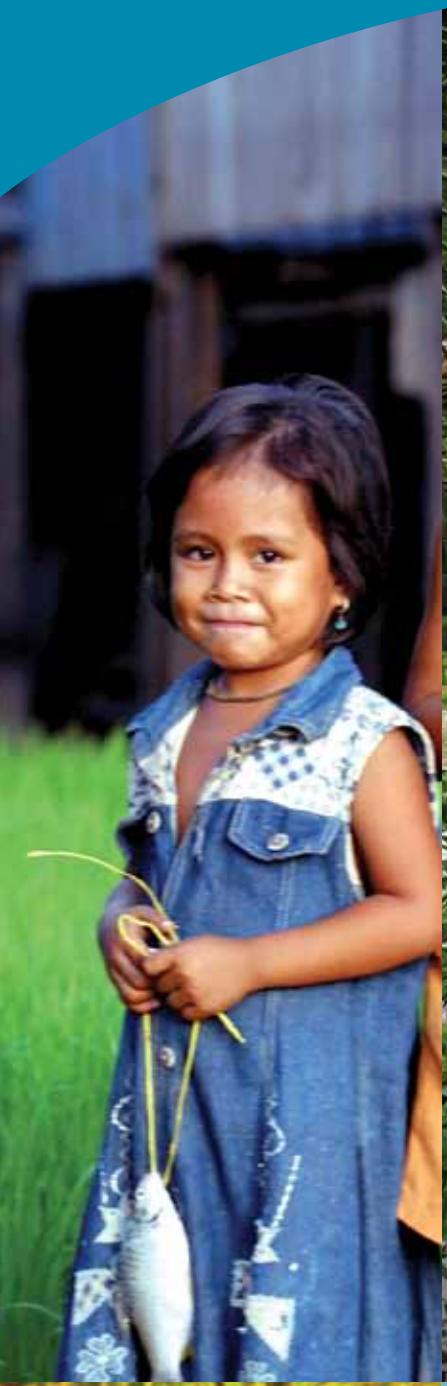
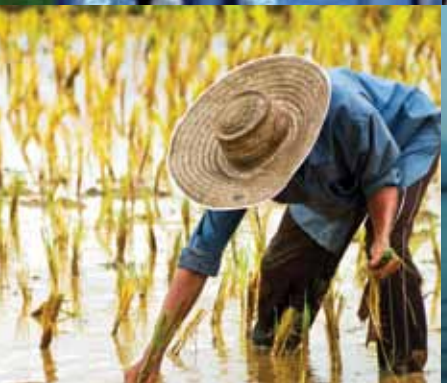


THE NATURE OF DEVELOPMENT

INTEGRATING CONSERVATION & DEVELOPMENT TO SUPPORT SUSTAINABLE, RESILIENT SOCIETIES



ADVISORY BOARD MEMBERS

Note: The findings, conclusions, and recommendations in this report are those of InterAction alone.

FOREWORD

ONE OF THE GREAT CHALLENGES OF THE 21ST CENTURY WILL BE TO LIFT THREE BILLION PEOPLE FROM POVERTY—and assist billions more living on its cusp—against a backdrop of severe natural resource degradation. The fundamental connections between human security and natural resource integrity need to be addressed.

InterAction, an alliance of nearly 200 U.S.-based international relief and development nongovernmental organizations (NGOs), has embarked on an ambitious effort to tackle this challenge. Over the course of four months in 2011, InterAction convened members from the global environment and development communities for a unique series of discussions on strengthening outcomes for both fields through increased integration. Drawing on the expertise of creative and dedicated professionals from over thirty organizations, InterAction has produced this policy paper to outline a new approach, capture successes in the field, and identify up-to-the-minute policy challenges and opportunities. The result is a call to action for Congress, the Obama administration, the philanthropic sector, NGOs, and others to immediately align development and environment policy and practice.

The benefits of an integrated approach are clear. Protecting the natural systems that support human well-being is cost-effective and helps to ensure the success of U.S. investments in international development. This approach will also contribute to stability and resilience in an ever-more volatile world.

On behalf of InterAction, I extend a heartfelt thank you to those who contributed to the development of this groundbreaking paper, including: Stephanie Cappa and Danielle Heiberg of InterAction; Laurie Mazur, project consultant; members of the project's advisory board for providing invaluable guidance; and the dozens of professionals whose participation in this powerful process helped break down barriers and build consensus around a more comprehensive plan of action to decrease global poverty.

Samuel A. Worthington
President and CEO
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EXECUTIVE SUMMARY

SOARING FOOD PRICES HELP IGNITE POLITICAL TURMOIL IN EGYPT.[1] Off the coast of Somalia, a fishery collapses from overuse, and local fishermen turn to piracy.[2] In Pakistan, depleted farmland and persistent drought create fertile ground for extremism.[3]

In a complex, globalized world, it is difficult to tease out cause and effect. *But many of today's crises and intractable challenges have, at their heart, a resource problem: the ecosystems on which human life and civilization depend are severely degraded.* The causes are many, including poor governance, mismanagement, corruption, and inequity. But the results are often the same: diminished prospects for a secure and prosperous future.

The environmental challenges of the 21st century are formidable. And so are the challenges for development (broadly defined as improvements in social and economic well-being). Today, nearly half the world's people live in poverty, and the world's poorest countries must provide for billions more as human numbers grow from 7 to 9.3 billion by the middle of this century.[4] *These two challenges—environmental protection and development—are profoundly interconnected.*

Many of today's crises and intractable challenges have, at their heart, a resource problem: The ecosystems on which human life and civilization depend are severely degraded.

Functioning ecosystems are the foundation of human well-being, and they are fundamental to lasting development. For example, forests stabilize soil and regulate rainfall, preventing landslides, droughts, and floods. Healthy fish stocks provide protein for 2 billion people.[5] Wetlands and coastal mangrove swamps provide a natural buffer against storm surges. And natural ecosystems provide $300 billion worth of pest control and pollination services to world agriculture every year.[6, 7] But too often, development has come at the expense of ecosystems that provide vital services to humanity. Destruction of ecosystems undermines gains in poverty alleviation, food and water security, and human health.

Environmental protection and development, often thought of as competing priorities, are more typically mutually reinforcing. A growing body of evidence shows that an integrated approach to conservation and development can advance human well-being by safeguarding critical ecosystems. An integrated approach is a departure from business as usual: It calls for new paradigms in decision-making, with active participation by a broad range of stakeholders. That, in turn, requires new partnerships, capacity building for effective resource management, and better ways of measuring success.

It is almost always less expensive to preserve a critical resource than to restore it, or to replace the services it provides.

An integrated approach to conservation and development accomplishes a variety of critical goals. This approach:

- Saves money. The economic value of ecosystem services—including flood prevention, pollination and pest control, soil maintenance, storm protection, and provision of food and fresh water—typically becomes apparent only when these services are gone. But it is almost always less expensive to preserve a critical resource than to restore it, or to replace the services it provides. The public and private sectors already pay billions of dollars annually for products and services nature once provided for free. And the bill gets higher each year as ecosystem services disappear.

- Protects investments in development. Conserving ecosystems protects investments in development by ensuring that gains in poverty alleviation, food security, and other development fundamentals can be sustained over the long term. And conservation can prevent catastrophic loss, as public- and private-sector investments are threatened by floods and other disasters caused or exacerbated by ecosystem decline.

- Creates jobs in the U.S. and other developed countries in addition to developing countries. The U.S. economy increasingly depends on trade with developing countries, which accounts for 48 percent of all U.S exports and supports a significant number of American jobs.[8] Developing country economies depend overwhelmingly on a healthy natural resource base to grow: 54 percent of the developing world's workforce is employed in agriculture, fisheries, and forestry.[9] Developing country economies require a healthy natural resource base to continue to grow and buy developed country exports.

Sofia Henriques

- Builds resilience. Communities with intact ecosystems have sustained less damage—and recovered more quickly—from hurricanes, tsunamis, droughts, floods, and other calamities. Functional ecosystems also support food security, health, and livelihoods—crucial building blocks of resilience.

- Enhances security. In the 21st century, national security is not simply a matter of military readiness but of "human security": access to food and water, protection from disaster, and stewardship of the natural systems that make those things possible.

Despite the benefits of an integrated approach to environment and development, policy and practice do not fully reflect these linkages. Many decision-makers still view the environment as a separate sector—one to be attended to after economic development is achieved.

There are three primary barriers to integration, but these can be overcome:

Barrier: Siloed sectors—While cross-sectoral communication and cooperation are increasing, the environment and development sectors largely remain in separate "silos," conceptually and practically.

> **Solution: Shared understanding, new partnerships—**Donors, governments, and practitioners need improved cross-sectoral communication and new alliances among environment and development actors, as well as with nontraditional partners, such as women's organizations, health advocates, and businesses.

Barrier: Structural flaws in resource management. Too often, critical decisions about the environment are made without accountability, transparency, and participation by those most affected—such as women, indigenous people, ethnic minorities, and the poor.

> **Solution: Build capacity for effective resource management—**Foster better resource management with new modes of decision-making that involve disenfranchised groups, remove incentives that encourage natural resource depletion, and promote resource rights.

Barrier: Missing metrics—Current methods of measurement fail to capture the complex, multidimensional nature of today's environment and development challenges. For example, governments and development agencies measure increases in food production but not the health of ecosystems that underpin those gains—or whether those gains are sustainable over the long term.

> **Solution: New measures of success—**An integrated approach requires more accurate and sensitive measures of human well-being and environmental health, including: comprehensive analyses of environmental and social assets and challenges, integrated accounting methods, new benchmarks of success, and shared information on best practices.

The bottom line: An integrated approach is doable, cost-effective, and necessary. An integrated approach to the environment and development does not require the creation of new bureaucracies and institutions. Instead, it calls for greater flexibility in our existing approach to development and how we account for its benefits.

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Fundamentally, it calls for a deeper recognition that human well-being and progress are dependent on the health of natural systems, and durable gains are not possible unless these systems are safeguarded. Protecting the environment can no longer remain separate from the central task of improving the human condition. And it cannot wait until prosperity is achieved; it is, in fact, a precondition for sustained economic growth.

At the same time, improved human conditions are necessary for conservation. Where people have the means to provide for themselves—and the power to make decisions in their community—they are more likely to protect the natural systems on which they depend.

The great challenge of the 21st century will be to lift 3 billion people from poverty—and provide for billions more—against a backdrop of severe natural resource degradation. A siloed approach to environment and development is simply not up to the task. The challenges we face are systemic; ecosystem health and human well-being are connected by myriad feedback loops. Our response must reflect—and embody—those interconnections.

I. **THE PROBLEM:** A CRUMBLING FOUNDATION FOR PROSPERITY

WE DEPEND ON NATURE. Natural systems—or ecosystems—are essential to civilization: They filter drinking water, replenish soils, pollinate crops, and provide the raw materials for much economic activity. Healthy ecosystems are vital to human well-being today, and they are the foundation of a peaceful and prosperous future.

Yet, around the world, that foundation is crumbling. Worldwide, ecosystems are collapsing under the weight of unsustainable systems of production and consumption. Less than a fifth of the planet's original contiguous forest cover remains intact.[10] One-third of coral reefs and mangroves—vital coastal ecosystems that nurture fisheries and buffer storms—have been lost or damaged.[11] Fully two-thirds of the planet's ecosystems—including freshwater and fisheries—are being used in ways that simply cannot be sustained.[12]

> It is as though humanity has built a taller, more elaborate house—by removing bricks from its foundation. As a result, the integrity of our collective "house" is at stake.

We are now in the throes of the greatest mass extinction of plant and animal life in the history of human civilization; every year, some 30,000 species become extinct, about three per hour.[13] And there is new evidence that many damaged ecosystems could soon reach the "tipping point" beyond which they cannot be repaired.[14]

The collapse of ecosystems affects people in ways both obvious and subtle. The impact is felt most keenly by the rural poor in developing countries, who draw their livelihoods directly from forests, fields, rivers, and oceans. For them, the loss of a forest means ever-longer treks in search of firewood and clean water; depleted soil means empty granaries; collapsed fish stocks mean forced migrations from the coasts to inland areas.

The developed world, including the United States, is also harmed by ecosystem decline. Global supply chains mean that U.S. businesses and jobs rely on stable markets overseas; disruptions in resource availability have ripple effects throughout the world economy. The U.S. and other developed economies increasingly depend on developing countries for economic growth and employment: According to the U.S. Chamber of Commerce, trade with developing countries constitutes 48 percent of all U.S exports and supports a significant number of American jobs.[15]

Developing countries' economies depend overwhelmingly on a healthy natural resource base to grow. More than half of the developing world's workforce is employed in agriculture, fisheries, and forestry.

And ecosystem collapse makes the world a more dangerous place: In the last two decades, at least 11 violent conflicts have been fueled by the degradation of natural resources.[16] In our interconnected world, environmental devastation and its consequences—including political instability—move freely around the globe.

Healthy ecosystems are the basis of development ("development" is broadly defined as improvements in social and economic well-being). The last century saw dramatic gains in development as measured by indicators like food production and an upward-trending GDP. But too often, those gains were made without safeguarding the natural systems that made them possible. It is as though humanity has built a taller, more elaborate house—by removing bricks from its foundation. As a result, the integrity of our collective "house" is at stake.

Moreover, the gains of the last century left many behind: Some 40 percent of the world's people—2.6 billion—still live on less than $2 per day; one in four suffer from acute deprivation in health, education, and standard of living.[17] The great development challenge of the 21st century lies in enabling those billions to escape from poverty, while providing for another 2 billion or more who will join the world's people by midcentury—mostly in the world's poorest countries.[18] The health of the world's ecosystems will help determine whether that challenge can be met.

Poverty alleviation: The lives of the world's poor—and their hopes for a better future—are tightly bound to the health of ecosystems. One study in Zimbabwe found that impoverished villagers obtain more than a third of their income from "freely-provided environmental goods," such as subsistence farming and wild foods.[19] In the Brazilian Amazon, that figure rises to nearly 90 percent.[20] Developing countries' economies depend overwhelmingly on a healthy natural resource base to grow. More than half of the developing world's workforce is employed in agriculture, fisheries, and forestry.[21] And natural resources represent 26 percent of the asset base

An ecosystem is a dynamic complex of plant, animal, and microorganism communities and the surrounding nonliving environment. Human beings are integral parts of ecosystems; our actions shape ecosystems, and our well-being is tied to them.

Ecosystem services are the benefits people obtain from ecosystems. These include:

- **Provisioning services,** or the production of basic goods such as food, water, fish, biomass fuels, timber for housing, and fiber for clothing;
- **Regulating services,** such as flood protection, purification of air and water, waste absorption, modulation of disease vectors, and climate regulation;
- **Cultural services** that provide spiritual, aesthetic, and recreational benefits; and
- **Supporting services** that are necessary for the production of all other ecosystem services, such as soil formation, production of atmospheric oxygen, photosynthesis, and nutrient cycling.[22]

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of low-income countries, compared to just 2 percent for industrialized countries.[23] Liquidating those natural assets for short-term gain may enrich elites and temporarily boost GDP but drive the rural poor into deeper poverty.[24]

Food security: Food production soared in the late 20th century, spurred by a wholesale expansion and intensification of agriculture. But damaged ecosystems may limit future increases in productivity. One-fifth of the world's cropland has been degraded by human activity—such as poor farming practices and overgrazing—and is now unsuitable for farming.[25] In Africa, intensified traditional farming practices have caused dramatic declines in soil fertility.[26] Elsewhere, synthetic fertilizers have boosted yields, but at a cost: Nitrogen fertilizer leaches into bodies of water—including the coastal waters of Brazil and India —where it creates "dead zones" that cannot support fish and other aquatic life. The number of dead zones is doubling every decade, decimating fisheries, a critical source of protein for 2 billion of the world's people.[27] Fisheries are threatened even more by overuse: More than three-quarters of fish stocks are fully- or over-exploited.[28] Food security is fundamental to social order: In 2008, soaring food prices sparked unrest in more than 20 countries; more recently, price hikes helped ignite political turmoil in the Middle East.[29, 30]

Disaster risk reduction: Weather-related disasters affecting at least a million people have quadrupled in the last 40 years, while economic losses from those disasters grew tenfold.[31] And there is more to come: Scientists predict that climatic changes in the 21st century will bring more intense storms, droughts, and other calamities.[32] Healthy ecosystems promote resilience: Wetlands and coastal mangrove swamps provide a natural buffer against storm surges. Coral reefs reduce the impact of large storms on coastal populations, saving lives and preventing $9 billion of losses every year.[33] And forests stabilize soil, preventing landslides and floods, and help regulate rainfall, lessening the chance of both droughts and floods. The benefits of intact ecosystems were apparent in 2004 when Hurricane Jeanne tore through the island of Hispaniola, which is shared by Haiti and the Dominican Republic. The Dominican Republic took the brunt of the storm but suffered fewer than twenty deaths, while Haiti, with near-total deforestation, experienced severe flooding and mudslides that killed 3,000 Haitians and drove many more into deeper poverty.[34, 35]

Water and sanitation: Water is essential for agriculture, industry, and human health. But the planet's finite supply of freshwater is distributed very unevenly, and a growing number of regions are chronically parched. Almost one-fifth of the world's people—1.2 billion—live in areas where water is physically scarce; one in four lack the means to collect water from rivers and aquifers.[36] By 2025, nearly 2 billion people will be living in areas where water is scarce, and two-thirds of the world's population could be living under water-stressed conditions.[37] Climate change could exacerbate this crisis: Today, one in six people gets their drinking water from glaciers and snowpack on the world's great mountain ranges, but those glaciers are receding worldwide.[38] Water scarcity forces people to rely on unsafe sources of drinking water, which contributes to outbreaks of diarrhea, cholera, and other preventable water-borne diseases. Every year, those diseases take the lives of 2 million people—mostly children.[39]

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Health: Human health is intimately tied to natural systems. For the world's poorest, healthy ecosystems can be a matter of survival: Starvation looms when topsoil is lost; cholera spreads in contaminated water. Indeed, up to one-fifth of the total burden of disease in developing countries—and up to 30 percent in sub-Saharan Africa—may be associated with environmental risk factors.[40] In all parts of the world, healthy ecosystems help mitigate disease; epidemics flourish when natural systems are disrupted. For example, one study in the Brazilian Amazon found that a 4.3 percent increase in deforestation was associated with a 48 percent increase in cases of malaria, because mosquitoes breed in standing water held by the hard soils of denuded rainforest.[41] And climate change is expanding the range of disease-carrying vectors.[42] Intact ecosystems also serve as a buffer between wildlife and human populations, minimizing the transmission of animal-borne infectious diseases—such as avian flu, SARS, and malaria—

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—Defense Secretary Robert Gates

which have caused millions of deaths and cost the world economy tens of billions of dollars annually.[43] In an increasingly globalized world, such diseases can cross borders and continents in a matter of hours.

Girls and women: Because they often bear the burden of growing food and gathering water and fuel, girls and women in developing countries have an incentive to act as good stewards of nature. And women are directly affected by ecosystem degradation: When forests are lost, for example, they must walk farther to gather firewood, often facing greater risk of violence. In Sudan, women spend four times as many hours collecting firewood as they did 10 years ago.[44] As a result, they have less time for education, employment, and community activities. Despite their reliance on ecosystems, their intimate knowledge of resource management, and the potential stewardship role that they can play, women are rarely engaged in the planning and implementation of natural resource management activities. And women—who own less than 2 percent of the world's titled land—often have little real control over the resources on which they depend.[45]

Security: Individual and national security rests upon a foundation of goods and services provided by nature. When that foundation crumbles, social order suffers as well. In Pakistan, for example, degraded cropland and water scarcity have led to food riots.[46] And the Somali government's inability to curtail illegal fishing by foreign fleets helped give rise to the piracy that now threatens international shipping (page 11). While the national security community has long been attuned to challenges surrounding nonrenewable resources, such as oil and minerals, it has been slow to acknowledge the threats posed by the depletion of renewable resources like water, forests, and fish stocks.[47] But that is changing: As Defense Secretary Robert Gates said in 2008, "[L]ooking ahead, I believe the most persistent and potentially dangerous threats will come less from ambitious states than from failing ones that cannot meet the basic needs—much less the aspirations—of their people."[48]

DEGRADED ECOSYSTEMS THREATEN SECURITY

PIRATES AND PLUNDER: THE STORY BEHIND THE HEADLINES

Americans watched helplessly as the drama unfolded: In February 2011, Somali pirates in the Arabian Sea hijacked a sailboat with two retired couples from California on board. As the American Navy closed in to rescue them, the hostages were murdered.

The deaths underscored a growing menace. In 2010, the U.S. and other nations spent roughly $2 billion to protect their ships from Somali pirates in the busy shipping lanes off the Horn of Africa. Hijackings in that area accounted for 92 percent of all ship seizures that year, according to the International Maritime Bureau.[49]

BBC World Service

Behind these grim headlines lies another story—of plundered resources, ecosystem collapse, and desperate poverty. Two decades ago, the pirates who now terrorize the waters off the coast of Somalia might have been fishermen, providing for their families with bountiful hauls of tuna, lobster, deepwater shrimp, and whitefish. But since the collapse of Siad Barre's regime in 1991, Somalia has effectively been without a central government—or a state-sponsored coast guard.[50] Industrial fishing operations from Europe, Asia, and elsewhere rushed into the void, plundering the rich fisheries off Somalia's coast.[51] The High Seas Task Force reported that there were 800 such vessels engaged in illegal fishing at one point in 2005.[52] The foreign vessels reportedly attacked Somali fishing boats, preventing the fishermen from pursuing their traditional livelihood.[53]

Soon, the Somali waters were fished to exhaustion, and the foreign fleets moved on. Coastal communities were devastated. Desperate and hungry, many former Somali fishermen chose to exploit their only assets: fishing boats and proximity to one of the world's most important commercial sea lanes. Some 95 percent of trade between the Far East and Europe—and half of the world's oil—passes through the waters off the Somali coast.[54] Piracy, for many, offered a ticket out of poverty. In this way, plundered resources and ecosystem decline helped transform peaceful fishing villages into an international security threat.

Of course, the relationship between ecosystems and security is complex: Not all resource pressures pose threats to security, and more stable countries are better able to cope with shortages. Still, ecosystem decline is too often the "story behind the story" in many cases of instability and conflict around the world. For more information, see *Sustaining Security: How Resources Influence National Security*, published by the Center for a New American Security in 2010.

II. **THE SOLUTION:** INTEGRATING CONSERVATION AND DEVELOPMENT

THE LOSS OF HEALTHY ECOSYSTEMS CAN UNLEASH A CASCADE OF NEGATIVE EFFECTS. Fortunately, the converse is also true: Careful stewardship of ecosystems can have far-reaching benefits for human well-being. The key is for decision-makers at all levels to take an integrated approach to conservation and development. Over the last three decades, this approach has been employed by communities, governments, agencies, and NGOs at scales ranging from local communities to global conclaves. The lessons learned from that experience are summarized below. In short, an integrated approach:

- Is guided by an understanding of natural and human systems. Decision-making is informed by careful analysis of ecosystems and the services they provide to human communities, and by an understanding of the social and economic systems that shape resource use.

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- Brings new constituencies to the table. Often those who have the most to lose from degraded ecosystems—and the greatest stake in protecting them—are not at the table when resource management decisions are made. An integrated approach brings these critical, but disenfranchised, stakeholders to the decision-making table.

- Balances conservation and human needs. An integrated approach recognizes both the urgent need to improve the human condition—especially for the world's poor—and the importance of conserving healthy ecosystems. Balancing those goals requires thoughtful tradeoffs. Where an ecosystem's services are deemed vital, full protection may be warranted; in other cases, managed use allows for development and income generation while preserving the resource for current and future generations.

The examples below show what an integrated approach looks like in practice.

"Like a bank to the people": Protecting fisheries in Fiji. The elders of the Fijian village of Ucunivanua could remember a time when the kaikoso clams were so large and abundant that it took just a few hours to collect as many as they could carry. But by the early 1990s, a villager could spend a whole day on the mudflats and return with only a half a sack of small clams. It wasn't just the clams: All of the marine species that are the lifeblood of Fijian villages were in steep decline due to overfishing.[55]

Today, the clams are once again big and plentiful in Ucunivanua thanks to the village's "locally managed marine area" (LMMA). The LMMA has reinstated the traditional resource management practices of Fijian villagers, which include limits on the number of fishers and the amount they may catch, restrictions on certain fishing practices, and the imposition of a tabu, or prohibition, on fishing for certain species. With help from the University of the South Pacific, the people of Ucunivanua bolstered these traditional practices with modern scientific monitoring methods. The fundamental premise of the LMMA is simple: Community members are empowered to manage their marine resources.[56]

The results have been extraordinary. Fish catches rebounded, and the villagers' incomes have roughly doubled, with women benefiting the most. Improved fish catches led to greater protein intake and a resulting improvement in children's health. Increased revenue from fishing and tourism paid for public health improvements such as water-supply tanks, public toilets, and washing places in several villages.[57]

The LMMA approach has proven popular: More than 120 new locally managed marine areas were set up by Fijian communities between 2004 and 2005. In villages with an LMMA, more than 95 percent of local people support the continuation of the program.[58] Perhaps most importantly, the people of Fiji see the LMMAs as an investment in the future. "The marine environment is our source of income and sustenance; our form of long term investment," remarked one villager. "The [LMMA] is like a bank to the people."[59]

Securing the soil: From the Great Plains to Niger. In the 1930s, dust clouds 10,000 feet high boiled across the U.S. Great Plains leaving human and ecological devastation in their wake. The Dust Bowl was a manmade calamity: Farmers plowed up the deep-rooted prairie grasses that anchored the soil; then, when drought descended, the topsoil became airborne, creating "black blizzards" that blew as far East as New England.[60, 61] But the Dust Bowl also prompted the U.S. government to create the Soil Conservation Service (later renamed the Natural Resources Conservation Service), which helped restore the prairie ecosystem and provide for ongoing managed use. Farmers were urged to replant native grasses in vulnerable areas and protect croplands with windbreaks, terracing, and conservation tillage. Those measures have proven effective: Although severe droughts have since fallen upon the region—notably in the 1950s and the 1980s—the "black blizzards" have not darkened the plains again.[62]

Today, a similar story is playing out in Niger. One of the world's poorest countries, Niger's land is mostly desert, its arable areas plagued with poor soils and frequent drought. Life is hard

in Niger, especially during the annual soudure, or "hungry period," when food supplies are perilously low. But the people of Niger are turning back the desert with a community-based "re-greening" effort that has improved crop production and food security. Launched by the missionary group Serving in Mission in the early 1980s, a program of "farmer-managed natural regeneration" has restored soil-anchoring trees and shrubs, while conservation measures have improved the fertility of cropland.

These efforts produced impressive results: a 10- to 20-fold increase in tree and shrub cover on more than 12 million acres of land, more bountiful harvests, and increased income for many.[63] Women spend only a fifth as much time collecting firewood as they did before the program began. Niger still faces steep challenges: Some 15 percent of its children are acutely malnourished;[64] and with the world's highest fertility rate—7.4 children per woman—the impoverished country must provide for an ever-larger population.[65] And climate change is expected to bring more severe drought to Niger. But restored ecosystems will bolster Niger's resilience in the face of these challenges. And for now, at least in some Nigerien villages, the soudure is no more.[66]

We all live downstream: Protecting watersheds. Most cities in the United States filter and treat their drinking water at considerable expense. One exception is New York City, which provides nine million people with water so pure it has been called "the champagne of drinking waters." For this, New Yorkers can thank visionary city planners who—starting in 1830—invested in collecting water from unspoiled upstate watersheds. Unfortunately, by the 1980s, pollution from farms and development threatened the city's water quality. New York faced the prospect of building a $4-6 billion water filtration plant that would cost $250 million a year to operate.[67]

Instead, the city made a somewhat radical decision: Rather than paying to clean up the results of pollution and land degradation, it would pay to prevent it—by protecting the rural environment from which its water flowed. And rather than impose a regulatory scheme, city planners entrusted upstate farmers to design an environmental protection program that would be compatible with their needs. Initially skeptical, the farmers came to realize that they could protect the watershed while enhancing the value and productivity of their land. Their efforts preserved New York's high-quality drinking water for just one-eighth the cost of a filtration plant—while preserving a cherished way of life.[68]

New York City is not the only community that is looking upstream to protect its water supply. In Colombia, as in many parts of the developing world, high-quality bottomland is often farmed by wealthy landowners and agribusiness, while poor farmers eke out a living on marginal lands and sloping hillsides. Today, the valley farmers are realizing that their interests are tied to those of the people living upstream. In Colombia's East Cauca Valley, for example, large sugarcane interests had invested heavily in the latest farming technologies, but those investments were threatened by diminished stream flows and seasonal flooding caused by deforestation and overgrazing on the slopes of the watershed.[69]

In response, the sugarcane producers worked with The Nature Conservancy, USAID and other partners to devise a "payment for ecosystem services" (PES) scheme. The PES strategy is simple: Those who benefit from ecosystem services pay to maintain them. In the Cauca Valley, that meant creating a water trust fund and using the revenues collected from sugarcane producers to help the poor farmers upstream. Water fund representatives met with the upland communities and identified priorities for conservation and development including: education and training; reforestation and crop-planting projects; and infrastructure improvements, such as sanitary and drinking water facilities, roads, and erosion control.[70] More recently, The Nature Conservancy has been working with the sugarcane industry and other stakeholders to ensure that the program's achievements can withstand changes in climate.

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The water fund has succeeded on many fronts. It has conserved more than 300,000 acres of critical watershed ecosystems while improving the quality of life in upstream villages. Moreover, it helped secure a sustainable water supply for sugar cane production—an important industry for the Colombian economy—and for the nearly 1 million people living downstream.[71]

Restoring forests, saving lives. In Guatemala, the rainy season is also the season of mud: Mud that shakes loose from the hillsides and swallows people, buses—even entire villages—without a trace. One such mudslide in 2005 was blamed for 700 deaths.[72]

Guatemalans have always been vulnerable to mudslides, which can be triggered by earthquakes, hurricanes, or heavy rains. But now, human activity has added a new trigger: "Deforestation—or the absence of trees—causes mudslides to occur," Anne Hallum, co-founder of the Alliance for International Reforestation, told CNN in February, 2011.[73] "Trees are cut for firewood and to make room for the crops, and without realizing it…they've taken away their protection. Where it used to be rainforest becomes an open space for the mud to come right on through." And deforestation is a growing problem in Guatemala, which lost 17 percent of its forest between 1990 and 2005.[74]

To restore forests and prevent deadly mudslides, Hallum, a political science professor at Stetson University in DeLand, Florida, founded the Alliance for International Reforestation in 1993. Since then, the Alliance has helped 110 villages plant more than 3.8 million trees throughout Guatemala.[75] The Alliance also helps villagers make a living from the land without destroying life-sustaining forests with a technique called "agro-forestry," in which trees are interplanted with crops. The trees anchor the soil, preventing mudslides and soil-depleting erosion. Trees also provide a source of fuel and generate income from the sale of fruits and other products. As Hallum says, "Food, shade, fertilizer, and mudslide protection—the trees can do it all."[76]

III. OVERCOMING BARRIERS TO INTEGRATION

DESPITE THE BENEFITS OF AN INTEGRATED APPROACH TO ENVIRONMENT AND DEVELOPMENT, policy and practice do not fully reflect these linkages. Many decision-makers still view the environment as a separate sector—one to be attended to after economic development is achieved. Even where the value of ecosystem services is recognized, there is a lack of coherence in policymaking at many levels: notably, trade and economic policies are often at odds with environmental goals. Here we explore the barriers to an integrated approach—and how those barriers might be overcome.

Barrier: Siloed sectors —While cross-sectoral communication and cooperation are increasing, the environment and development sectors largely remain in separate "silos," conceptually and practically. These divisions are evident in academia, donor agencies, government, and NGOs.

At root, there is a lack of shared understanding of multidimensional challenges. Environment and development professionals describe their objectives in different language; they often do not understand each other's constraints and priorities. Development groups are sometimes unaware of the environmental implications of their work: Efforts to improve food production, for example, may accelerate deforestation that causes soil erosion and flooding. And environmentalists may fail to comprehend the impact of their efforts on human development. Without a nuanced understanding of social dynamics, conservation can reinforce existing inequities. For example, some "payment for ecosystem services" (PES) schemes compensate landowners for preserving ecosystems. If PES benefits only those with secure title to land, without recognizing traditional land-use patterns, it can further marginalize the landless poor. Or, if land is owned by men but worked by women, PES payments may fail to reach—and incentivize—the true user of the resource.

Many decision-makers still view the environment as a separate sector—one to be attended to after economic development is achieved.

The silo problem is compounded by separate funding streams, objectives, and programs, which are sometimes at cross purposes. Donors (private and public) often fund conservation and development work separately. Consequently, a funding applicant is unlikely to design an integrated program, a donor is unlikely to fund an integrated program, and national strategies are created with a siloed approach. Funding is geared toward discrete and easily measured objectives—such as increased food production or income generation—which favors single-sector approaches. Integrated programs, which produce benefits on a broader range of indicators, struggle to compete with more targeted efforts.

Too often, environmental concerns are segregated into relatively powerless ministries and agencies, rather than being incorporated into agriculture, trade, and development policymaking at all levels.

Solution: Shared understanding, new partnerships—Environment and development challenges readily transgress sectoral boundaries; so must the solutions. Today's challenges require bold, systemic approaches, built from shared understanding and new partnerships.

- Shared understanding. An integrated approach begins with improved cross-sectoral communication and understanding. That understanding can be nurtured in many ways. For example, universities and agencies can invest in cross-disciplinary education—both degree programs and lifelong learning for environment and development professionals. Governments and NGOs can convene multidisciplinary teams to plan, create, and review development strategies, and cross-train staff at environment and development ministries and agencies. True integration of environment and development requires policy that cuts across sectors; that, in turn, requires improved communication among high-level decision-makers, including agency heads and mission leaders. And, at the community level, sound decision-making flows from education and awareness building, with all stakeholders at the table.

- New partnerships. Successful integration means reaching across sectoral boundaries, and forging partnerships among environment and development actors, as well

as with nontraditional partners, such as women's organizations, health advocates, and businesses. Such collaborations must be nurtured with funding and other incentives that favor—rather than discourage—integration. For example, the U.S. government could establish a coordinating mechanism to enable agencies involved in conservation and development to coordinate strategies and attract private capital and resources. And Congress could allow agencies more flexibility in building cross-sectoral partnerships.

- Incentives for collaboration. To foster new partnerships, donors can pool resources or create new investment platforms for integrated programs; they can mandate cross-ministry or cross-NGO collaboration and provide incentives for collaboration in the proposal process. Environment and development NGOs can map their in-country projects and look for areas of overlap. They can also reach out to private sector entrepreneurs who are building businesses with environmental benefits, such as fuel-efficient cookstoves (see page 22).

- True integration of environmental concerns. An integrated approach calls for broad recognition that the environment is not merely a "sector," but a cross-cutting priority that is integral to social and economic development. Thus, environmental concerns must be incorporated into development planning tools at all levels.

SHARED UNDERSTANDING/NEW PARTNERSHIPS

RECOMMENDATIONS	STAKEHOLDERS		
	U.S. Congress	U.S. Administration/ Operational Agencies	Development and Environment NGOs, including donors
Assess current and planned programming to harmonize environment and development outcomes; incentivize integrated programs and country strategies.	X	X	X
Base program design on case studies that demonstrate effective integration of the environment and development.		X	X
Foster partnerships among donors, governments, civil society, and research institutions to mobilize diverse technical skills for integrated programs.	X	X	X
Adopt longer time frames for implementation that are appropriate to integrated programs.	X	X	X

- Shared information on best practices. Environment and development practitioners need to better understand one another's priorities and constraints. Education featuring case studies of best practices and lessons learned can help. Useful case studies begin with baseline measures and a theory of change, then measure the effectiveness of interventions against the baseline. A growing body of evidence shows the benefit of an integrated approach to environment and development; that evidence can help spur new initiatives and lower the hurdles they must leap.

[CASE STUDY]

NEW PARTNERSHIPS & SHARED INFORMATION ON BEST PRACTICES
REBUILDING FOR RESILIENCE

In 2004, the Indian Ocean tsunami killed nearly a quarter of a million people and swept away entire communities in coastal Asia and East Africa. When the waters subsided, an opportunity—and a new danger—arose. An infusion of resources offered a chance to rebuild more resilient communities. But hasty reconstruction efforts—however well-intentioned—threatened to further damage key ecosystems, leaving communities even more vulnerable to future disasters.

Fortunately, the tsunami also gave rise to The Humanitarian Partnerships Program, a pathbreaking collaboration between The American Red Cross and the World Wildlife Fund. The Program worked with survivors to ensure restoration of livelihoods, shelter, and access to fresh water—while crafting plans to protect ecosystems and bolster resilience. For example, the program took immediate action to restore water systems while also helping communities develop long-range watershed conservation and waste management plans.

Lessons learned from the post-tsunami experience have now been incorporated into a "Green Recovery and Reconstruction Training Toolkit for Humanitarian Aid." The toolkit offers a comprehensive training program designed to empower humanitarian aid practitioners with practical, solution-oriented techniques for integrating environmental sustainability into disaster recovery, reconstruction, and risk reduction. Created with participation from CARE, Oxfam, Save the Children, Mercy Corps, RedR, International Federation of Red Cross and Red Crescent Societies, USAID, and the United Nations Environment Program, among others, the toolkit is a model of effective cross-sectoral partnership.

Barrier: Structural flaws in resource management. Frequently, critical decisions about resource use are made without accountability, transparency, or participation by those most affected. Fundamentally, the problem is with governance. Too often, weak central governments lack the capacity for sound resource management and enforcement. A trend toward decentralized governance holds promise for improved local resource management, but to deliver on that promise—and improve conditions for the poor—decentralization must be accompanied by the creation of accountable, representative local institutions invested with meaningful authority.[77]

Gender bias is a formidable barrier to sustainability. Women are the primary users and potential stewards of many natural resources—from soil and water to medicinal herbs. Women grow 80 percent of the food eaten in Africa and collect 90 percent of drinking water in rural communities in developing countries.[78, 79] But women are not systematically engaged in planning and implementation of natural resource management.[80]

Insecure resource tenure is also part of the problem. Legally, tenure includes rights and responsibilities; it embraces the right to own, manage, and benefit from resources and land, as well as an obligation to do so in a way that does not harm others.[81] Women and disadvantaged social groups—such as indigenous people, ethnic minorities, and the poor—often have traditional or customary access to common-property resources, such as forests, but lack secure tenure.

Those with insecure resource tenure face new and challenging threats. In an increasingly integrated world economy, many former common-property resources have been transferred to private interests.[82] For example, affluent nations are acquiring land in poor countries at a staggering pace: In 2008 and 2009 alone, the World Bank reported acquisitions totaling 174,000 square miles—an area the size of Sweden—mostly in African countries, including Ethiopia, Madagascar, and Mali.[83] This "land grab" is raising prices and reducing the availability of land for the rural poor.

Research shows that insecure tenure fosters short-term exploitation, while secure resource rights encourage long-term investments in careful resource use—such as sustainable forestry and soil conservation.[84] (Secure resource rights do not guarantee wise resource use, however—regulatory restraints are also necessary to curb exploitation.) Moreover, where the poor lack clear property rights, they are ineligible for credit, which could help them escape poverty through productive investment.[85]

Market failures create perverse incentives to use resources unsustainably. As noted above, ecosystem services are not traded on markets, therefore, there are no price signals to encourage better management. Lack of secure property by individuals or communities can also contribute to market failure: Where resource rights and responsibilities are ill-defined, "open access" resources are frequently destroyed by overuse—the Somali fisheries provide a tragic example (see page 11).

> **Solution: Build capacity for effective resource management**. An integrated approach to conservation and development requires new means of decision-making that ensure accountability, transparency, and the full participation of those affected.

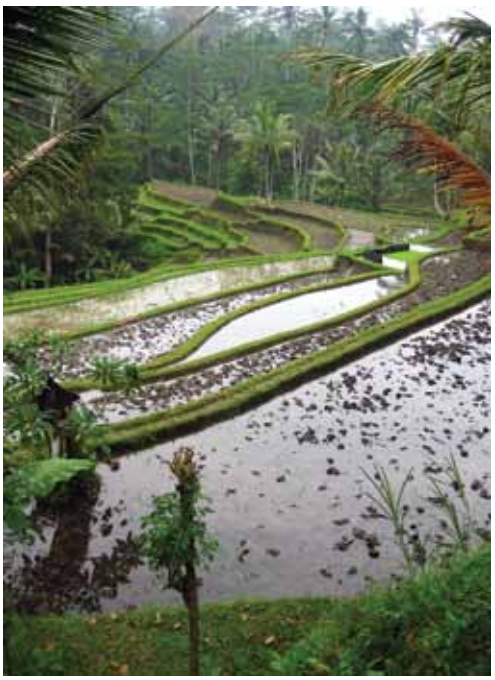
- Local management of resources. In recent decades, community-based resource management (CBRM) has emerged as a promising model for effective, accountable resource management, especially in forestry. Today, more than 900 million acres of forest land are managed by local communities.[86] A hallmark of CBRM is the devolution of power and authority in resource management from central government to the local level; its goals encompass sustainable management of natural resources as well as improvements in human well-being, local self-government, and the creation of local institutions for the management of common-property resources.

[CASE STUDY]

LOCAL RESOURCE MANAGEMENT

BUILDING CAPACITY FOR COMMUNITY FORESTRY

A generation ago, most forests in the Asia-Pacific region were managed by central governments, often in close collaboration with large-scale industrial timber companies. With few exceptions, that system proved disastrous—both for the forests and the 450 million people who rely on those forests for their livelihoods.[87] According to the Center for People and Forests, this centralized management model "ignored the needs, aspirations, skills, and knowledge of local people."[88]



In response, activists helped pioneer a new approach to forest management: community forestry. In essence, community forestry puts local residents in charge of forest management, with the dual objectives of maintaining healthy forests and supporting local livelihoods.

As community forestry spread throughout the Asia-Pacific region, it became clear that effective local forest management doesn't just happen. It requires effective institutions, governance systems, and stakeholders with appropriate skills and knowledge. To help communities develop that capacity, the Center for People and Forests (formerly known as the Regional Community Forestry Training Center for Asia and the Pacific) launched training programs in six countries: Cambodia, China, Indonesia, Laos, Thailand, and Vietnam. Over the past two decades, those programs have trained 10,000 people from more than 20 countries—including national policymakers, researchers, and local forest users.

Today, nearly a quarter of forests in the Asia-Pacific region are under some form of community management with more expected in the coming years. As this promising model of forest management grows, so too will the need for effective capacity building.

- Strengthening women's leadership, addressing their needs. New means of decision-making must be accompanied by the inclusion of new decision-makers—especially women. A large body of research affirms that women—as the primary users of many key resources—are vital partners for sustainable development.[89] For example, in Gujarat, India, when women were well-represented on community forest committees, forest conditions improved markedly.[90] And investments in women's education, civic engagement, and economic opportunity have far-reaching benefits for families and societies.[91] Ensuring women's full participation in decision-making rests on basic social and legal measures to guarantee women's rights—including education for girls and improving women's access to credit, land, employment, and training. In addition, both environment and development practitioners must apply a "gender lens" to their work: assessing the challenges women face, understanding the differential impact of current programs, and designing interventions to ensure women's full participation at every level.

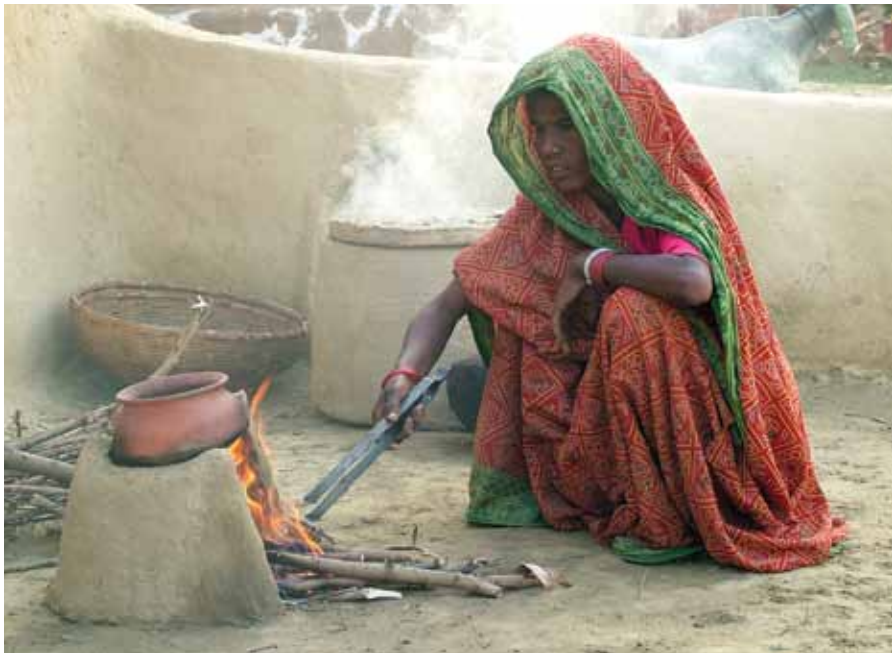
[CASE STUDY]

STRENGTHENING WOMEN'S LEADERSHIP, ADDRESSING THEIR NEEDS

CLEANER COOKSTOVES FOR WOMEN AND THE ENVIRONMENT

Throughout the developing world, women cook with wood, charcoal, dung, coal, or farm wastes on simple traditional stoves or open fires. Nearly half the world's population— 3 billion people—eats food prepared this way.[92] But such fires take a stunning toll on human and environmental health, causing pneumonia, emphysema, cataracts, lung cancer, bronchitis, heart disease, low birth weight, and an estimated 1.9 million premature deaths every year, mostly among women and children. [93]

The endless task of feeding those fires forces women and children to spend many hours each week collecting fuel, diminishing their time for education and economic activity, and placing them at considerable personal risk. That foraging also takes a substantial toll on forests and habitat. And the "black soot" produced by traditional fires is the second-largest source of greenhouse gases after fossil-fuel burning.[94]



Sunil Lal

The solution: clean, efficient cookstoves, which can dramatically reduce fuel consumption and exposure to deadly smoke and provide a source of local economic opportunity. Yet efforts to encourage their widespread adoption have often foundered.[95] To make efficient cookstoves work, says Erin Patrick of the Women's Refugee Commission, "You have to sit down with women and ask them what they cook, how they cook, and what is important to them when they cook."[96] Successful programs have employed this model, working with women to design and promote stoves that meet their needs.

One such program, the Global Alliance for Clean Cookstoves, is a public-private partnership that seeks to "save lives, empower women, improve livelihoods, and combat climate change by creating a thriving global market for clean and efficient cookstoves." Led by the United Nations Foundation and a broad coalition of bilateral and multilateral agencies, NGOs, and corporations, the Alliance works to help overcome the market and cultural barriers that currently impede the production and use of clean cookstoves in the developing world.

Strengthening women's leadership and addressing their needs—in this case, for safe and efficient cooking methods—can produce dramatic gains in health, development, and environmental protection.

- Correcting market failure. As long as financial incentives favor unchecked exploitation of natural resources, progress toward sustainable development will remain stalled. The key is to align incentives with the goals of human development and environmental protection. Governments can get the incentives right by removing subsidies that distort commodity prices; providing tax incentives for conservation; establishing progressive fees for resource use; and using procurement policies to encourage environmentally responsible production. And they can "internalize" externalities by levying fees for activities that destroy ecosystem services.

  At the same time, it is vital to capture the value of intact ecosystems—for example, through payment for ecosystem services and ecotourism (see page 25). The rural poor, in particular, need to receive a larger share of the value extracted and harvested from their natural assets. Strategies for capturing that value include "fair trade" marketing and producer cooperatives, which ensure that producers receive a fair share of the profits from their labor and promote higher environmental standards.

- Resource rights. Broadly speaking, resource rights refer to poor and indigenous communities' ability to own, control, and benefit from natural resources. Those rights may be secured through a range of market and legal reforms, including tenure reform. In

contrast with land reform, tenure reform does not involve redistribution of land to new owners. Instead, it strengthens informal tenure rights by, for example, making those rights legally enforceable or by modifying state land-use permits to recognize traditional use.[97] Ensuring resource rights alone will not eliminate poverty or protect the environment, however. Resource rights must be combined with structural changes that foster sustainable resource use, including environmentally-friendly infrastructure, social services, and access to credit.[98]

BUILD CAPACITY FOR EFFECTIVE RESOURCE MANAGEMENT AND INTEGRATION

RECOMMENDATIONS	STAKEHOLDERS		
	U.S. Congress	U.S. Administration/ Operational Agencies	Development and Environment NGOs, including donors
Support broad-based community resource management, including women, indigenous people, ethnic minorities, and the poor.	X	X	X
Support policy reforms in priority areas such as land management and tenure, gender, community mobilization, valuing ecosystem services, incentives for conservation, sustainable supply chains, and subsidies that distort commodity prices.	X	X	X
Provide periodic cross-disciplinary training on integration of environment and development at all levels, from leadership to field staff.		X	X

[CASE STUDY]

CORRECTING MARKET FAILURE
CAPTURING NATURE'S VALUE

Intact ecosystems provide invaluable services to local economies. However, unlike extractive industries, such as timber or mining, they usually do not produce the cash revenue that keeps a nation's balance of payments in the black. When policymakers weigh alternative land uses, those cash-generating activities usually prevail.

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But there are ways to generate cash from intact ecosystems. For example, ecotourism, defined as "responsible travel to natural areas that conserves the environment and improves the well-being of local people," is a proven means of doing so.[99] Costa Rica was an early pioneer: Beginning in the 1980s, the Central American nation moved to protect and restore its forests and aggressively promoted tourism. Today, more than a quarter of Costa Rica's land area is protected in national parks, wildlife refuges, and forest reserves.[100] As visitors flock to see Costa Rica's cloud forests, active volcanoes, and exotic wildlife, tourism has emerged as the country's leading economic sector.[101] Similar gains have been recorded in Tanzania, Botswana, and elsewhere.[102] And ecotourism holds great promise for war-scarred Southern Sudan, an impoverished region with one of the greatest wildlife habitats on the planet. Today, the Southern Sudanese government is working with the Wildlife Conservation Society and the U.S. government to set aside a 77,000 square-mile "special area," that will include national parks and a wildlife reserve, in hopes of capturing tourism revenue.

Ecotourism is not without pitfalls. Drawing large numbers of people to pristine natural areas takes an inevitable toll on environmental quality.[103] And while tourism generates significant revenue, a disproportionate share typically winds up in the hands of local elites or foreign tour guides.[104] Still, even where the gains are inequitable, local economies get a significant boost from tourism.[105] And ecotourism though imperfect is far less damaging to the natural environment than other cash-generating alternatives.

Other initiatives help people living in or near important ecosystems benefit financially from conservation. For example, COMACO—Community Markets for Conservation—forms producer groups with farmers in the Luangwa Valley of Zambia. Launched by the Wildlife Conservation Society and the Zambian government, COMACO encourages sustainable farming practices and helps farmers market their products under the "It's Wild" label. The project has succeeded on many fronts: Participating families have seen their annual incomes grow by over 100 percent and food production increase by 36 percent, while the purchase of farm commodities has injected $1.2 million into the local economy.[106] And as their fortunes improve, the farmers of Luangwa are less likely to poach the area's spectacular wildlife. As a result, a third of local wildlife species have significantly increased in number.[107]

Barrier: Missing metrics— "You get what you measure," the saying goes. Indeed, measurements reflect social priorities, the goals to which people and institutions will be held accountable. But current methods of measurement do not account for the health of ecosystems, nor do they capture the complex, multidimensional nature of today's environment and development challenges. For example, governments and development agencies measure increases in food production but not the ecosystems that underpin those gains. We get what we measure, at least in the short term: increased production. But degraded soils and depleted aquifers render those increases unsustainable over the long term.

Current measurements reflect (and limit) the priorities of funding agencies. Funding is geared toward discrete and easily measured objectives—such as increased food production or income generation—in a system which favors single-sector approaches. Integrated programs, which produce benefits on a broader range of indicators, struggle to compete with more targeted efforts. And evaluation metrics for development programs often neglect to include measures of environmental health.

In the last two decades, scientists and economists around the world have engaged in a robust effort to define and quantify ecosystem services.[108] Some ecosystems produce marketable commodities—like crops, timber, and fish—or inputs to those commodities, such as pollination, which are fairly easy to measure and price. But most ecosystem services are "public goods"—such as storm protection, soil maintenance, and water purification—that are not traded in markets.[109]

In many cases, damage to ecosystem services is an *externality*, a cost that does not appear on balance sheets but is borne by society as a whole. As a result, there are no market mechanisms to signal that an ecosystem service has become scarce or degraded—at least until the ecosystem collapses, at which point society must pay to restore or replace it. Traditional accounting also fails to value the long-term productive value of natural resources. Investments in conservation entail visible upfront costs, while less visible benefits accrue in the long term.

Despite efforts to craft alternative indexes, GDP—gross domestic product—remains the standard measure of economic progress.[110] But GDP measures only the exchange of money, which may or may not contribute to human well-being. The "informal" economy, which includes subsistence farming and bartering, is invisible to GDP, as are the rural poor in developing countries who are engaged in those activities.

GDP does not account for the sustainability of growth. A nation may boost its GDP by liquidating a nonrenewable resource, so what appears to be economic growth is really a one-time windfall. In the 1960s and 1970s, the South Pacific island nation of Nauru briefly enjoyed the world's highest per-capita GDP, while it strip-mined its phosphate deposits. When the deposits ran out in the 1980s, the island's fragile ecosystems were utterly ravaged, and the nation sunk into desperate poverty.[111] Reliance on GDP as a primary indicator of economic health can align incentives against durable and equitable development.

Solution: New measures of success. An integrated approach to conservation and development demands more sensitive and accurate measures of human well-being and environmental health. It also means applying new lenses and metrics to environment and development initiatives, and evaluating their impact on ecosystems, sustainability, and equity:

- **Comprehensive analysis of human and natural systems.** Human systems are embedded in natural systems, and vice versa. The success of an integrated approach to environment and development rests on an understanding of both systems and the relationship between them. Such analyses can be conducted by governments, NGOs, or universities; they can take place locally, nationally, or within an "eco-region"—an area that shares a common geography and ecology (such as the Amazon Basin or the Chesapeake Bay Watershed), if not a political jurisdiction. (See "The "3-M approach," page 28.)

- **Policy review and harmonization.** For governments, donors, and private sector entities, comprehensive analysis means taking a "whole-portfolio" view of policies and investments to ensure that they are not at cross purposes. For example, what incentives and disincentives are embedded in tax and trade policies? The impact of economic subsidies, in particular, bear examining: For developed countries, spending on subsidies in agriculture, energy, and water sectors outstrips development assistance by a factor of 10.[112] Yet in many cases, those subsidies produce a range of unintended negative impacts on the environment and on the well-being of the poor.

[CASE STUDY]

COMPREHENSIVE ANALYSIS OF HUMAN AND NATURAL SYSTEMS
THE "3-M APPROACH"

Deqin County, in the northwest corner of China's Yunnan province, is a rugged, mountainous region rich in biodiversity; its forests and rivers shelter thousands of unique plants and animals. The region is also home to some 60,000 mostly impoverished people, who depend on the forests for wood, water, game, and other wild foods. When the Chinese government expanded the Baimaxueshan Nature Reserve to cover one-third of the county in 2000, the people of Deqin were banned from the forest. As their poverty deepened, the poor villagers took to poaching in the reserve, and the handful of rangers assigned to the reserve could not stop them. Conflict ensued.

The World Wildlife Fund (WWF) applied its "3-M" approach to the standoff in Deqin. The 3-M approach begins by analyzing environment and development dynamics at three levels: micro (local), meso (subnational), and macro (national and international). WWF's analysis revealed that when the people of Deqin were deprived of secure access to forest resources, they lost their incentive to manage the forests sustainably. Moreover, national policy gave reserve managers no leeway to negotiate with local communities.

With a nuanced understanding of the dynamics at hand, WWF then worked with rangers and communities to cooperatively manage the reserve and establish sustainable forest enterprises. Now 70 local communities are engaged in businesses, such as the production of matsutake mushrooms, and community incomes have increased by five- to ten-fold. The Deqin experiment brought changes at the meso and macro levels as well: China's Nature Reserve Bureau has established a new department to foster community-based resource management in other reserves—paving the way for sustainable development, improved forest management, and reduced conflict.[113]

- New streams of data. Sustainable resource management requires comprehensive data on natural systems and the services they provide as well as the capacity to monitor and respond to changes in ecosystem health. Several mechanisms exist at the national, regional, and global levels to supply environmental data to policymakers on discrete issues. At a global level, the Millennium Ecosystem Assessment, a five-year audit of natural systems initiated by the United Nations completed in 2005, was the first effort to provide a snapshot of the planet's ecosystems. To build on that effort, in 2010 the UN launched the Intergovernmental Platform on Biodiversity and Ecosystem Services (IPBES), which will serve as an ongoing mechanism to collect and analyze data on ecosystem health worldwide and provide policy-relevant information to decision-makers. And the UN's Economics of Ecosystems and Biodiversity (TEEB) report aims to capture how habitats like tropical forests and coral reefs contribute to nations' economic bottom lines.

[CASE STUDY]

NEW STREAMS OF DATA

InVEST—THE INTEGRATED VALUATION OF ECOSYSTEM SERVICES TRADEOFFS TOOL

How will a new coastal management plan affect seafood harvests? What is the best location for a reforestation project to protect downstream water quality? These are the kinds of questions InVEST—the Integrated Valuation of Ecosystem Services Tradeoffs Tool—was designed to answer.

InVEST is a software-based program that helps local, regional, and national decision-makers incorporate ecosystem services into a range of policy and planning decisions. Program users develop scenarios to show, for example, areas where fishing might be regulated or where agricultural land might be converted to residential development. InVEST estimates the impact of alternative scenarios on terrestrial, freshwater, and marine ecosystems.

The first version of InVEST offers relatively simple models; more complex, data intensive models are now under development and should be broadened to include socio-cultural factors. InVEST was created by a joint venture among Stanford University's Woods Institute for the Environment, University of Minnesota's Institute on the Environment, The Nature Conservancy, and World Wildlife Fund.

Other data sources for incorporating environmental metrics into development planning include:

- The International Standards Organization's 14,000 series on environmental management.
- The UN's Economics of Ecosystems and Biodiversity (TEEB) report.

- Integrated accounting policies. Public- and private-sector accounting must be expanded to include environmental losses and gains. For example, national accounts can reflect the value of natural capital stocks and ecosystem service flows. Governments and donors can distinguish between windfalls from once-only extraction and income from sustainable resource use. Development agencies can shift from an income-based approach to an asset-based one for evaluating and mitigating poverty. And public and private actors at all levels can think more sustainably by adopting longer-term timeframes for accounting and policymaking.

- New benchmarks for success. To foster integrated programming, governments, NGOs, and donors must incorporate clear environmental metrics in development guidelines and evaluations. Environmental reporting requirements can be better integrated into

development initiatives, including the Poverty Reduction Strategy Papers used to report progress toward meeting the Millennium Development Goals and in the U.S. government's initiatives on food security, global health, and climate. At the same time, environmental initiatives can measure their value to human well-being by including metrics on water quality, food security, storm protection, and other development benefits.

[CASE STUDY]

NEW BENCHMARKS FOR SUCCESS

ADAPTING TO CLIMATE CHANGE: CARE'S TOOLKITS

Recognizing the devastating impact of climate change on the world's poorest people, CARE created a digital "Toolkit for Integrating Climate Change into Development Projects." The toolkit provides practical assistance for adapting design, implementation, and monitoring/evaluation of development projects to the challenges posed by climate change. Its step-by-step structure helps users design climate-resilient interventions, and it includes simple checklists to ensure that development efforts do not inadvertently increase vulnerability—for example, are crop introductions appropriate for new climatic conditions? A separate "Community-Based Adaptation Toolkit" helps facilitate the design, implementation, and management of locally-managed interventions. The toolkits were produced by CARE International, with technical input by the International Institute for Sustainable Development (IISD).

- Use more comprehensive measures of human well-being and security. To encourage a broader rethinking of the environmental dimensions of development, decision-makers must supplement GDP with finer-grained measures of human well-being. Many alternative indices have been developed including: the United Nations Development Program's Human Development Index, the Genuine Progress Indicator, the Index of Sustainable Economic Welfare, and the French government's Measurement of Economic Performance and Social Welfare. These indicators recognize the many dimensions of human well-being as well as the environmental basis for development. In addition, the Center for a New American Security has proposed a "Natural Security Index" that would reflect U.S. security interests and incorporate the expertise, knowledge, and tools that natural resources and conservation groups can bring to bear.

NEW MEASURES OF SUCCESS

RECOMMENDATIONS	STAKEHOLDERS		
	U.S. Congress	U.S. Administration/ Operational Agencies	Development and Environment NGOs, including donors
Ensure program sustainability is evaluated and integrated indicators are appropriately monitored. Build environmental sustainability indicators into all appropriate program areas, including infrastructure, health, food security, economic growth, etc.	X	X	X
Improve measures of the sustainability of development. For example, distinguish between windfalls from resource extraction and income from sustainable resource use. Incorporate environmental criteria into indices of human well-being, including the UN's Human Development Index.	X	X	X

IV. CONCLUSION

An integrated approach to the environment and development does not require new bureaucracies and institutions. Instead, it calls for different approaches to current efforts: new partnerships, capacity building for effective resource management, and new measurements of success.

Fundamentally, it calls for a deeper recognition that human well-being and progress are dependent on the health of natural systems, and that durable gains are not possible unless these systems are safeguarded. Protecting the environment can no longer remain separate from the central task of improving the human condition. And it cannot wait until prosperity is achieved; it is, in fact, a precondition for sustained economic growth.

At the same time, improved human conditions are necessary for conservation. Where people have the means to provide for themselves—and the power to make decisions in their community—they are more likely to protect the natural systems on which they depend.

Protecting the environment can no longer remain separate from the central task of improving the human condition.

Environmental sustainability must be incorporated at all levels of development planning, implementation, monitoring and evaluation. And environmental groups and agencies must bring a more nuanced understanding of human development to their work. By producing demonstrable gains in human well-being, conservation efforts will be more sustainable, both practically and politically.

The benefits of an integrated approach are clear. Protecting the natural systems that support human well-being is cost-effective and helps to ensure the success of U.S. investments in international development. This approach will also contribute to stability and resilience in an ever-more volatile world.

The great challenge of the 21st century will be to lift 3 billion people from poverty—and provide for billions more—against a backdrop of severe resource degradation. Our current, siloed approach to environment and development is simply not up to this task. The challenges we face are systemic; ecosystem health and human well-being are connected by myriad feedback loops. Our response must reflect—and embody—those interconnections.

Stakeholder-Specific Recommendations

RECOMMENDATIONS	STAKEHOLDERS		
	U.S. Congress	U.S. Administration/ Operational Agencies	Development and Environment NGOs, including donors
SHARED UNDERSTANDING/NEW PARTNERSHIPS			
Assess current and planned programming to harmonize environment and development outcomes; incentivize integrated programs and country strategies.	X	X	X
Base program design on case studies that demonstrate effective integration of the environment and development.		X	X
Foster partnerships among donors, governments, civil society, and research institutions to mobilize diverse technical skills for integrated programs.	X	X	X
Adopt longer time frames for implementation that are appropriate to integrated programs.	X	X	X
BUILD CAPACITY FOR EFFECTIVE RESOURCE MANAGEMENT AND INTEGRATION			
Support broad-based community resource management, including women, indigenous people, ethnic minorities, and the poor.	X	X	X
Support policy reforms in priority areas such as land management and tenure, gender, community mobilization, valuing ecosystem services, incentives for conservation, sustainable supply chains, and subsidies that distort commodity prices.	X	X	X
Provide periodic cross-disciplinary training on integration of environment and development at all levels, from leadership to field staff.		X	X
NEW MEASURES OF SUCCESS			
Ensure program sustainability is evaluated and integrated indicators are appropriately monitored. Build environmental sustainability indicators into all appropriate program areas, including infrastructure, health, food security, economic growth, etc.	X	X	X
Improve measures of the sustainability of development. For example, distinguish between windfalls from resource extraction and income from sustainable resource use. Incorporate environmental criteria into indices of human well-being, including the UN's Human Development Index.	X	X	X

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