

Sustainable Financing for the Planet



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Acronyms and Abbreviations

ACC	Asian Conservation Company
ADA	Austrian Development Agency
AFD	French Development Agency
BBOP	Business and Biodiversity Offset Program
C2D	Debt Development Contract
CARE	Cooperative for Assistance and Relief Everywhere
CCB	Climate, Community and Biodiversity Standard
CCBA	Climate, Community and Biodiversity Alliance
CCX	Chicago Climate Exchange
CFUG	Community Forest User Groups
CI	Conservation International
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CONAP	National Council for Protected Areas
DANIDA	Danish International Development Agency
DGFFS	Dirección General Forestal y de Fauna Silvestre
DOC	Department of Conservation
EAMAAPQ	Empresa Metropolitana de Alcantarillado y Agua Potable de Quito (Quito Metropolitan Water Supply and Sewerage Company)
ETS	Emissions Trading System
EU ETS	European Union Emissions Trading System
FAS	Amazonas Sustainable Foundation
FAST	Finance Alliance for Sustainable Trade
FMCN	Fondo Mexicano para la Conservación de la Naturaleza (Mexican Nature Conservation Fund)
FONAFIFO	The National Forestry Financing Fund
FONAG	Water Protection Fund
FSC	Forest Stewardship Council
GAA	Government Aid Agency
GEF	Global Environment Facility
GPS	Global Positioning System
IFC	International Finance Corporation
INBio	National Biodiversity Institute of Costa Rica
INRENA	Instituto Nacional de Recursos Naturales
IUCN	International Union for Conservation of Nature
LDMF	Local Development Mitigation Fees
MBF	Madagascar Biodiversity Fund
MOU	Memorandum of Understanding
MSC	Marine Stewardship Council
NGO	Nongovernment organization(s)
NOx	Nitrogen oxide
PACT	Protected Areas Conservation Trust
PES	Payments for Ecosystem Services
QMM	QIT Madagascar Minerals
REDD	Reduce Emissions from Deforestation or Degradation
RedLAC	Latin American and Caribbean Network of Environmental Funds
RGGI	Regional Greenhouse Gas Initiative

SO ₂	Sulfur dioxide
TCCC	The Coca-Cola Company
TCM	Traditional Chinese Medicine
TFCA	Tropical Forest Conservation Act
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
USAID	United States Agency for International Development
VCS	Voluntary Carbon Standard
VSLA	Village Saving and Loan Associations



Introduction

What Is Conservation Finance?

Conservation finance generates new, long-term, and diversified sources of revenue for conservation. Professionals in this field work with stakeholders ranging from local communities to large multilateral finance institutions, private corporations, and country governments. They support conservation work that extends across ecoregions, landscapes, ecological hotspots, protected area networks, and large terrestrial, freshwater, coastal, and marine areas. The purpose is to create revenue that can play a major role in ensuring biodiversity conservation, sometimes in perpetuity.

Conservation finance includes an array of innovative financing mechanisms, such as tourism-related taxes and fees, debt-for-nature swaps, conservation trust funds, and payments for environmental services. While these alone may not be sufficient as single solutions to achieving targeted conservation goals, they can have the power to leverage millions of dollars.

Healthy and productive ecosystems are important for the survival and well-being of all species, including humans. However, funding for biodiversity protection is usually the last to be provided by governments facing daunting social needs and political challenges. Many of the most biodiversity-rich areas on Earth are in places threatened by poverty, corruption, extensive resource extraction, and uncontrolled development. Thus, the principal challenge of conservation finance is to identify solutions that not only generate revenue for conservation, but also effectively manage and allocate this funding to provide a mix of community and social benefits as well.

Purpose of the *Guide to Conservation Finance*

The *Guide to Conservation Finance* provides an overview of conservation financing mechanisms that have been implemented throughout the world. The guide informs field practitioners about which of the available financing mechanisms they could apply to achieve their conservation aims. The various mechanisms are illustrated with short case studies that demonstrate both successes and challenges. In addition, the guide provides a list of resources and Web links for further exploration of the conservation finance field.

Traditional Funding Sources and Emerging Finance Opportunities

The primary funding sources for biodiversity conservation have traditionally been grants, donations and government budget allocations, the latter being largely determined by national priorities. Typical donors include multilateral and bilateral agencies, nongovernmental organizations (NGOs), private corporations, foundations and individuals. Each type of donor differs in terms of its policies and priorities, with funding directed toward conservation projects that reflect the donor's interests and timeframe and not necessarily the most urgent needs of a given place or species.

Foundations are philanthropic organizations generally established by wealthy individuals, corporations or other groups to fund charitable activities. Private companies usually contribute to conservation through foundations, special initiatives, and creative partnerships. NGOs raise hundreds of millions of dollars for conservation activities, leveraging technical expertise, supplies and equipment, and other critical resources to achieve conservation results. Bilateral donors typically provide direct assistance toward specific countries of strategic importance and work with host countries to achieve joint priorities. Multilateral agencies that fund conservation activities include the Global Environment Facility (GEF), the United Nations Development Programme (UNDP), the United Nations Environment Programme (UNEP), and the World Bank. Those projects tend to be large in geographic scope or reflect multiple country priorities. Some multilateral agencies, such as regional development banks, provide loans to governments, rather than grants or donations. There are many existing resources published by WWF and other institutions that provide guidance on traditional fundraising.

This guide focuses on new sources of sustainable financing for conservation, including market-based economic instruments. The term “Payments for Ecosystem Services” (PES) describes a wide variety of payment arrangements in which the beneficiaries, or users, of ecosystem services provide payment to the providers of ecosystem services.

For example, carbon finance and payments for watershed services are increasingly gaining recognition as viable payment schemes for forest, water and biodiversity conservation. The global carbon market alone has grown substantially in recent years. A staggering 4.9 billion tons of carbon credits were traded in 2008, an increase of 83 percent from the previous year. The total value of global trading for both voluntary and compliance carbon markets amounted to \$125 billion in 2008, more than a twofold increase from \$51 billion in 2007 (Point Carbon, 2009). There is considerable potential to draw on funding generated by these emerging markets to support conservation efforts worldwide.

Conservation finance mechanisms, such as water funds, green taxes, bioprospecting, tourism-based revenues, and carbon finance represent types of payments for ecosystem services that can be used to finance a shift away from conventional and unsustainable resource use practices and create a market in favor of preservation, restoration and sustainable management. They can also provide benefits for local communities, who are often the stewards of important conservation areas. This guide describes sustainable financing mechanisms that have been applied in different parts of the world to support landscape-level conservation efforts as well as sustainable financing of protected areas. To meet international commitments to support protected areas, countries are developing sustainable financing strategies that combine more effective financial management with initiatives to diversify funding sources.

Assessing the Feasibility of Conservation Finance

Financing mechanisms should be evaluated as part of a financing strategy for conservation programs of any scale. A financial assessment considers the project’s scope, spatial scale, strategic activities and time frame, as well as total costs, current sources of revenue, and gaps. Thus, a sustainable financing strategy evaluates the total funding currently or potentially available from all sources — government budgets; funding from private donors, corporate or NGO partners; revenue generated by access and user fees, fines, and other payment schemes. The assessment estimates the funding needed and determines the financing gap that must be filled to meet the program’s conservation goals. A comprehensive financial assessment then evaluates the legal, administrative, social, political, and environmental context to determine which finance mechanisms can most realistically close the financing gap.

The following is a sample list of issues to evaluate when conducting a conservation finance feasibility assessment:

Financial

- How much money will actually be needed each year to support the particular conservation programs and activities that are envisaged?
- How much revenue is likely to be generated each year by current donors and financing mechanisms? How much additional revenue is needed?

What new conservation financing mechanisms can most feasibly be created?

- Will the revenues generated be worth the cost of setting up the new financing mechanism?
- Could the revenues vary substantially from year to year depending on global and national economic, political, and natural conditions?
- How will a highly variable revenue flow affect the conservation programs that the financial mechanism is intended to pay for?
- What other sources of funds might be available, either on a long-term or a one-time basis, to close funding gaps or offset annual variability?

Legal

- Can the proposed financing mechanisms be established under the country's current legal system? Some systems do not provide the legal basis for setting up a conservation trust fund. In other legal systems, there may be a policy prohibiting the earmarking of tax revenues or fees for specific purposes.
- Will new legislation or an executive action be required in order to establish the proposed financing mechanism? How difficult and time-consuming will it be to pass such legislation?

Administrative

- In the given country, how difficult will it be to administer, enforce, collect, or implement a particular type of financing mechanism? Will it be too complicated or costly to administer?
- Are there enough trained people to administer and/or enforce the financing mechanism? If not, how difficult will it be to train enough people?
- Will implementing the particular financing mechanism depend too much on the discretion of individual officials who may be susceptible to undue political influence or corruption?
- How difficult will it be to collect, verify, and maintain the data upon which a particular financing mechanism is based? How will transparency and accountability be assured?

Social

- What will be the social impacts of implementing a particular system of generating revenues for conservation?
- What stakeholders will pay into the new mechanism, and what is their willingness and capacity to pay?
- Will the new financing mechanism be perceived as equitable and legitimate? Will the financing mechanism help or hurt local communities and indigenous peoples?

Political

- Is there government support for establishing the new financing mechanism?
- Can the government be relied upon to spend the new revenues only for the purposes intended, or is there a strong likelihood that the money may end up being used for other purposes?
- How stable is the government? What is the risk of a future shift in government support for a conservation agenda?

Environmental

- What will be the environmental impact of implementing the new financing mechanism? For tourism-based mechanisms, will the desire to increase revenues from tourism compromise conservation objectives or exceed the carrying capacity of a protected area? Or, will a biodiversity offset mechanism provide a net gain in biodiversity over resources lost due to development?

Challenges in Implementing Conservation Finance Mechanisms

Implementing financing mechanisms that help fund desired conservation activities can take a long time. As outlined above, there are a number of factors to take under consideration when designing a financing mechanism or payment scheme, each one with its own set of challenges. Some of these include

- *General lack of funding for developing and implementing conservation financing mechanisms.* While much funding has been invested in conservation efforts over the years, there is relatively little public and private funding available to develop conservation financing mechanisms, such as fully funded conservation trust funds or carbon offset projects.
- *Wide stakeholder participation with varying needs and priorities.* Key stakeholders can be from a range of sectors — industry, agriculture, tourism, local communities, and indigenous peoples — all of whom have varying priorities. Getting a wide group of stakeholders on board to pay into new financing mechanisms takes time and requires buy-in at multiple decision-making levels.
- *Legal and institutional barriers at local, national and regional scales.* Establishing new financing mechanisms in a given country or region can require extensive stakeholder engagement, enactment of policies, and new legislation of intergovernmental agreements — all processes that can be time-consuming and expensive.
- *Social, political, and economic risks.* Biodiversity-rich regions are often areas of great political and social turmoil and poverty, with poor governance and rampant corruption. This poses large risks to investors and can limit funding support for new financing mechanisms.
- *Long timeline between project start and actual delivery of funds.* Many conservation financing mechanisms take years to develop, and this may not meet stakeholder expectations (in particular governments and donors) of seeing results within a certain time frame.
- *Replicability.* Financing models are closely tied to local operational conditions, regulatory frameworks, and stakeholder buy-in, and can be challenging to replicate in other countries.

These are all issues for consideration that can present challenges when developing specific sustainable financing opportunities in an area. Chapters 1 through 10 of this guide cover the variety of sustainable financing mechanisms that have been developed around the world. Conservation finance professionals take all these mechanisms into consideration when developing the best sustainable financing strategy for a protected area, a country, or a region.

Carbon Finance

In the realm of conservation finance, and particularly in regard to payments for ecosystem services, there is no potential source of financing more broadly discussed than carbon finance. Forest conversion, largely in tropical developing countries, accounts for around 20 percent of global carbon emissions. Finding ways to reduce and ultimately eliminate these emissions is a top priority for climate policy negotiations at the international level and domestically, in countries like the United States. Both compliance (cap and trade) and voluntary markets for trading carbon credits (see section 1.1) already exist and will become an even bigger source of financing for emissions reductions in the years to come. Carbon markets offer a new opportunity for funding natural resource protection activities, but also require considering these activities in light of their carbon sequestration benefits in addition to their biodiversity benefits.

The current climate debate is therefore focused on establishing carbon policies and mechanisms that allow carbon market funding to support forest and land use practices that contribute to (and do not erode) overall greenhouse gas reduction goals. WWF believes that carbon finance, if used appropriately, can play a critical role in reducing global greenhouse gas emissions, contributing to biodiversity conservation, and providing a range of local economic and social benefits as well.

This chapter is a simple overview of one of the most complex and quickly growing financial sectors in the world. Our purpose is to paint a general picture of carbon finance as part of the mix of sustainable financing mechanisms available to fund biodiversity conservation.

1.1 Carbon Markets

Broadly speaking, there are two types of markets in which reductions in greenhouse gas emissions are valued and traded: compliance markets and voluntary markets. In these markets, carbon becomes a tradable commodity (carbon credits, issued in terms of metric tons of CO₂, methane, or other greenhouse gases); trade of carbon credits under the voluntary market derived from renewable energy, land use and forest projects currently produce revenue for biodiversity conservation activities that also produce carbon benefits. The only existing national-level compliance market is in the European Union, which does not allow forest carbon to be traded under its system. Ongoing discussions about future compliance regimes in the United States and elsewhere contemplate including forest carbon.

Compliance Markets

Compliance markets are derived from a fixed regulatory (“cap and trade”) system designed to reduce carbon emissions. These compliance regimes require regulated companies to purchase pollution permits in order to comply with emissions caps. In the simplest terms, compliance regimes can produce two types of revenue streams that can be used for forest conservation: (1) new public funding generated from the sale of carbon pollution permits, and (2) new private-sector

funding generated when companies fund conservation-related activities as an alternative to buying carbon pollution permits. The former is often referred to as “market-linked” funding; the latter as an “offset.” These two forms of funding are considered complementary, though each comes with its own set of challenges.

The United Nations Framework Convention on Climate Change (UNFCCC) and Kyoto Protocol provide the international rules for carbon trading. The only current compliance market, the European Union Emissions Trading System (ETS) is operated under these rules and dominates carbon credit trading with an estimated market value in 2008 of \$125 billion (up from \$63 billion in 2007) (*World Bank Carbon Market Report*, 2009). The European Union ETS does not currently allow forest-based offsets. There are other national compliance markets under development in New Zealand, Australia and the United States, as well as some subnational compliance markets within the United States.

The concept of a cap and trade system is already used in the regulation of other pollutants, notably the regulation of sulfur dioxide (SO₂) in the United States. Established as a mechanism to reduce acid rain-causing gas emissions in 1990, the SO₂ cap and trade system has systematically reduced emissions of these gases, including two reductions in the overall nationwide cap (*Eco-finance: the legal design and regulation of market-based environmental instruments*, 2004). Some of the other cap and trade concepts being discussed in the U.S. would cover nitrogen oxides (NOx), nutrients, and even salinity.

In the U.S. there are regional compliance markets coming on line in 2009 and 2010: The Northeast states’ Regional Greenhouse Gas Initiative (RGGI) and the California Climate Action Registry (CCAR). At the time of this writing, serious negotiations are under way in Congress to create a nationwide ETS for the United States. Most experts agree that it is just a matter of time before the U.S. enacts a national cap and trade system. Once launched and operational (by 2013 at the earliest), the U.S. market will have the potential to dwarf all other country-specific markets and likely replace the nation’s regional markets.

At present, none of the compliance markets accept carbon offset credits from forest or land use projects. A major effort is under way to get the European ETS to allow carbon credits to be produced from forest projects that reduce emissions from deforestation or degradation (commonly referred to as REDD). This might happen as early as 2012, but more likely after 2020. A similar effort is under way to allow forest and land use credits under a developing U.S. compliance system, but it is too early to know whether, when, and to what degree such credits will be allowed within a U.S. market. The CCAR has developed protocols for accepting certain types of forest projects. There also may be acceptance of this type of credit in the New Zealand or Australian compliance systems.

Voluntary Markets

A voluntary carbon market functions outside of the compliance markets, enabling companies and individuals to purchase and sell carbon offsets on a voluntary basis. Voluntary carbon markets are already a substantial economic force and will likely grow in the coming years, although once compliance markets are established worldwide, the need for and use of voluntary markets will diminish.

Distinct from carbon compliance markets, the voluntary carbon market enables those in unregulated sectors or in countries that have not established mandatory compliance regimes to voluntarily offset their emissions. It allows them to provide project developers with more flexibility to implement projects that might not be viable under compliance regimes, and to give companies and NGOs the opportunity to gain experience with carbon accounting, emissions reductions and carbon markets.

Although dwarfed by the EU’s ETS compliance market, the combined value of carbon trading in the voluntary marketplace in 2008 was \$705 million, up from \$351 million in 2007 (*World Bank Carbon Market Report*, 2009). The quality and price of the credits traded in voluntary markets varies widely based on the standards used to design and validate the projects.

Most voluntary markets are based on an established set of standards and a registry through which a project must quantify, validate and verify its carbon offset credits. Some – but not all – of these voluntary systems allow use of forest or land use carbon offsets. For example, the Voluntary Carbon Standard (VCS) and the Chicago

Climate Exchange (CCX) are two of those that do; the Gold Standard is one of those that do not. In a third scenario, the Climate, Community and Biodiversity (CCB) Standards neither verify carbon offsets nor provide a carbon registry, but rather serve to guide project development to ensure a robust project with clear benefits to local communities and biodiversity.

At the time of this writing, there are approximately 15 of these standards in varying states of development and use. It is important to note that these standards differ with regard to the method and reliability with which they account for additionality, leakage, and permanence of the offset carbon. Some are more inclusive of biodiversity concerns or the social benefits of carbon finance than others. As such, these standards have varying degrees of applicability for designing voluntary forest or land use carbon projects that contribute to real, verifiable greenhouse gas reductions and produce verifiable biodiversity and social benefits as well (*Green Carbon Guidebook*, 2008).

1.2 Carbon Finance Projects

The international conservation community is beginning to understand the steps, standards, sources of funding, and inherent risks involved in developing carbon finance projects that address greenhouse gas reduction goals as well as biodiversity and social benefits. Carbon project development is further along in areas such as renewable energy projects, than in the area of forest and land use carbon projects.

All carbon finance projects must be able to prove their integrity and sustainability if they are to make a real contribution to reducing greenhouse gases and also hold their value in the marketplace. Viable, marketable projects must be independently validated against an accepted set of standards, certified by a known registry, and independently monitored and verified over time.

Forest and land use projects are not common in the voluntary markets, but more are appearing and this is the area in which forest carbon and land use carbon standards will be tested and refined. Some of the better known or more popular standards, such as the Gold Standard, do not currently allow forest or land use projects. WWF and other conservation NGOs are testing methodologies that would include forestry in one or more of these standards.

In the context of compliance markets, carbon offsets are increasingly being discussed in terms of sector-based, rather than project-based, crediting. Under a sector-based approach, emissions reductions are measured and monitored at a national or regional level and offset credits are rewarded based on reductions against a business-as-usual scenario in that geographic area.

A sector-based approach requires more active involvement from the government, and often requires substantial capacity building before proper monitoring and accounting is possible. A sector-based approach is intended to address concerns about leakage (emissions moving from one area to another as a result of the project), as well as provide a more comprehensive approach to the drivers of emissions-causing behavior. Project-based activities could still be conducted within a sector-based approach, but accounting and financing would need to be coordinated with administrators of the sectoral program.

Carbon Credits from Renewable Biogas, Nepal

http://nepal.panda.org/our_solutions/conservation_nepal/tal/project/biogas

In Nepal's Terai Arc Landscape, WWF-Nepal has partnered with the Alternative Energy Promotion Center and Biogas Sector Partnership-Nepal to install biogas methane generators in individual households. The

project was initiated partly as a means of protecting forest habitat in critical wildlife corridors from being used as fuelwood, and partly to deliver inexpensive and reliable energy to extremely poor communities. The carbon credit is based on calculating the reduction of greenhouse gases (methane and carbon dioxide) that would otherwise be produced from the breakdown of livestock and human waste and from the burning of fossil fuels and fuelwood that would occur in the absence of the biogas stoves.

With the consent of the government of Nepal, WWF-Nepal created a renewable energy carbon project based on 7,500 individual household biogas units. This project has been validated and is registered with the Gold Standard APX registry. By using the Gold Standard, WWF-Nepal was able to demonstrate that considerable environmental, social and economic benefits enhance the value of the carbon credits generated by this project. Initial offer prices for these Gold Standard credits were at the high end of typical prices for voluntary market credits.

Juma Reserve Forest Carbon Project, Brazil

www.fas-amazonas.org

The Juma Reserve encompasses over 589,000 acres in the Brazilian Amazon forest. Through a voluntary carbon offset initiative, the Brazilian state of Amazonas is creating a financial mechanism to generate funds from activities that reduce emissions from deforestation. By issuing credits for sale, the state government aims to cover the reserve's operating costs, ensuring its protection and sustainable management. The Juma Reserve project is being implemented by the Amazonas Sustainable Foundation (FAS) in partnership with the State Secretariat of the Environment and Sustainable Development of Amazonas.

FAS anticipates raising almost 60 percent of the operating budget needed for the Juma Reserve project through a partnership with the Marriott Corporation, which has already given an initial contribution of \$2.5 million (*The Juma Sustainable Development Reserve Project: Reducing Greenhouse Gas Emissions from Deforestation in the State of Amazonas, Brazil*, 2008). Marriott has launched an internal program — *Green Your Stay for \$1.00 Per Day* — to allow guests to “offset” the estimated carbon footprint of their hotel stay. Funds raised from guests will be contributed to the Juma Reserve project, and in turn a certain number of the credits will be retired by FAS for each “guest-day.” Marriott anticipates raising an estimated \$4 million over four years from this program. Importantly, this is not a legal offset but a voluntary contribution by guests to “reduce” their carbon footprint and support an important rain forest reserve.

The Juma Reserve project was developed using the Climate, Community and Biodiversity Alliance (CCBA)

standards to determine the social and environmental benefits of the project, rather than its carbon emissions impact. Because the CCBA does not provide for carbon accounting or validation, these credits can only be used by Marriott (or other similarly motivated corporate partners) for their own internal purposes. As such, this is largely a philanthropic project to date, rather than one that tracks carbon emissions.

The Juma Reserve project developers propose to use the Voluntary Carbon Standards (VCS) to calculate and validate a real, verifiable carbon emissions reduction. Preliminary estimates predict approximately 3.6 million tons of carbon dioxide emissions will be avoided over the first 10 years of the project. If validated and registered, these reductions could be sold as credits in the voluntary market, with the proceeds contributing to the reserve's ongoing management costs and providing financial benefits to the communities in and around the reserve.

Carbon Credits from Avoided Grassland Conversion, United States

Ducks Unlimited, a United States NGO specializing in habitat protection, launched a project funded through Equator Environmental and New Forests that will result in marginal farmland in North Dakota, South Dakota and Montana being converted back to native grassland. The project is set up to protect 26,300 acres of native grassland with perpetual conservation easements that prohibit converting the land to crop-based agriculture. Land conversion on native grasslands releases carbon dioxide into the atmosphere through the oxidation of soil organic carbon.

Using the Voluntary Carbon Standard (VCS), the project developers estimate the total reduction of carbon dioxide emissions across the project area will be 795,777 metric tons over 99 years. The carbon sequestered in the native grasses will result in carbon credits to be registered and retired in the Environmental Resources Trust, Inc./Winrock GHG Registry (*Ducks Unlimited Avoided Grasslands Conversion Project in the Prairie Pothole Region*, 2008).

1.3 Carbon Investment Funds

There are a number of investment funds specifically for forest carbon. These include public funds (The World Bank Forest Investment Fund, Prince's Rainforest Project), financing facilities (Forest Carbon Partnership Facility, Global Environment Facility) and related sources of both public and private investment financing (United Nations REDD Initiative, various private investment funds).

Many of the private funding sources are investing in carbon finance project development, but the public funding is largely in support of developing countries' establishment of national baselines, carbon accounting systems, and overall readiness to participate in carbon finance and forest carbon projects. For instance, Norway has pledged \$500 million per year in direct assistance to REDD capacity building and emissions reductions in developing countries. The United Kingdom has pledged \$100 million per year, and in the U.S. some congressional budget proposals include up to \$200 million in 2010 for REDD capacity building.

1.4 Carbon Tax

The carbon tax represents a policy approach to reducing emissions that is quite different from a cap and trade system. Both a carbon tax and a cap on carbon emissions would result in a price being placed on greenhouse gas emissions for the purpose of encouraging the use of low- or zero-carbon alternatives. A carbon tax strategy, however, would impose that price directly through a tax on the use of carbon and carbon-based materials.

A limited carbon tax could be implemented by taxing the burning of fossil fuels, including coal and petroleum products such as gasoline and aviation fuel, in proportion to their carbon content. (A modest form of national carbon tax currently exists in the United States in the form of the national gasoline tax.) A carbon tax could also be implemented more broadly in taxing carbon-based chemicals, industrial feedstocks, raw materials or finished goods containing carbon.

Depending on the level of the tax, a national carbon tax strategy would likely limit a country's ability to create a cap and trade system involving carbon offsets. A carbon tax "charges" for the use of carbon and forces payment through the manufacturing and distribution process toward the consumer. Reductions in carbon use result when consumers are not willing or able to pay these higher prices for goods. No offset mechanisms are used, and no additional revenue is generated for purchase of carbon offset credits, thus a carbon tax provides no additional financial benefit for biodiversity.

A cap and trade system, in contrast, creates the carbon price by putting a hard cap on total emissions and leaving the market to set the price by allowing capped entities to trade emissions permits. A cap and trade system allows for the inclusion of offsets (investments in emissions reductions from outside the capped sector that can be used in place of pollution permits). The inclusion of offsets from non-capped sectors creates incentives for market investment in quantifiable emissions reductions from activities like forest conservation.

Nonetheless, carbon tax systems are appearing in regional and local settings. As the case study that follows demonstrates, a carbon tax can be a viable economic solution to reducing greenhouse gas emissions and can provide local energy conservation benefits for businesses and consumers.

Carbon Tax, Colorado, United States

In 2006 the city of Boulder, Colorado, passed the first carbon tax in the United States. It charges residents and businesses a carbon tax based on how much electricity they use. Most electricity in Boulder is

generated at plants that use coal, which produces more of the main greenhouse gas carbon dioxide than natural gas or oil. The Boulder tax raises average home electricity bills and generates about \$1 million for the city annually. The money will fund energy audits for homes and businesses and visits by energy experts to advise homeowners on saving energy.

2

Payments for Watershed Services

The conservation finance mechanism of payments for watershed services is used worldwide and is emerging more and more in developing countries. Payment agreements are usually between private water users and environmental agencies and NGOs, or between governments and private landowners. The approach considers the impacts of industry operations and other activities on a watershed. In general, payments for water use come from four major sources — hydroelectric power suppliers, large industrial users, municipal water suppliers, and irrigation water users — and are applied toward achieving improved water quality and habitat restoration in the watershed.

For water payment markets to develop, certain elements must be in place: recognition of the goods and services provided within a watershed; agreement on the value and price of those goods and services; the presence of buyers and sellers; and established property, access and usage rights related to land tenure and water use. The arrangement must also be transparent and reliable — there must be a clear understanding of the risks involved, appropriately negotiated agreements between buyers and sellers, established standards and norms for governance and transactions, and financing mechanisms that enable the completion of transactions between buyers and sellers (Smith et al., 2006).

Africa lags behind most other areas of the world in developing ecosystem services payment schemes. Initiatives are emerging in Kenya, Tanzania, South Africa, and Uganda. However, watershed payment markets in Africa are limited due to the lack of technical and market information, inadequate legal framework and institutional experience, and few business models. In addition, the lack of monitoring and accounting makes it challenging to appropriately charge for water consumption. Willingness to pay for water services is also difficult due to the high levels of poverty and high transaction costs in overcoming the various obstacles in developing payment schemes (*Payments for Watershed Service Regional Synthesis*, 2007).

Watershed payment schemes have been particularly successful in certain Latin American countries, including Guatemala, Costa Rica, and Ecuador.

Sierra de las Minas Biosphere Reserve Water Fund, Guatemala

www.watershedmarkets.org/casestudies/Guatemala_Sierra_Minas.html

The Sierra de las Minas Water Fund in Guatemala was created in 2002 and became operational in 2006. Various stakeholders make payments into the water fund, which is set up like a trust fund to manage the revenue from the payments for watershed services in the Sierra de las Minas Biosphere Reserve. Establishment of the fund was made possible through initial support from WWF and

the Swiss Re insurance company, combined with subsequent support from the Critical Ecosystems Partnership Fund, Austrian Development Agency (ADA), USAID, DANIDA, and CARE. Current support comes from The Coca-Cola Company (TCCC) and The Coca-Cola Foundation. The initial funding of roughly \$256,000 enabled the development of a financial plan, establishment of a board of directors, formation of basin committees who could represent stakeholders on the board, and the conducting of initial studies. The water fund has a board of representatives from the largest stakeholder groups in the watershed including agriculture, hydroelectric plants, local authorities, private corporations, and environmental organizations.

Once the fund is fully operational, contributions are anticipated from all major sectors within the watershed, including industrial, agro-industrial and irrigation, hydroelectric facilities, municipalities, and tourism. Participating companies are expected to contribute \$25,000 each per year to implement community projects, and can have representation on the Investment Committee that oversees funding allocations. The water fund will require an estimated \$130,000 a year to cover fixed operational costs, and is expected to require \$867,000 a year in combined contributions from donors, investors, and project contracts. The numbers are based on the business plan developed at the outset. Given that it takes time to gain the confidence and participation of donors and investors, this level of activity is not expected to be feasible until the fifth or sixth year of operations.

To date, two bottling companies are participating — ABASA, TCCC bottling plant in Teculután, and Salvavidas, a water bottler that is owned by the Cervercería Centroamericana. The participation of an additional company is under negotiation. Using funds invested by ABASA and the Cervercería Centroamericana, the water fund has already begun to support watershed management activities with communities. So far, projects have included the distribution of wood-saving stoves to 35 families in Santa Rosalía Mármol, which reduced wood consumption by 55 percent, and two wildfire prevention and control projects in the Teculután and Rio Hondo watersheds, which reduced fires by 25 percent and 21.9 percent respectively. In addition, the sugar cane growers' association on the Polochic side of the watershed is collaborating to improve soil conservation and to better manage water use, especially during the rainy season.

Payments for Watershed Protection, Costa Rica

www.fonafifo.com/paginas_english/environmental_services/servicios_ambientales.htm

In Latin America, Costa Rica has long been a leader in designing and implementing payments for watershed services. Land and forest users are paid for the environmental services they generate when they adopt land-use and forest management practices that preserve biodiversity and maintain people's quality of life. The payment program is based on legal and financial

contractual agreements between individual farmers and the government, and it functions like a funds transfer system between those providing environmental services and those benefiting from them. Participants must have a certified forest management plan and carry out conservation, reforestation, and sustainable forest management activities.

Payments vary depending on the type of conservation activity and service rendered. While reforestation can cost about \$816 per hectare, forest protection is valued at about \$320 per hectare (FONAFIFO, 2008). The payments are made over a five-year period and are administered by the National Forestry Financing Fund (FONAFIFO). Upon contract expiration, landowners can renegotiate prices or sell their rights to third parties, but they remain committed to managing or protecting their contracted forest for 20 years. The payments are funded through the Costa Rican fuel tax, international donations, and funding generated from other payments for ecosystem services activities (Russo and Candela, 2006).

The Water Protection Fund, Quito, Ecuador

www.fonag.org.ec/portal

The Water Protection Fund (FONAG) is an endowment fund created in 2000 to improve the watershed that provides drinking water to Quito, Ecuador. The fund was established with help from Fundación Antisana (a local NGO), The Nature Conservancy, the municipal water company Empresa Metropolitana de Alcantarillado y Agua Potable de Quito (EMAAPQ) and the Quito City Council. Additional organizations that eventually joined the board of directors include the Quito Electrical Company, Tesalia Springs, Cervecería Nacional, and the Swiss Agency for Cooperation. The fund is a key part of an effort to protect the Cayambe-Coca, Illinizas, Cotopaxi, and Antisana reserves in the watershed's upper area, and the environmental services these reserves provide to Quito's 1.5 million people.

Water users in Quito — residents as well as sectors including agriculture, hydroelectric power and tourism — contribute to the Water Protection Fund via their monthly water bills. For instance, EMAAPQ pays 1.5 percent of its total water sales, which amounted to roughly \$100,000 per month in 2008. Cervecería Andina, a local brewery, made a one-time payment of

\$6,000 to the fund. Quito's electrical utility pays \$45,000 per year and generates 22 percent of its hydropower from Quito's watersheds. The revenue, channeled through the fund, goes toward funding watershed management projects, communications and outreach, environmental education, reforestation, training, and management of protected areas that provide water to the city. The fund also will be used to acquire land within the watershed to ensure conservation in perpetuity.

FONAG's endowment fund amounted to \$6 million at the end of 2008 and is expected to grow to \$8.5 million by 2010. From the endowment, \$360,000 (the return on investment) is spent annually. During 2008, an additional \$3.3 million was spent on conservation initiatives in the watershed. This funding came from additional donor and partner support, including the World Bank, the Inter-American Development Bank, The Nature Conservancy, the U.S. Agency for International Development, the French Institute for Research and Development, Inwent, and the Municipality of Quito, among others (FONAG, 2008).

Payments for Watershed Services from Hydropower, Philippines

Hydropower generation is encouraged by Philippine law. A number of policies and agreements exist in the country to support conservation and local community development through taxes and voluntary payments by hydroelectric companies. The revenue is managed by both local and national treasury offices. For instance, the Bakun Watershed, in the mountainous northern Philippines, receives a national wealth tax of 1 percent payment on the generated gross revenue of the local hydropower companies. This tax is paid directly to local government units: 20 percent to the province, 45 percent to municipalities, and 35 percent to villages. In addition, the company can remit a three-percent-of-net-sales voluntary payment to the local government to support community development.

The Philippine's Department of Energy Act of 1992 and the Electric Power Industry Reform Act of 2001 mandate that profits from power generation should benefit the host communities by fund contributions equivalent to 25 percent per centavo (PhP) per kWh of total sales. The revenues are managed through a fund and allocated to reforestation, watershed management, public health, and conservation (*RUPES Synthesis Notes No. 3, 2007*).



Revenue from Tourism and Recreation

International travel and tourism is expected to generate close to 15 trillion dollars over the next 10 years, according to the latest Tourism Satellite Accounting research released by the World Travel and Tourism Council (*World Travel and Tourism Council*, 2008). The tourism industry can be highly volatile and depends entirely on visitors' willingness to pay. Revenue generated from nature-based tourism can go a long way in covering identified financial gaps and needed budgets for effective conservation and management of natural resources. However, nature-based tourism can bring with it significant human impacts, and if not properly managed can lead to degrading prime habitat, declining wildlife, and ultimately diminished visitor experience.

Nature tourism provides a strong incentive for governments, communities and businesses to conserve species and their habitat since tourists demand a high-quality experience characterized by beautiful scenery and abundant wildlife. If designed to direct revenue back into the sustainable management of tourist-targeted wildlife and habitat, tourism-based financing mechanisms can provide considerable support for conservation. Mechanisms include protected area entry and recreation fees, species-related user fees, sport hunting fees and “green” safaris, hotel and airport taxes, and tourist and tourism operator voluntary contributions.

3.1 Protected Area Entry Fees

Protected area entry fees provide a mechanism for raising tourism-based conservation revenue because fees are generally collected at certain protected area entry points. At the most basic level, entry fees require a collection post and collector. However, it is also important to note that collecting tourism fees has a cost to a protected area. This needs to be accounted for in a cost-benefit analysis to ensure cost recovery.

In some countries, the fees collected do not always benefit conservation, as many park systems lack incentives for their staff to rigorously collect and account for entry fees. Additionally, in many countries entry fees are deposited into the general government treasury rather than allocated back to the park system. To ensure an effective financial stream, revenue from protected area entry fees should be channeled directly back into the protected area system to cover operational needs such as staff salaries or investment needs such as infrastructure.

When establishing a program of protected area entry fees, planners should consider a number of feasibility issues, such as the annual number and origin of tourists; the potential economic value of the species, habitat, scenic beauty, or other natural attributes; and the accessibility of the protected area. Foreign tourists are generally willing to pay substantially higher fees than many protected areas charge, but protected area authorities (particularly in developing nations) often choose not to increase the price due to an unsubstantiated fear of losing tourism (Krug et al. 2002). Many protected areas have implemented tiered systems in which foreign tourists, regional tourists, and national citizens are charged separate entry fees. By setting tiered fees according to visitors' ability to pay, rather than charging only foreign tourists, protected areas can increase the total amount of revenue collected.

Park Entry Fees, Bunaken National Marine Park, Indonesia

www.ecodivers.com/diving_bunaken_entrancefee.php

In 2000, the North Sulawesi Provincial Government passed a law creating a mandatory entrance fee system in Bunaken National Park. This entrance fee is collected mostly from visiting divers. Prior to the law, entrance fees were paid only on a voluntary basis. Indonesian visitors pay between Rp 1,000 and Rp 2,500 (\$0.10–\$0.30) and foreign visitors pay Rp 50,000 (\$6) per daily ticket or Rp 150,000 (\$18) for an annual park entrance tag. This entrance tag must remain visible at all times within the borders of the park and is enforced using a spot check system conducted by a park ranger. Tags can be purchased through marine tourism operators or from three official ticket counters. In its first three years of operation, the entrance fee system generated over \$420,000.

Revenue from the entrance fees is managed by the Bunaken National Park Management Advisory Board, a multistakeholder group comprising representatives from dive companies, environmental organizations, academia, government, and local villages. Eighty percent of funds collected from the fee go toward financing conservation programs in the park, such as illegal fishing patrol and enforcement, village improvement programs, collection and disposal of garbage, marine conservation education, and reef and mangrove rehabilitation. These programs have helped to conserve over 1,000 species of fish, dugongs, marine turtles, and other threatened marine species that live in the region (Eco Divers North Sulawesi, 2008).

Park Entry Fees, Quirimbas National Park, Mozambique

In 2003, the Mozambican government established a nationwide fee system for entrance into national parks. International tourists pay \$8, and national tourists pay \$4, as a one-off entry fee. Children under the age of 12 are admitted free. In Quirimbas National Park, a simple collection of entry fees proved difficult because the park has numerous entry points, a large resident population, and is crossed by important national roads. Therefore, it was decided that the tourism establishments themselves

would collect the fees and remit them to the park administration on a monthly basis. Visitors receive a park receipt which they must show to avoid repeat charging.

After a few years of incomplete coverage, the park entrance fees are now being regularly collected and submitted, yielding an income of approximately \$22,250 in 2007. Of this amount, 20 percent is returned to the local population on a rotational basis for use on local projects. The remaining 80 percent is deposited into a government account and returned to the park administration for operational costs such as ranger salaries, maintaining sustainable fisheries, sea turtle monitoring, reducing human-elephant conflict, and zoning for conservation and community-based tourism (WWF Mozambique, 2007).

Entry Fees, Marine Protected Areas, Belize

www.wri.org/publications (*Financial Overview of Marine Protected Areas in Belize*)

In 1981, the government of Belize and various non-governmental organizations worked together to create a network of protected areas to preserve the unique biodiversity in Belize under the National Parks System Act. The government instituted fixed park entry fees that are comanaged by NGOs including the Belize Audubon Society, Hol Chan Trust Fund, Friends of Nature, Green Reef, and Forest and Marine Reserves Association of Caye Caulker.

In some of the protected areas, the entry fees are used entirely in those areas. In other cases, some or all of the fees are channelled to the government. In the case of the Blue Hole (comanaged by the Belize Audubon Society and the Forest Department under the Ministry of Natural Resources), 100 percent of daily entry fees go directly back into managing the protected area. This raised a total of Bze \$549,360 (\$282,489) in 2007 for operation and park maintenance and marine research (Coastal Capital Belize, 2009). In the case of Silk Cayes and Gladden Split protected areas (comanaged by Friends of Nature and the Ministry of Fisheries) all the entry fees go to the government, with only a small fraction returned for use in the protected areas for monitoring and research.

In one further example from outside of Belize, note that the government of Mexico collects all the revenue generated from park entrance fees and then disperses

the funds in equal shares among all of the marine protected areas. This equitable distribution ensures that all

of the protected areas have enough funds for their operating and program costs.

3.2 Recreation License Fees and Special Access Payments

Many protected areas charge additional fees for park-related activities: daily use fees; vehicle, boat, and plane fees; camping fees; and special service fees. Income from such sources can supplement basic park entry revenue and help cover the true costs of supporting park visitors. This income capitalizes on highly attractive features (scenery, charismatic species) and in some cases produces enough revenue to benefit other protected areas or conservation practices in the region.

Gorilla Visit Fee, Rwanda

www.rwandatourism.com/primate.htm

In 1980, the government of Rwanda implemented Gorilla Visit Fees for guests of the Parc National des Volcans, home of the mountain gorillas made famous by Dian Fossey. The gorillas' status as an endangered and charismatic symbol carries significant value, which allows the government to charge high fees for visitors to view the animals in their natural habitat. There is also a high cost to caring for these animals and a risk in habituating them to human presence — the gorillas' acceptance of human viewers means they sit still for poachers as well as tourists.

As of June 2007, the fees for a one-to-four-hour gorilla viewing trek were \$500 for non-nationals, \$250 for foreign nonresidents and \$36 (20,000 Frw) for Rwandan citizens. The Rwandan Office for Tourism and National Parks maintains a team of 80 trackers who speak both French and English to guide park visitors. Revenue raised from the visit fees supports gorilla conservation activities and park management costs (Rwanda Tourism, 2007).

Dive Fees, Anilao: Mabini and Tingloy, Philippines

www.wwf.org.ph/downloads/Anilao2007CaseStudy.pdf

The island of Tingloy and the municipality of Mabini, often referred to by outsiders as "Anilao," are the prime scuba-diving destination closest to Manila. Only a two-hour drive from the capital city, this nearly 20-mile stretch of rugged coastline is extremely popular among divers, so in 2003 a conservation diving fee was

introduced to help conserve the coral reefs. Divers are required to pay PhP100 (\$2) per day or PhP1,800 (\$36) for an annual pass, which allows access to all of the Mabini-Tingloy dive sites.

Diving passes can be purchased from the resorts, from the Municipal Environmental and Natural Resources Office and Municipal Tourism Office of Mabini, and from the World Wildlife Fund office in Barangay Anilao East. The revenue generated by the dive fees is divided evenly between the two municipalities after administrative expenses have been deducted. The funds are independently managed to sustain conservation efforts in Anilao. Dive fees collected from September 2003 to December 2006 generated PhP 5,628,130 (\$112,563).

Whale Shark Fees, Gladden Spit and Silk Cayes, Belize

www.friendsofnaturebelize.org/gladden_spit.html

Gladden Spit and Silk Cayes Marine Reserve is located in the Belize barrier reef and is home to the whale shark. March through June, visitors can dive to observe the whale shark in its natural habitat for Bze \$50 per day (\$26). In 2007, annual revenue from the whale shark fee was Bze \$146,298 (\$77,922), with 80 percent going directly back into the marine protected area managed by Friends of Nature, a local NGO, and 20 percent going to the Fisheries Department under the Ministry of Agriculture and Fisheries.

Friends of Nature uses the revenue for internal operational costs and surveillance of whale shark activities, 24-hour a day ranger patrolling programs, and funding for a tourism stakeholder group that implements best practices in the whale shark zone (Coastal Capital Belize, 2009).

3.3 Hunting Fees and Green Safaris

Hunting fees and green safaris can help support conservation if they are instituted as part of a comprehensive sustainable wildlife management strategy and channeled back into wildlife agency budgets or local protected areas. Trophy fees and hunting licenses are standard requirements for legal hunting in most countries, and can generate significant income. In South Africa, tourists pay up to \$20,000 in trophy fees and hunting licenses for a *single* animal. In 2007, these fees contributed to hunting industry revenues of 2.5 billion ZAR (\$357 million) (Professional Hunters' Association of South Africa, 2007).

Some organizations have created alternative hunting opportunities that give clients the hunting experience without the lethal outcome. Offered by private landowners, wildlife managers, national park systems, or private organizations, these “green safaris” coordinate with ongoing conservation efforts, permitting clients to track, tranquilize, photograph and record a “kill” without permanently harming the animal. On some green safari expeditions, clients use tranquilizing darts that leave the animals sedated long enough for wildlife managers to conduct necessary conservation activities such as translocation, medical treatment, surveys and radio-collaring. Green safari “hunters” pay for licenses, equipment, staff time and “trophy fees” for each particular species, infusing much-needed income into species conservation efforts.

Hunting Fees, Phinda Private Game Reserve, South Africa

www.ccafrica.com/specialist_safaris

In South Africa, Conservation Corporation Africa offers a nonlethal alternative for rhino hunters. In Phinda Private Game Reserve, each safari includes a team of trackers, professional hunters, and a veterinary surgeon experienced in handling rhino capture. Clients “shoot” the rhino with a tranquilizer, and while it is sedated the team inserts a GPS tracking system into the rhino’s horn and performs ear notching. These things enable monitoring of the endangered species — it can be tracked for veterinary treatment and even for translocation to prevent overgrazing. On average, Phinda rhino safaris cost R14,985 (\$1,474), excluding accommodations (Conservation Corporation Africa, 2008).

Photo Safaris, Frontiers North Tundra Buggy Adventures, Canada

www.tundrabuggy.com/polar-bear-tours/polar-bears-at-legendary-cape-churchill

In Churchill, Manitoba, Frontiers North offers photo safari experiences during which tourists observe polar bears in their natural habitat without causing them harm. Frontiers North is a private tourism operator that donates a portion of the monies raised from the polar bear excursions to Polar Bear International,

an NGO focused on polar bear conservation through research and education programs.

Approximate annual contributions include \$50,000 CAD (\$41,232) to Polar Bear International leadership camps; \$180,000 CAD (\$148,435) to Tundra Buggy One, a platform from which the organization executes educational outreach, research and media programs; \$15,000 CAD (\$12,370) to provide room and board for researchers and experts contributing to the programs; \$25,000 CAD (\$20,616) to host special guests on Frontiers North tours; and \$2,500 CAD (\$2,061) for one-year memberships to Polar Bear International for Frontiers North Specialist-level guests (Frontiers North, 2009).

Trophy Quotas, Communal Conservancies, Namibia

Fifteen years ago, as part of a successful collaboration among nongovernment institutions, community-based organizations and development partners, the government of Namibia developed a Community-Based Natural Resource Management Program. In 1996, legislation was passed by the Ministry of Environment that gave conditional rights to local communities over wildlife and natural resources management. Since then, 50 conservancies have been established and have raised more than N\$26 million (\$3.8 million) to conserve millions of acres of communal land in Namibia. Registered conservancies are given ownership over wildlife and can generate revenue through

projects such as sport hunting, private tourism concession leases, community campsites, and craft sales.

In 2006, following a population increase in several wildlife species (elephant, zebra, oryx and springbok), 24 conservancies were able to obtain hunting trophy quotas, while 31 conservancies harvested game and distributed the meat directly to their residents. In 2006, 44 percent of the total conservancy income with trophy

hunting, premium hunting, own-use hunting, and shoot-and-sell hunting were among the critical activities that generated N\$8.29 million (\$1.2 million), with N\$5.6 million (\$812,112) earned as cash revenue and N\$2.2 million in-kind (value of the actual meat distributed, \$319,044). In 2007, N\$6.35 million (\$822,422) was collected from trophy hunting concession fees, and N\$1.9 million (\$246,079) in-kind (NACSO, 2008).

3.4 Tourism Operations in Protected Areas

Protected area agencies can supplement their budgets by operating concessions such as lodges, restaurants and gift shops within protected area boundaries. Royalties and fees generated from these concessions provide a predictable revenue stream to support the agencies' long-term activities. Concessions can be run directly by the protected area agency or leased to a private company. In cases where employees of a protected area lack the skills necessary to operate a commercial business, it may be preferable to transfer business operations to private enterprises, as long as the concession agreement provides both conservation protections and fee revenue to the protected area.

Public Land Concession Fees, New Zealand

www.doc.govt.nz/templates/summary.aspx?id=42193

The New Zealand Department of Conservation (DOC) leases more than 3,500 concessions on public conservation land to private companies. Concession contracts are issued for commercial activities such as guided tours; restaurants, shops, and lodges; agriculture, horticulture and telecommunications ventures; and filming.

To determine the fees, the DOC uses a formula that represents a revenue-sharing scheme based on the proportion of investment contributed by the leasing business (investing capital) and the DOC (investing land). The formula is directly connected to the income of the concessionaire and can be set as a percentage of gross income; an amount per hectare, head or trip; a fixed payment; or a combination of the three. For example, guided tour concession fees are set at 7.5 percent of gross income, helicopter landing rights command 5 percent gross income, and hotels or ski areas collect 3 to 5 percent gross income.

The DOC also operates more than 1,000 back-country huts and 250 campsites. To use a hut, visitors must buy a permit at a local DOC office; campsite fees are generally collected on-site. Usage fees for huts and

campsites are divided into categories based on the level and quality of the facilities offered. Top-end, highly trafficked huts can cost NZ\$35 (\$22) per person per night (ppn), while campsites and other huts cost NZ\$3-\$15 (\$1.90-\$9.60) ppn. Huts within New Zealand's famous "Great Walk" network recover operating costs entirely from user fees. Other huts and campsites require additional taxpayer subsidies (New Zealand Department of Conservation, 2007).

Tourism Concessions, NamibRand Nature Reserve, Namibia

www.namibrand.com

The NamibRand Nature Reserve, located in southern Namibia, is the largest private nature reserve in southern Africa, spanning over 172,200 ha (425,500 acres). Established in 1992 to conserve the unique ecology and wildlife of the southwest Namib Desert, the reserve is financially independent thanks to funds generated through park fees. The reserve sustains its conservation efforts through five tourism concessions that pay daily per-bed fees. The total number of guest-beds in the reserve is restricted to one bed per two hectares and a limit of 20 guest-beds in any one location.

Five concessions are located in various parts of the reserve that pay a levy as a percentage of their income.

Each concession provides lodging and special activities such as hot air-ballooning, walking trails, and safaris. In 2007, the NamibRand Nature Reserve raised

N\$16 million (\$2 million) with a net profit of 12 percent or roughly \$200,000 in revenue, and had an average of 45 visitors per day (NamibRand, 2008).

3.5 Transportation and Hotel Taxes

Most countries have established systems of hotel and airport passenger taxes but the vast majority of this revenue goes into general government coffers. Governments could significantly support conservation efforts by allocating a portion of the airport and hotel tax revenues to natural resource agencies or wildlife management programs. Such allocations make particular sense in countries where a significant portion of tourists come to experience nature and wildlife. Some governments have implemented additional airport passenger and hotel taxes specifically to raise revenue for conservation; they include Costa Rica, Nepal, Galápagos, Belize, and the Turks and Caicos.

National Airport and Cruise Ship Fees, Belize

www.pactbelize.org

The Protected Areas Conservation Trust (PACT) in Belize was established in 1996 to promote the sustainable management and development of the country's protected areas. The trust receives most of its revenue from a conservation fee of Bze \$7.50 (\$3.75) paid by all visitors upon departure from the airport and from a 20 percent commission on cruise ship passenger fees. Conservation fees are earmarked at the time of collection and deposited directly into the trust. From January to April 2008, PACT donated a total of Bze \$283,218 (\$143,780) to conservation projects throughout Belize (PACT, 2008).

Hotel Tax, Turks and Caicos Islands

www.turksandcaicos.tc/ecotours/ecotourism.htm

The Turks and Caicos Islands in the eastern Caribbean designates 1 percent of a 9 percent hotel tax as a conservation tax to support the maintenance of the country's protected areas. The revenue from the hotel tax is deposited into a conservation trust fund modeled after PACT and known as the Turks and Caicos National Trust. Recent projects of the trust include the conversion of the Bambarra Primary School in Middle Caicos into an eco-tour base and visitor center, with accommodations and work area for scientists; the creation of low-impact tourism sites; and the funding of research on the Turks and Caicos rock iguana. The trust currently receives \$30,000 per year and is managed by the Coastal Resources Management Project within the Ministry of Natural Resources (Turks and Caicos National Trust, 2000).

3.6 Voluntary Contributions from Tourists and Tourism Operators

Through voluntary contributions, tourists and tourism operators can support the very places and species that render their vacations (or businesses) valuable. Mechanisms such as voluntary surcharges, supplementary donations on retail or resort bills, and even charitable research assistance can establish a direct financial link between a tourist's natural experience and the conservation of the place. Tourists are more likely to contribute if they can be assured that the funds collected will be disbursed transparently and allocated to the conservation of the species or places they have viewed. Tourism operators generally contribute to conservation when it directly benefits business operations.

SeaWorld and Busch Gardens Conservation Fund, United States

www.swbg-conservationfund.org

The Busch Entertainment Corporation created the SeaWorld and Busch Gardens Conservation Fund in 2003 to strengthen the company's commitment to wildlife conservation. The fund provides support through grants to nonprofit conservation programs and is financed primarily through donations from visitors to all nine Anheuser-Busch Adventure Parks. Guests can make contributions at park gift shops and other outlets, as well as on the season and annual passes.

In 2007, guest contributions to the conservation fund totaled \$804,369. Species conservation efforts in 2007 included the monitoring of right whales off the coast of northeast Florida, research and monitoring of marine turtle habitat in Panama, and black rhino rescue efforts in Zimbabwe (SeaWorld & Busch Gardens Conservation Fund, 2008).

Lindblad Expeditions, Galápagos

www.expeditions.com

Lindblad Expeditions, a cruise ship operator that specializes in travel to scenic and natural places, directly supports conservation efforts through a number of voluntary partnerships and projects. The Galápagos Conservation Fund, established by Lindblad in 1997, has received over \$4.5 million in voluntary donations from ship passengers to preserve the region's unique flora and fauna. The funds are directed to local projects, as determined by an independent board and implemented by the Galápagos National Park and Charles Darwin Research Station. Projects in the Galápagos range from the removal of invasive species from Santiago Island to supporting the National Park Marine Reserve patrol boats (Lindblad, 2008).

Cullman and Hurt Community Wildlife Project, Tanzania

www.cullmanandhurt.org/index.html

The Cullman and Hurt Community Wildlife Project considers the support of local communities critical to the success of its conservation projects. Clients on safari with Robin Hurt Safaris Ltd. in Tanzania pay a voluntary 20 percent community conservation fee (separate from Tanzanian government fees), which funds village development projects near the areas allocated to Robin Hurt Safaris.

As a component of each project, Cullman and Hurt trains each recipient community about the economic value of species conservation, stressing that sustainable resource management can provide more profitable and longer-term benefits than traditional resource utilization. To date, villagers in 33 communities have received more than \$1 million for development projects of their choosing, such as primary school renovation, construction of medical clinics, and water schemes (Cullman and Hurt Community Wildlife Project, 2008).

Wilderness Safaris, Southern Africa

www.wildernesstrust.com/trust/main.jsp

Wilderness Safaris is a private tourism operator that promotes conservation through the use of its wilderness camps, expeditions and safaris in Southern Africa. Founded 20 years ago, the Wilderness Safaris Wildlife Trust is the conservation arm of Wilderness Safaris, and its funds are channeled to conservation projects such as wildlife management, conservation education, and research.

In 2008, R 2.8 million (\$288,000) was raised for the trust, with 43 percent of that coming from individual donations from tourists and tourism operators. The remainder was raised through a guest bed/night levy applied to overnight establishments, international funding agencies, and individual Wilderness Safaris staff fundraising efforts. The trust's costs are managed by Wilderness Safaris. The trust funded 30 conservation projects spanning Botswana, Namibia, Malawi, South Africa, Zambia, Zimbabwe and the Seychelles in 2008 (Wilderness Safaris Wildlife Trust, 2009).

4

Compensation Payments

Compensation payments are an effective way to hold companies accountable for the impact they have on ecosystems and biodiversity. They finance conservation by collecting revenue from fines for pollution, royalty fees for natural resource use, compensation for environmental impacts, or even voluntary contributions. Although compensation payments don't necessarily reflect the actual environmental impact or provide one-for-one compensation, they pay for the extraction or use of one natural resource by investing in the conservation of another.

Compensation payments are also often referred to as biodiversity offsets. However, biodiversity offset payments rendered by private sector companies are designed to account for direct environmental impacts from a development project. In contrast, compensation payments are typically calculated as a percentage of project development costs.

4.1 Voluntary and Mandated Compensation Payments

An increasing number of natural resource companies are voluntarily addressing the environmental impact of their activities and enhancing their contribution to biodiversity conservation and sustainable development. Typically, donated financing is managed by an independent conservation trust fund or NGO dedicated to conserving the environment in the area where the resource extraction is taking place. Compensation payments can vary widely in amount and may be voluntary or required by law, as illustrated by the cases below. Malua Biobank in Malaysia is an example of a financing scheme that has been established as a type of voluntary compensation arrangement for companies that operate in Malaysia and have an impact on the country's natural resources.

Hydroelectric Power Revenues, Costa Rica

Since 1998, La Esperanza hydroelectric power plant has had a direct, private, and voluntary agreement for operating within the boundaries of Children's Eternal Rain Forest. The 3,000-hectare (7,413 acres) nature reserve, located in the area of Monteverde's cloud forests in Costa Rica, covers most of the hydroplant's upper catchments. It is managed by the Ministry of Environment.

The company has signed a 99-year contract with the NGO Monteverde Conservation League, owner of the forest reserve. The power plant contributes 20 percent of its operation and management costs toward management of the reserve (about \$10 per hectare per year), factoring in the difference between forecast and the actual production volume of power. Because private energy producers in Costa Rica have a cap on production, there is a limit on the level of payment. The payments are made directly to the Monteverde Conservation League for protecting the Monteverde cloud forests (*Watershed Markets*, 2007).

Environmental Compensation Tax, Brazil

Brazil designed a federal tax system in 2000 (Federal Law No. 9985) that requires major development projects that cause significant environmental impacts to compensate for those impacts. The revenue is collected by the Brazilian government and is set aside to help establish and maintain protected areas. Businesses have the option of using the compensation money to implement activities related to protected areas. The environmental compensation tax is thus a policy mechanism that requires planners to internalize their projects' negative externalities and impacts on biodiversity. In practice, a minimum of 0.5 percent of the total project cost is set aside for environmental compensation. To date, the government has collected about \$200 million in compensation payments from development projects. However, this funding has yet to be spent on conservation initiatives.

It should further be noted that, as of April 2008, a Supreme Court decision suspended all further payments of environmental compensation. Going forward, the Ministério do Meio Ambiente is required to develop a satisfactory methodology for measuring the specific environmental impact of each infrastructure investment in order for payments to account for those specific impacts.

In 2007, the Para State Environmental Authority of Brazil and Alcoa Alumínio, the Brazilian unit of U.S.-based Alcoa Inc., entered into an agreement in which Alcoa paid 27 million reais (\$15 million) in environmental compensation fees for its Juruti bauxite project. The

compensation payment amounted to 1.57 percent of the project's total investment value. The fee was payable in three installments to be invested in conservation areas in the state of Para (Chinamining, 2007).

Development Impact Fees, California, United States

www.cvmshcp.org

Development impact fees are usually a one-time charge applied to compensate for additional public-service costs resulting from new development. These fees are enforced in many parts of the U.S. as a way to internalize more of the costs of new development.

The Coachella Valley Multiple Species Habitat Conservation Plan incorporates Local Development Mitigation Fees (LDMF), a type of development impact fee required under California Government Code Section 66000 et seq. The LDMFs are imposed on any new development within the cities and county of Riverside. Development mitigation fees for 2008 were \$5,730 per acre, with a per-unit fee for residential development. The residential fee per unit for a density of zero to eight units per acre was \$1,284.

In 2008, the Coachella Valley of Governments got the final permit from the U.S. Fish and Wildlife Service to move forward with the conservation plan. Through funding raised from the development mitigation fees, the plan will permanently conserve 240,000 acres of natural desert and protect 27 sensitive plant and animal species (Coachella, 2008).

4.2 Mitigation Banking and Biodiversity Offsets

Mitigation banking is rapidly emerging in the global conservation arena as a way to address the impacts of consumption and development. These approaches are also seen as potentially significant sources of financing for biodiversity conservation. Both approaches offer potentially significant sources of financing for biodiversity conservation. Biodiversity offsets are defined as measurable conservation outcomes that result from actions meant to compensate for the residual biodiversity impacts of project development and persisting after appropriate prevention and mitigation measures have been implemented (Business and Biodiversity Offset Program, 2009).

The goal of biodiversity offsets is to achieve no net loss, and preferably a net gain, in biodiversity. They offer one mechanism to balance the impacts of development with the conservation of biodiversity and the equitable sharing of benefits. The United States has had legislation related to biodiversity offsets and wetlands mitigation banking since the Clean Water Act in 1972. Financial institutions and banks are increasingly including biodiversity offsets in their loan conditions. More and more companies are investing in voluntary offsets and mitigation activities as an approach that makes business sense.

Pineywoods Mitigation Bank, Texas, United States

www.conservationfund.org/sites/default/files/PMB%20Backgrounder.pdf

The Pineywoods Mitigation Bank, established in Texas in 2008, is one of the largest mitigation banks in the U.S. The bank, managed by The Conservation Fund, sells mitigation credits to public and private developers who are required to compensate for unavoidable impacts to wetlands in the more than 19,000 acres along the Neches River in Angelina, Jasper and Polk counties. Developers are eligible to purchase credits only if they have received development permits from the U.S. Army Corp of Engineers under the Federal Guidance for the Establishment, Use, and Operation of Mitigation Banks and Texas state law.

The revenue from the mitigation credits goes to restore more than 13,000 acres of bottomland forested wetland, and an additional 6,000 acres in the upland area, to their original condition. This effort includes removing exotic plant species, replanting native trees, and doing related restoration work. In addition, the bank will maintain and enhance wetlands, emergent wetlands, and areas of open water on the property.

Biodiversity Offsets and the Gorgon Gas Fields, Australia

The Gorgon Joint Venture (an undertaking of Chevron, Shell and ExxonMobil), has received approval to plan gas processing facilities on Barrow Island, with a Final Investment Decision expected late in 2009. Barrow Island is a Class A Nature Reserve of significant conservation value, located off the northwest coast of Western Australia.

The Gorgon gas fields are located about 80.8 miles off the northwest coast of Western Australia. They constitute the largest gas field area ever discovered in Australia, and together with other area fields they contain an estimated 40 trillion cubic feet of natural gas. Rich in biodiversity, the area is home to some of Australia's endangered species, including sea turtles and mammals that are extinct on the mainland.

To offset the impacts the venture is expected to have, the companies involved have agreed to invest a total of about \$43 million (A\$60 million) over 30 years

in a series of initiatives to conserve flatback turtle populations and other endangered species in the area. According to the agreement, the conservation initiatives will be administered by an executive committee made up of government and company representatives. Activities will include surveying, monitoring, and researching turtle populations; mitigating turtle loss by reducing interference in key feeding and breeding locations; and doing outreach in support of turtle protection.

If monitoring reveals that these activities are not positively affecting the flatback turtle, venture partners have agreed to fund further activities. Additional funds will be capped at \$5 million. The Gorgon Joint Venture has also agreed to fund a variety of other conservation activities on the Island, including a 12-year threatened species reintroduction program and the eradication of non-native species, should they escape the company's quarantine management system (Western Australia Office of the Appeals Convenor, 2007).

The total investment to develop the Gorgon gas fields is expected to be more than \$21 billion (A\$30 billion), although some media reports suggest as much as \$35 billion (A\$50 billion). Additional investment is being considered. Once the gas fields are operating, profits are likely to be several billion dollars per year. In this context, an offset commitment of around \$2 million per year is considered rather small.

Biodiversity Offsets in Rio Tinto, Madagascar

www.riotintomadagascar.com

In early 2009 in Madagascar, the Rio Tinto mining subsidiary QIT Madagascar Minerals S.A. (QMM) began building infrastructure for planned mining operations that will remove significant portions of coastal forest. This ecosystem is recognized as both biologically unique and extremely limited. The mining project will encompass about 1,000 hectares (2,471 acres), some of which are already deforested. Costs are estimated at \$850 million. The operations will initially mine approximately 750,000 tons of ilmenite per year, which will be processed at Rio Tinto's facilities in Quebec, Canada.

As part of the project, QMM is helping to finance a 620-hectare (1,532 acres) conservation zone that has been excluded from the mining area to protect surviving coastal forest and management of 31,275 hectares (77,280 acres). To determine the parameters of the

conservation initiative, Rio Tinto has worked with Kew Gardens, Birdlife International, Conservation International, Flora and Fauna International, Missouri Botanical Gardens, and the Malagasy government. The aim is to achieve a net positive impact on biodiversity and to rehabilitate and restore the land and ecosystems affected by the mining project and related development. It is also important to note that this project has been controversial, with opposition from local communities and international NGOs.

Malua BioBank, Malaysia

www.maluabank.com

The Malua Wildlife Habitat Conservation Bank (also referred to as the Malua BioBank) was established in Malaysia in the fall of 2008 to protect 34,000 hectares (80,000 acres) of critical orangutan habitat in the Malua Forest Reserve. The Malua BioBank is a partnership between the Eco Products Fund, LP, a private equity fund jointly managed by New Forests Inc. and Equator Environmental, LLC, and the government of Sabah in Malaysia.

The Sabah state government has licensed conservation rights for a period of 50 years to the Malua BioBank, and a private investor has committed up to \$10 million for the rehabilitation of the Malua Forest Reserve over the next six years. The Malua BioBank will sell Biodiversity Conservation Certificates, with each certificate representing 100 square meters of rain forest restoration and protection. Revenues generated from certificate sales will be used to recover costs incurred. They will also endow a trust fund (the Malua Trust) set up to handle management of the Malua BioBank over the remaining 44-year period of the license.

Any profit will be shared between the forest management license holder (Yayasan Sabah, a foundation established by the Sabah government to improve the livelihoods of local citizens) and the Malua BioBank investor. The certificates are registered with TZ1 Limited, a leading New Zealand-based registry in the voluntary carbon market. TZ1 provides a secure online facility that enables efficient issuance, housing, ownership transfer, and retirement of the conservation certificates.

The project provides an opportunity for private sector companies working in Malaysia or sourcing products from the country to help fund conservation initiatives in a rain forest area that is high in biodiversity and home to rhinos, pygmy elephants and orangutans.

4.3 Bioprospecting

Bioprospecting is the systematic search for new sources of chemical compounds, genes, proteins, microorganisms, and other products with potential economic value. Through bioprospecting agreements, international pharmaceutical companies compensate developing countries for the property rights over useful compounds contained in the country's biodiversity. In return, the companies get exclusive rights to screen the biodiversity for pharmaceutical compounds. If such screening leads to the development of a major drug, the agreements provide the host country with a share of the profits, which may be used for biodiversity conservation.

INBio, Costa Rica

www.inbio.ac.cr/en/default.html

The National Biodiversity Institute (INBio) was created in 1989 as an NGO for private founding members.

INBio's mission is to promote a new awareness of the value of biodiversity and conservation. INBio's formal agreement with the Costa Rican Ministry of the Environment and Energy allows it to do biodiversity prospecting in government protected areas in collaboration with research centers, universities, and private

companies. The agreements require that 10 percent of the research budgets and 50 percent of future royalties be donated to the ministry to be reinvested in conservation. INBio's annual operating budget is about \$6 million. Seventy percent of that comes from grants and contracts with research institutions and companies (*Nature*, 2006).

In 2006, INBio entered into an agreement with the San Diego-based biotech company, Diversa (later acquired by Verenum), in which Diversa was paying \$6,000 per year for two products developed and derived from natural resources in Costa Rica. These

products were DiscoveryPoint, a fluorescent protein that comes from a marine organism in the Caribbean Sea, and Cottonase, an enzyme for processing raw textile material (and a substitute for harsh chemicals).

INBio has further formed research collaborations with Novartis, University of Michigan, Harvard University, and the Massachusetts Institute of Technology.

4.4 Royalties from Resource Extraction

Royalties paid by oil and gas and mining companies can serve as an effective way to compensate for the extraction of one resource by helping to conserve another.

Land and Water Conservation Fund, United States

The U.S. Land and Water Conservation Fund generates its revenues from royalties paid by oil companies for offshore oil and gas drilling. The fees are from leases made in agreement with the U.S.

government. Since its establishment in 1964, the fund has provided almost \$10 billion for the protection of land for national parks and reserves. Individual states, including Florida and Louisiana, have established similar conservation funds that are financed from payments for resource extraction on state-owned land and coastal waters.

4.5 Fines for Environmental Damage

Some countries use the fines collected for pollution damage to finance long-term conservation programs that are not limited to cleaning up the specific damage caused by the polluter. As described below, settlements may also be reached to mitigate specific pollution damage caused by oil spills, and special funds may be allocated in advance to finance cleanup operations.

Exxon Valdez Oil Spill Trustee Council, United States

www.evostc.state.ak.us

The Exxon Corporation was ordered by a U.S. Federal District Court to pay \$1.5 billion in fines and settlement charges for damage claims arising from the huge oil spill caused by the oil tanker *Exxon Valdez* off the coast of Alaska. The court required Exxon to pay

- \$150 million in criminal fines, of which \$12 million went to the North American Wetlands Conservation Fund
- \$100 million in criminal restitution for injuries caused to the fish, wildlife and lands of the spill region, which was evenly divided into payments to the federal and state governments
- \$900 million to restore resources that suffered a substantial loss or decline as a result of the oil spill

The *Exxon Valdez* Oil Spill Trustee Council was established to administer the last category of funds. Forty percent of the \$900 million is dedicated to providing guaranteed funding for the Gulf of Alaska Ecosystem Monitoring and Research Program, a long-term scientific effort to better understand and manage the biological components of one of the world's most commercially productive marine ecosystems. Sixty percent is being used for habitat protection in the spill region, through the purchasing of a series of conservation easements and real estate in strategically located habitats along Prince William Sound.

Oil Spill Revolving Fund, Straits of Malacca

The Straits of Malacca Oil Spill Revolving Fund is a good example of cooperation between the countries of Indonesia, Malaysia and Singapore and the users of the Malacca and Singapore straits for the

purpose of safeguarding that marine environment. The fund was established in 1981 through a Memorandum of Understanding (MOU) signed by Indonesia, Malaysia, Singapore and the Malacca Strait Council, which is supported by the Japanese shipping community.

Under the MOU, the Nippon Foundation and the Petroleum Association of Japan contributed 400 million yen (about \$5 million) as the principal sum for the revolving fund. At the end of 2008, the fund had 480 million yen (about \$5.1 million) and had been drawn from on two occasions since it was established. The fund is managed by the three states on a rotational basis for a period of five years each. The Revolving Fund Committee establishes rules and procedures for administering the fund (*The Revolving Fund in the*

Straits of Malacca and Singapore, 2008).

The Malacca and Singapore straits are some of the busiest and most important channels in the world for oil tankers. They are surrounded by Malaysia, Indonesia and Singapore, but are considered to be international waters. The damages from a major oil spill in the straits could be great. In a disaster scenario where rapid response is essential, action could be delayed as the three countries negotiate their respective responsibilities. The revolving fund serves as a governance and funding mechanism that provides ready financial support for emergency response to oil spills. Following the oil spill, the company or individual deemed responsible for the damage must reimburse the revolving fund for any cleanup expenses incurred.



Fishing Industry Revenues

The seas have long been regarded as a global commons where resources are inexhaustible and free for the taking. However, many marine species have been depleted — and many more are threatened with extinction — as a result of a rapidly growing human population and extensive overfishing. But in spite of a general decline in fisheries productivity, the world fishing industry still reported revenue upwards of \$157 billion in 2005 (Food and Agriculture Organization, 2006).

To ensure healthy ocean productivity into the future, substantial capital investments are needed to promote sustainable fisheries management and to establish and maintain marine protected areas for key spawning grounds. This chapter describes financing mechanisms and economic incentive mechanisms that have been applied for marine conservation, both within and outside of marine protected areas. Tradable fishing quotas, fish levies, economic incentives for sustainable fishing, revenue from aquaculture, and fines from illegal fishing have been used to improve ecosystem health and sustain fishing revenue.

5.1 Catch Shares

Limited-access privilege programs are used to promote conservation and sustainable use by privatizing exploited fisheries through a market-based mechanism. These market mechanisms include individual fishing quotas (or individual transferable quotas) community quotas (allocated to communities dependent on fisheries for income and used mostly to promote community development) and fishery association quotas.

Under a limited-access privilege program, a government fisheries agency or an industry-wide association of fisheries allocates specific shares of the total allowable catch of a given fish species in a given area to specific individuals, community groups, associations or companies. This is often done on the basis of the current or historical shares in a particular fishery, although lotteries and auctions have also been used to allocate quotas. Fishermen may fish up to, but not over, their allotted quota, or they may trade some or all of their quota to another fisherman (or to a conservation NGO) for market price.

The most common sanctions for violating quota limits are imposition of a fine or reduction of the violator's quotas for the following year(s). The government agency administering the quota system measures current fish stocks to calculate the total allowable catch for each target species and to determine the most appropriate size and boundary for each fishery. Limited-access privilege programs work best in places with a well-defined geographic scope, where the total number of fishing operators is small and law enforcement is effective (Environmental Defense Fund, 2008).

Individual Fishing Quotas, New Zealand

www.fish.govt.nz/en-nz/SOF/default.htm

In New Zealand, an individual transferable quota system (also known as the quota management system) has been operating successfully since 1986 for almost all species of commercially harvested fish. The quota system is managed and regulated by the New Zealand Ministry of Fisheries.

Currently, there are 126 species divided into 96 species groupings under the quota system. Approximately 60 species groupings have specific allowances for indigenous Maori and recreational fishermen. The current commercial value of the quota holdings is estimated at NZ\$3.8 billion (\$2.5 billion), which represents a steady increase since the introduction of the transferable quota system (New Zealand Ministry of Fisheries, 2009). The quota system generates lasting conservation results because it regulates the fishing industry by preventing overfishing, improves the economic efficiency of the fishing industry, and works toward best practices in fisheries management and monitoring to ensure sustainable numbers of fish stocks in New Zealand.

Individual Fishing Quotas, Iceland

www.fisheries.is/management/fisheries-management/individual-transferable-quotas

In an attempt to regulate the fishing industry, in 1990 Iceland's Fisheries Management Act established an individual trading quota system for vessel catch quotas. These quotas — set in response to the rapid

depletion of fish stocks such as the Icelandic herring — are permanent, divisible, and freely transferable. The quota shares per vessel are based on the catch made three years leading up to the original quota for a specific fish stock species, which for most groundfish was from 1981 to 1983.

The quota system in Iceland is managed and regulated by the Ministry of Fisheries and Agriculture. In 2007, the export value of marine products from Iceland totaled 125 billion Icelandic kronas (\$2.1 billion). Of this, 69 percent was from bottom fish and shellfish and roughly 20 percent was from pelagic fish species (herring and capelin). The industry provides 70 percent of the country's export earnings and employs 12 percent of the work force. Consequently, the Ministry of Fisheries strives for best management and conservation of the fish stock species by closely monitoring the individual trading quota system (Ministry of Fisheries, 2008).

Iceland also provides an example of fisheries quota management systems having a negative impact on conservation efforts. In January 2009, the government increased the number of local whale fishing fleets allowed to hunt over the next five years to a quota of at least 250 whales per year. According to the Icelandic Marine Research Institute, whalers are now permitted to hunt 100 minke whales, 100 fin whales and 50 sei whales. In comparison, in 2008 whalers were authorized to catch only 9 fin whales, 40 minke whales and no sei whales. Fin and sei whales are both listed as endangered species by the International Union for Conservation of Nature (IUCN). In the wake of Iceland's current economic crisis, the increase in whale quotas demonstrates the powerful hold the fishing industry has over political will (*Daily Mail*, 2009).

5.2 Fish Levies

Conservation levies charged to the commercial fishing industry provide a direct stream of revenue for conserving fish and mitigating the impact the fishing industry has on other sensitive marine species. Conservation levies are a statutory mandate, usually in the form of a tax, to generate money for conservation. Fish catch and service levies can be charged to fisheries as a way of recovering a portion of the costs related to scientific research, fisheries management, and administration of individual fishing quotas. Conservation levies are typically charged on a specific fish species, whereas fish catch levies are charged based on the volume of fish caught.

In some countries, even though the payment of levies is mandatory and collected by the government fisheries agency, the revenue can go to private industry groups and conservation groups for conservation activities.

Salmon Conservation Levy, Ireland

www.cfb.ie/legislation/salmon.htm

Salmon stocks around the world are plummeting at alarming rates. In 2006, the government of Ireland decided to implement conservation levies that would work toward a comprehensive salmon conservation effort in Ireland. The salmon conservation levies are applied to all salmon rod licenses and commercial salmon fishing licenses. Commercial license levies for

salmon in 2009 range from €20 (\$25) for juveniles to €134 (\$173) for adults. The Regional Fisheries Board is the statutory agency responsible for salmon conservation and management. Through the salmon conservation levy, the Fisheries Board raised €11.3 million (\$16.6 million) in 2008, including €0.4 million (\$589,600) in spending (Central Fisheries Board, 2009). The revenue generated from these levies is invested in wild salmon management initiatives designed to rehabilitate wild salmon stocks and catalyze salmon habitat improvement.

5.3 Revenue from Aquaculture

According to the UN Food and Agriculture Organization, aquaculture makes up almost half (73 million tons) of the world supply of seafood (150 million tons). By some estimates, aquaculture is projected to surpass wild harvest in fisheries production and supply in the next 10 years. Since aquaculture is emerging as a competitive alternative to the fishing industry, revenue from aquaculture production could be a substantial source of funding for conservation activities, as illustrated by these examples from Honduras, Ecuador, and Australia.

www.fao.org/docrep/009/a0699e/A0699E00.HTM

Tilapia Aquaculture in Regal Springs, Honduras

www.regalsprings.com

Regal Springs Tilapia is one of the largest producers of tilapia in the world. The company invests in conservation and social projects with communities in Honduras, Indonesia and Mexico.

In Honduras, one of the company's projects, "Fish for Trees," provides community members with the opportunity to start their own tilapia aquafarms by giving them a percentage the company's fingerlings, feed, and tilapia cages. The profits from this project go back into community projects, such as planting trees to prevent soil erosion, installing electricity to reduce the use of wood for cooking, policing the forest against illegal logging, supporting health clinics, and investing in conservation education. To date, revenues from fish sales are \$2,400,000, of which \$514,000 in profits are being reinvested in community projects. Regal Springs has also invested \$150,000 per year of their own money in additional community and conservation projects. Their approach to fish farming and conservation are to incorporate a holistic strategy of sustainable business profits, education, environmental protection, and community infrastructure development.

Shrimp Aquaculture, Ecuador

www.biocentinela.com

Founded in 2003, BioCentinela is an organic-certified saltwater shrimp company that promotes and invests in mangrove reforestation programs. Partnering with The Nature Conservancy's EcoEnterprises Fund, BioCentinela originally received a \$30,000 business start-up loan in 2002, and is expected to generate a revenue of over \$6 million by 2009. To date, BioCentinela has restored over 87 hectares (215 acres) of mangrove forests, and continues to take over abandoned shrimp farms to promote sustainable aquaculture practices. According to the EcoEnterprises Fund, a recent biodiversity assessment of the restored mangrove forests uncovered that four bird species and nine fish species have returned to the restored area since BioCentinela began their reforestation efforts (EcoEnterprises Fund, 2008).

Seahorse Aquaculture, Australia

www.seahorse-australia.com.au/index.html

Seahorse populations are rapidly declining due to overfishing and habitat loss. They have high

economic value in traditional Chinese medicine (TCM) and private aquariums. Currently, 24.5 million seahorses are harvested each year for use in TCM. Aquaculture is one emerging method of conserving the current wild stocks of seahorses and putting an economic value on seahorses that are farmed sustainably. Seahorse Australia is a commercial seahorse farm that

is approved by CITES and the government of Australia to breed and sell captive seahorses for the global aquarium trade and for TCM use. Revenue from the sale of seahorses from Seahorse Australia goes toward supporting sustainable aquaculture and educational programming about the dwindling wild sea horse populations in Australia.

5.4 Fines for Illegal Fishing

In many countries, fines for illegal fishing are paid entirely into the national treasury and are not used for conservation purposes. This may also be the case for proceeds from sales of confiscated fish that were harvested illegally. In countries that collect money from fines and forfeiture, a source of sustainable conservation finance may be accessed by convincing the government to allocate some or all of these funds to conservation.

Illegal Fishing in Primeiras and Segundas, Mozambique

<http://af.reuters.com/article/mozambiqueNews/idAFLM16617020090122>

WWF works in partnership with the Mozambique Navy, the Maritime Administration, and local communities to monitor marine resources in the Primeiras and Segundas Archipelago. The joint efforts promote sustainable resource management and a reduction in conflicts between semi-industrial and industrial fisheries through patrols and confiscation of fishing equipment. WWF and our partners are continuing to adapt our strategies to find the best solution to tackle the problem of illegal fishing in Primeiras and Segundas. Currently, the government of Mozambique does not require that revenues from the confiscation and sale of illegal boats, fishing equipment, or fish catch be earmarked for conservation. With revenue from illegal fishing fines in Mozambique estimated at \$38 million per year, some portion could potentially be channeled toward conservation and fisheries management.

Illegal Fishing Penalties in Florida, United States

www.leg.state.fl.us/Statutes/index.cfm?App_mode=Display_Statute&Search_String=&URL=Ch0379/Sec337.HTM

Florida law requires that in all cases of illegal taking, sale, possession, or transportation of saltwater fish or products, the fishing devices used must be confiscated. Proceeds from the sale of this confiscated equipment are deposited in the Marine Resources Conservation Trust Fund to be used for law enforcement purposes. To date, the trust fund has invested \$38 million annually in law enforcement and marine management activities in Florida (Marine Resources Conservation Trust Fund, 2008).



Real Estate and Economic Activity

Various types of financing mechanisms have been used to protect land and expand public land holdings for the purpose of conservation. Conservation concessions and land lease agreements have been introduced as alternatives to land protection and to more traditional ways to conserve land, such as wilderness areas or national parks. Adding a real estate-related tax to development projects can also help generate substantial revenue for conservation and help compensate for development impacts. Many U.S. states impose surcharges on property and real estate development, and use the revenue to acquire land for parks and permanent open spaces (as illustrated in the example from California).

6.1 Conservation Concessions

A concession is a contractual agreement, usually extending over decades, between a government and a nongovernmental party. Traditionally, concessions are used for resource extraction, such as logging and mining. Conservation concessions usually involve some type of financial compensation to the government or local communities in exchange for biodiversity conservation. Private entities or NGOs can invest in conservation concessions to help ensure the preservation of a particular area. Peru established its first formal forest conservation concession, Los Amigos, in 2001, and has since created several hundred concessions that produce products and services while safeguarding biodiversity. As illustrated in the examples below, concessions can be effective ways to encourage micro-enterprises that support community-based development while promoting sustainable resource management.

Brazil Nut Concessions, Peru

www.cepf.net/Documents/Final.ACA.BrazilNutFinal_Report.pdf

Forest concessions have been part of Peruvian forestry legislation since 2000. Up until 2008, the national forest agency INRENA handled the legal approval and awarding of Peru's forest concessions. More than 7 million hectares (17.3 million acres) in Peru are under forest concessions; of these, more than 603,000 ha (1.49 million acres) are certified timber concessions and over 45,000 ha (111,200 acres) are non-timber, including Brazil nut concessions (INRENA). Beginning in 2009, the Dirección General Forestal y de Fauna

Silvestre (DGFFS), in Peru's Department of Agriculture, took on forest concessions. Ideally, the award process should involve substantial consultations with the public, including local and regional stakeholders, local communities, and the private sector. DGFFS generally supports the concessions that appears the most appealing from technical and financial standpoints.

In 2005, 130 Brazil nut farmers in the Madre de Dios Amazon region of Peru won formal Brazil nut concessions from INRENA. The concessions protect 224,000 ha (553,500 acres) of primary tropical forest. Here, Brazil nuts are harvested from mapped areas and natural stands (not plantations), according to sustainable forest management plans. More than 27,000 ha (66,720 acres) have been cer-

tified by the Forest Stewardship Council. The harvesters sell the nuts to local shelling factories that pack and export the products overseas. The activity provides more than half of the yearly income for over 1,000 Brazil nut producers in the Amazon and has helped to protect about 1 million ha (nearly 2.5 million acres) of forest from deforestation (CEPF, 2005).

Community Forest Concessions, Petén, Guatemala

Community-based sustainable forest management concessions exist all over the world and were first introduced in the Maya Biosphere Reserve in 1995. The Maya Biosphere Reserve is the largest protected area in Central America and extends across 2.1 million hectares (5.2 million acres). In 2005 the area had 17 community-forest concessions, including about 520,342 ha (1.29 million acres) (*Forest Concessions: A Successful Model*. USAID, 2006). The forest concessions are granted and administered by the National Council for Protected Areas (CONAP). Enterprises with concessions can extract and market timber as well as nontimber forest products according to annual management plans approved by CONAP. All concessions must be certified by the Forest Stewardship Council.

The concessions obtain much of their financing from commercial banks that have provided smaller individual loans of about \$13,000, on up to larger packaged loans of \$1.4 million, across several concessions. The U.S. Agency for International Development has also helped subsidize the program (Junkin, 2007). During some years, U.S. subsidies of about \$8 million

amounted to half of the concessions' logging revenues. In 2005, the concessions provided workers about \$10 per day — about twice the pay of most agricultural workers in the region — and generated about \$4 million in revenue (Davis, 2005).

The Wildlife Conservation Lease Program, Kenya

The Wildlife Conservation Lease Program is managed by the Wildlife Foundation with a goal of protecting 60,000 acres of prime wildlife habitat in and around Nairobi National Park. The selected area is an important dispersal and migration area for the park's wildlife. The program was born of consultations between the park management authority and local stakeholders, and is supported by funding from The Nature Conservancy. Initial funding support came from the Wildlife Trust, Friends of Nairobi National Park, and the Wildlife Foundation.

The pilot project that in 2000 began with 214 acres owned by two households has grown to 10,000 acres. More than 160 families participate in the program. Under the agreement with the Wildlife Conservation League, landowners living outside the boundaries of the park agree to keep their lands unfenced and free from cultivation. In return they receive compensation in the amount of \$4 per acre per year. They also agree to manage their lands for wildlife and sustainable livestock grazing in the traditional pastoral way. Since this effort was initiated, there has been a resurgence of wildlife in the park, including the return of lions and other big cats (*Kenya Maasai Wildlife*, 2005).

6.2 Fees from Real Estate Development

Development mitigation fees are usually collected based on the per-acre impact of new development, and then tied to funding habitat preservation. In the United States, mitigation fees are often a major funding source for local habitat acquisition and conservation projects.

Development Impact Fees, California, United States

www.qcode.us/codes/laquinta/view.php?topic=3-3_34&frames=on

Development impact fees are enforced in many parts of the U.S. as a way to internalize more of the public costs of new development. Typically the fees are used to fund schools, roads, or other public infrastructure. Increasingly, impact fees are being adopted to compensate for the loss of open space, habitat or species.

The Coachella Valley Multiple Species Habitat Conservation Plan incorporates Local Development Mitigation Fees (LDMFs), a type of development impact fee under California law covering the cities and county of Riverside. The fees are imposed on any new development project in this area. The fee is based on a per-acre fee, as well as a unit fee for residential development. In 2008, the Coachella Valley of Governments got the final permit from the U.S. Fish and Wildlife Service to move forward with the conservation plan. Through funding raised from the development mitigation fees, the plan will permanently conserve 240,000 acres of natural desert open space and protect 27 sensitive plant and animal species.

Real Estate Transfer Tax, Maryland, United States

www.dnr.state.md.us/land/pos/index.asp

The state of Maryland has a 40-year-old program to raise funds for the purchase of open space using a real estate transfer tax. In Maryland, any purchase of land or real estate, whether new or existing, personal or commercial, is subject to a transfer tax at the time of sale. Fees generated from the tax are earmarked for the Maryland Open Space Program, which acquires open space, key habitats and public recreation property. Half the funds are used for statewide land acquisition and half the funds are disbursed to Maryland counties for local use, making the transfer tax more politically palatable to local constituencies.



Revenue from the Sale and Trade of Wildlife

Revenues generated from both the legal and illegal sale and trade of plants and wildlife products can generate millions of dollars for conservation activities. It is important that any sale or trade of these products is guided by a solid framework designed to support sustainable activities and to deter and penalize unsustainable activities.

Governments, NGOs, multilateral institutions, academic and research organizations, and private businesses have worked for decades to develop a framework which allows wildlife trade to occur in a legal and sustainable way. This framework is maintained by international conventions, such as the Convention on International Trade in Endangered Species (CITES) and associated national laws. The U.S. Lacey Act also cracks down on illegal trading of plants and wildlife and imposes significant fines that are rolled back into conservation activities. Financing mechanisms such as fines, wildlife auctions, loans, and in-situ-ex-situ partnerships can contribute funding to species conservation.

7.1 CITES

CITES estimates that the annual international trade of wildlife (both legal and illegal) is worth billions of dollars. The international sale and trade of commodities from protected species is highly regulated by CITES, which provides a legal framework for wildlife trade-related laws and regulations at the national level. Countries that are parties to CITES and wish to sell or trade goods restricted by CITES must issue permits based on management and scientific findings. If they wish to change the status of a species on the CITES appendices, they must submit proposals for approval at the CITES Conference of Parties. CITES rules and associated national laws also enable countries to raise revenue for conservation through fines imposed on violators (CITES, 2008).

In February of 2009, Wing Quon Enterprises Ltd., a traditional Asian medicine firm based in Canada, was convicted of possessing and attempting to sell medicine containing parts from tigers and other protected species. The company was fined \$36,000, which was awarded by the court to WWF's species program TRAFFIC to help fund the program's conservation initiatives.

www.traffic.org/home/2009/2/19/canadian-firm-convicted-of-trading-in-tiger-parts.html

7.2 Lacey Act, United States

The U.S. federal law known as the Lacey Act bans all illegal trading of plants and wildlife that have been illegally taken, possessed, transported or sold. The act was amended in May 2008 to include a broader range of plants and plant products, including timber products. The Lacey Act is considered to be one of the most comprehensive forces in the U.S. federal arsenal to combat the illegal taking of plants and wildlife. With increasing activity in wildlife trafficking, the act has evolved to become an important weapon to protect animals and plants domestically and abroad. The act also establishes penalties for violation, including fines and confiscation of goods and vessels. In some instances, the criminal fines are given over to foundations supporting conservation efforts.

In 2007, a California church group was convicted of violating the Lacey Act by illegally trafficking thousands of undersized California leopard sharks from San Francisco Bay to aquarium dealers across the U.S., the United Kingdom, and the Netherlands for profit. California law prohibits the possession, buying or selling of leopard sharks less than 36 inches in length. The sentence for the six convicted felons included restitution payments totaling \$410,000. The money went to a \$1.5 million partnership fund created to restore marine habitat for California leopard sharks and other wildlife in the San Francisco Bay (U.S. Fish and Wildlife Service, 2007). www.fws.gov/news/NewsReleases/showNews.cfm?newsId=BBF007E1-99AA-4D20-214B7BFDB996A336

7.3 Wildlife Auctions

Wildlife auctions have been used for years, primarily in Africa, to help finance conservation. Surplus game from various protected areas is sold at auction and purchased mostly by private game reserves to supplement their stock. The species are awarded a monetary value based on their rarity or desirability, and are sold to the highest bidder. Profits generated from auction sales have been used to finance the development of new parks and the management and protection of existing protected areas.

Wildlife auctions, especially those related to ivory trade, are widely questioned as effective and appropriate tools for raising revenue for conservation. While some argue that auctions allow for responsibly harvested and certified wildlife parts to generate much-needed funding for conservation, others say that adequate monitoring is difficult and the practice ultimately encourages further illegal trading.

Ivory Auction, South Africa, Namibia, Botswana and Zimbabwe

Amid some controversy, CITES approved the auction of more than 100 tons of ivory by South Africa, Namibia, Botswana and Zimbabwe in 2008. It was the first official sale of ivory since 1999, and the ivory came mostly from elephants that had died of natural causes. Buyers from China and Japan were required to comply with strict conditions and were prohibited from exporting the ivory. CITES also committed to monitoring the ivory trade in China and Japan to ensure that companies were not mixing illegal ivory into legally sourced shipments. The auction raised \$15 million across the four countries and is being used to support conservation efforts (CITES, 2008).

Ezemvelo KZN Wildlife Game Auction, South Africa

www.kznwildlife.com/site/index.html

Ezemvelo KZN Wildlife is a for-profit conservation organization in the province of KwaZulu-Natal in South Africa. Every year the organization holds a game auction to sell surplus wildlife from the protected areas it manages. The auction is promoted as a sustainable activity and a game management tool that helps maintain the quality of South Africa's game stock. In 2008, the auction raised R12,061,600 (about \$1.3 million) toward the organization's annual operating budget. The organization provides ecotourism services and engages in conservation and land stewardship activities with local landowners and other stakeholders.

7.4 In Situ-Ex Situ Species Conservation Partnerships

In situ-ex situ conservation partnerships, typically between governments and zoos (e.g., China lending pandas to U.S. zoos), can support biodiversity conservation activities while providing benefits to both sides. The in-situ institution (usually a government wildlife agency) can earn steady revenue during the term of the partnership and use it to help fund local conservation activities associated with the designated species. In exchange, the ex-situ organization gains access to a rare species that can be integrated into scientific research and highlighted in educational exhibits.

Because the species on loan becomes an attraction that generates entrance and viewing fees, such partnerships can increase the global populations of threatened species by supporting conservation programs in wild and captive breeding programs ex-situ. These partnerships should adhere to strict international and national guidelines that direct funds to conservation, with a focus on conservation programs in countries of origin that enhance species populations in the wild.

Long-term Giant Panda Conservation Partnership, U.S.-China

http://library.fws.gov/IA_Pubs/panda_policy03.pdf

Since the late 1990s, U.S. zoos have entered into agreements with the Chinese government (the China Wildlife Conservation Association) for long-term loans of pandas. The U.S. Fish and Wildlife Service has specific policy guidelines by which it evaluates proposals and issues an import permit if the proposal is approved. The primary goal of the policy is to ensure that permitted activities will directly contribute to the survival and recovery of the wild panda population. These pandas and their offspring remain the property of China during the loan period, and the ex-situ borrower pays an annual loan fee to China.

In an effort to impact the decline of wild populations, the San Diego National Zoo has committed funding to the long-term study of giant pandas in captivity and also to in-situ conservation efforts to reverse the threats to the species' population in the wild. Working with World Wildlife Fund, the U.S. Fish and Wildlife Service, the China Wildlife Conservation Association, and the Chinese Association of Zoological Gardens, the San Diego zoo contributes more than \$1 million each year to China, most of which is designated for conservation of wild giant pandas and their habitat.

Sumatran Rhino Partnership, U.S.-Indonesia

www.msnbc.msn.com/id/18404500

Indonesia and the United States have a long-standing partnership regarding rhino conservation. The Indonesian Rhino Conservation Programme, the International Rhino Foundation, IUCN - Asian Rhino Specialist Group, and the government of Indonesia have worked together since the early 1980s to address the rapidly decreasing population of the critically endangered Sumatran rhino.

Originally, the Sumatran Rhino Trust was authorized to pay the government of Indonesia \$60,000 for each rhino captured for a captive breeding program that was designed to lessen the impact on wild populations. Through this arrangement, two Sumatran rhinos were sent to the Cincinnati Zoo and Botanical Gardens in the late 1980s. They have produced three calves in the only U.S.-based captive breeding program. In 2001, the first calf born at the Cincinnati Zoo was sent to the Sumatran Rhino Sanctuary in Indonesia as an in-kind donation, with hopes that once the calf reaches maturity, more offspring will be produced in Indonesia (*Save the Rhino*, 2009).



Sustainable Capital and Environmental Investment Funds

Sustainable capital is an area of public and private financing that utilizes access to favorable equity, credit, and microfinance as an incentive to promote environmental sustainability and responsible business practices. Sustainable capital is not widespread to date, and is generally practiced by small-scale, niche companies who are testing lending or investment concepts for innovative social and environmental benefits which, if successful, can be integrated into mainstream finance as criteria or regulations.

Examples of sustainable capital are outlined below and include environmental investment or biodiversity enterprise funds; forest securitization, or more broadly, eco securitization; favorable credit or loan terms tied to performance incentives or standards required by public or private lenders; and emerging microfinance programs to promote community conservation and social development.

An increasingly common recipient of sustainable capital are companies that participate in industry-specific certification programs such as the Forest Stewardship Council (FSC), the Marine Stewardship Council (MSC), and various commodity certification roundtables. Sustainable capital also targets those companies that provide goods and services such as ecotourism or organic farming.

This chapter examines both private and public sources of sustainable capital, but is heavily oriented to private sector funds and innovations. There have been a number of innovative developments in targeting public funding such as loans to promote sustainable business practices. However, this chapter does not encompass traditional government aid agency (GAA) funds and activities in support of biodiversity, nor does it cover the large and rapidly growing multilateral and bilateral carbon funds (for example, the World Bank Carbon Finance Facilities or the Norwegian Norad Carbon Fund). Finally, the fund does not cover here an increasing number of mutual funds devoted to socially responsible investing (for example, the Calvert Social Investment Funds).

8.1 Environmental Investment Funds

Environmental Investment Funds (sometimes called Biodiversity Enterprise Funds) have the primary objective of supporting biodiversity conservation through sustainable business practices in the portfolio of companies with whom the fund has invested its capital. Investors in these funds are offered the prospect of a reasonable return on their investment. Such investment vehicles offer private investors both a financial as well as a conservation “return” on their investment.

Funds that have been formed to date vary in size and scope, but none have reached either the scale or the competitive rate of return of a typical venture capital, hedge or other private investment fund. The funds in existence offer a mix of equity investments and credit to companies such as forest producers, organic farming enterprises, and ecotourism establishments. Some funds also offer business skills and environmental technical advice to the companies in the areas in which they have a presence (this is particularly prevalent in the area of microfinance).

Asian Conservation Company

www.asianconserve.com

The Asian Conservation Company (ACC) was created in 2001 with assistance from WWF, the International Finance Corporation, and the Global Environment Facility to forge a link between private sector investment and biodiversity conservation in Asia. The company aims to assemble a portfolio of private equity investments that proactively conserve biodiversity while remaining profitable. ACC invests in companies that operate in high-priority biodiversity areas and work to mitigate negative environmental impacts. Company profits provide a sustainable financing stream to support long-term biodiversity conservation.

The Asian Conservation Foundation was established by the ACC to manage its conservation support activities. To date, ACC has raised \$12 million and has invested in three projects: a sustainably managed fishery, an ecotourism venture, and a transportation company serving the ecotourism project. ACC has since divested from the sustainably managed fishery project, and is focused on responsible/sustainable tourism.

Verde Ventures

<http://web.conservation.org/xp/verdeventures>

Verde Ventures, managed by Conservation International (CI), was established in 2004 to provide affordable debt and equity financing to businesses that play a critical role in conserving biodiversity. The fund focuses on providing loans to small- and medium-sized enterprises (SMEs; assets of \$5 million or less) that operate in areas of important biodiversity, including sustainable coffee production and ecotourism operations. Each project needs to demonstrate clear socioeconomic and conservation benefits and be located in one of CI's priority areas to be eligible for funding. The fund has to date invested \$12 million in 34 enterprises in 12 countries and areas that are considered of high biodiversity value.

EcoEnterprises Fund

www.ecoenterprisesfund.com/index.htm

The EcoEnterprises Fund, managed by The Nature Conservancy, is an investment fund that supports environmental entrepreneurs in Latin America and the Caribbean. It has invested \$6.2 million in targeted financing and technical assistance in 23 companies. By requiring matching funds from other investors, the fund has leveraged about \$38 million.

The fund's portfolio includes a mix of equity investments and loans in ecotourism lodges and activities, small enterprises deriving timber and nontimber forest products from the forest, and sustainable agriculture and aquaculture. For instance, the fund has invested in Jolyka Bolivia, S.R.L., a high-quality wood flooring company that relies on sustainably sourced and FSC-certified wood. Jolyka was the first company in Bolivia to receive FSC certification. The company also invests a percentage of its earnings in Fundación Jolyka, a local nonprofit organization that supports community-based sustainable forestry activities that contribute to the growth of forest reserves in protected areas and national parks in Bolivia.

The EcoEnterprises Fund is legally incorporated as a Panamanian investment company, Fondo EcoEmpresas, S.A. The fund provides financing for up to 50 percent of any single venture and requires leverage funding for the additional investment. Accredited investors are invited to purchase shares directly in the venture fund at the minimum of \$50,000. Returns on investment are distributed at the end of the fund's life. The fund is currently nearing the end of its planned investments. A next generation, EcoEnterprises Fund II, is in the planning stages. This fund hopes to scale up its activities to \$30 million as initial investments.

8.2 Forest or Eco Securitization

Securitization is an important form of financing for forest management and can be a potential mechanism to secure sustainable capital. Securitization involves pooling and repackaging of financial assets into securities; in forest operations, these might include managed forest areas that are in line to be harvested. The projected cash flow from these assets are securitized and then sold to investors and expected to produce a return on their investment. The securitization provides the additional benefit of isolating the cash-producing assets from the company that holds the assets and, in doing so, isolating the investors in the new security from company-related risks.

By using securitization, the company can issue debt securities and raise funds at a lower interest rate and cost than if the company itself issued the debt securities to investors or borrowed funds from a bank. Forest and eco securitization have been implemented in some cases to raise capital for a company to develop more sustainable business practices. Taken a step further, these techniques have also been used to raise funding for the protection of valuable forests and biodiversity, as illustrated by the examples from Chile and Guyana below.

Private Equity Forestry Fund, Chile

Fondo de Inversión Forestal Lignum (the Lignum Investment Fund) was launched in 2006 and is a \$39.4 million Chilean fund and the first Latin American forestry investment fund. This is an interesting example of a private equity forestry fund that was established to help enable small and medium landowners to significantly increase their current income and to monetize and optimize the value of their landholdings. A centerpiece of Lignum's strategy is the proposed use of a forest-backed securitization to obtain alternative capital market funding for its work.

Part of the Lignum Fund's strategy is to have an important environmental impact through sustainable forestry management practices and the afforestation of dry, eroded land that currently has marginal alternative agricultural use. In its first three years, the fund plans to acquire approximately 12,000 hectares (29,650 acres) of immature pine and eucalyptus forests, and plant approximately 15,000 hectares (37,070 acres) of land with pine and eucalyptus under long-term land-use rights agreements (contracts) with small and medium landowners. Although these are nonnative, commercially harvestable species, the concept is to reforest highly degraded, eroded lands and provide longer-term social benefits as well.

On the basis of these contracts, the fund intends to issue a securitized financial instrument backed entirely by net cash flows generated from the harvest and commercialization of its forestry assets. Following this securitization, fund investors will receive cash

proceeds as both dividends and a return of capital. The Lignum Investment Fund has a four-year duration, with the possibility of an additional four-year extension if approved by the fund investors. Upon the final liquidation of the fund, the investors will also receive an in-kind distribution of the subordinated tranche of the securitized bonds (IFC, 2006).

Forest-backed Bonds, Guyana

<http://canopycapital.co.uk/investments/index.html>

In 2008, United Kingdom-based Canopy Capital announced a partnership with the International Centre in Guyana that involves guaranteed payments over a five-year period in return for rights to market the ecosystem services produced by a rain forest reserve. These services are defined as rainfall, cooling of the atmosphere, carbon and biodiversity storage, and weather moderation.

The funds are expected to provide livelihoods to 7,000 indigenous people who depend on the reserve and to support conservation of the rain forest. The rights will in turn be packaged and sold to investors as forest-backed bonds that are expected to acquire value over time. Up to 90 percent of the profits will be shared with the Iwokrama community in the long-term.

8.3 Favorable Credit Tied to Sustainable Practice Standards

A number of networks are emerging in different parts of the world with the intention to connect environmentally responsible businesses to both public and private sector lenders. For example, the Finance Alliance for Sustainable Trade (FAST) is a global, nonprofit association that represents lenders and producers dedicated to bringing sustainable products to market. Root Capital is a nonprofit social investment fund that provides loans to small- and medium-sized enterprises to help transform rural economies and poor and environmentally vulnerable places.

In the public funding arena, some major bilateral aid agencies such as the French Development Agency (AFD) are exploring concepts for placing criteria on their lending to promote sustainable resource-using businesses like tourism or forestry. The International Finance Corporation (IFC), the private sector arm of the World Bank Group, adopted in 2006 a set of performance standards that specifically acknowledge the importance of sustainable development and biodiversity conservation. Companies must adhere to these standards when applying for project loans.

www.ifc.org/ifcext/sustainability.nsf/Content/PerformanceStandards

Finance Alliance for Sustainable Trade

www.fastinternational.org

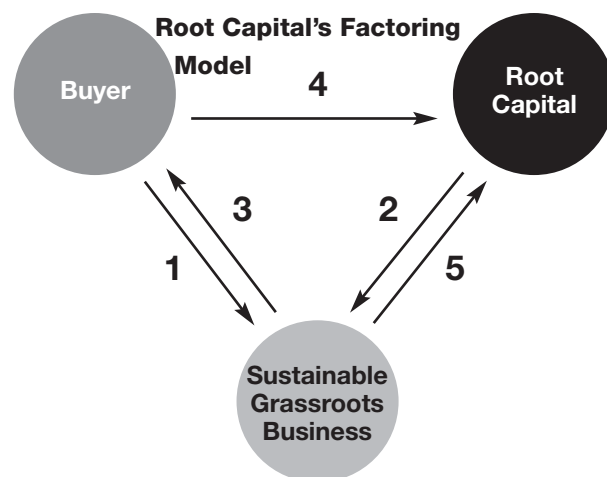
The Finance Alliance for Sustainable Trade (FAST) serves as an intermediary between the lender and the producer to facilitate access to loan capital. It also develops instruments to help mitigate risk, and helps to identify opportunities for streamlining the lending process by sharing best practices. FAST is further developing Lending Marketplace, an online market tool, to provide information about financing in the field of sustainable trade, connecting socially and environmentally oriented lenders and sustainable producers. Since FAST opened up to membership in May 2008, about 120 members from different sectors, especially the financial, coffee, and forestry sectors, have signed up.

Root Capital

www.rootcapital.org

Root Capital is a nonprofit investment fund that provides credit to small farmer and artisan associations, including coffee, ecotourism and forestry in developing countries. Root capital targets those community groups that are considered too risky for local bank loans, yet too large for microfinance loans. By providing both short-term capital as well as longer-term investments, Root Capital helps to build business partnerships and serves as a loan intermediary be-

tween the associations and large companies such as Starbucks, Marks & Spencer, and Whole Foods. With a repayment rate of 99 percent, Root Capital has serviced over 340,000 artisans and farmers, dispersed about \$100 million, and made over 500 loans (Root Capital).



1. Order goods
2. Make loan with purchase order as collateral
3. Ship goods
4. Pay for goods
5. Remit payment, net of loan principal and interest

Source: Rootcapital

8.4 Microfinance for Sustainable and Community-based Conservation

In the last 30 years, investments in microfinance operations from financial intermediaries have grown and have proven to be successful in terms of both risk management and profitability (BlueOrchard, 2009). Micro-entrepreneurs who borrow at market rates have shown a repayment track record that beats that of most commercial banks (97% on average) (Grameen Foundation, 2009). Importantly, the lessons learned from early microfinance programs like Grameen are now being adopted by mainstream financial institutions that recognize business opportunities in this market.

Microfinance cannot only be applied to boost local businesses and entrepreneurship, but can also be a powerful development tool, generating job creation and better living standards. As the following examples show, microfinance lending practices that acknowledge a “triple bottom-line” approach (people, planet, profit) can have positive impacts on biodiversity conservation.

Microfinance and Sustainability, Tanzania and Kenya

Since 1999 a number of projects in Tanzania and Kenya have used microfinance to promote sustainable development and conservation in communities surrounding important protected areas. A microfinance model that has shown success in generating local income while encouraging natural resource protection is the Village Saving and Loan Associations (VSLA) model. VSLA is a network of informal voluntary groups of individuals, established for the purpose of mobilizing savings for lending back to the group members. The model has been applied as an entry point for health, education, and environmental projects in Tanzania, Kenya, and Zanzibar.

The VSLA, among other things, provides a number of opportunities to improve environmental sustainability of individual community-based businesses that are members in the network. The main mechanism includes setting prohibitions against unsustainable business activities and encouraging alternative income generating activities that generate fewer environmental impacts. The VSLA model has shown good performance in comparison to other community-based microfinance models and is well suited to enhance financial, social, and environmental sustainability in many rural and conservation situations (Wild et al, 2008).

Community-based Microfinance for Biogas and Forest Management, Nepal

www.worldwildlife.org/what/communityaction/people/phe/family/easternhimalayas.html

In the Terai Arc Landscape in Nepal, WWF has been actively engaging with local community groups to introduce biogas stoves that directly help to conserve forest habitat in the area. Biogas stoves provide an alternative fuel, methane, which is produced in a simple digester that breaks down human and animal waste.

The technology generates a constant supply of cooking fuel, replacing the need for fuelwood. In addition to considerable forest restoration and biodiversity benefits associated with lowering the rates of wood cutting and overgrazing, the use of biogas provides significant social and health benefits including removal of wood smoke from the home and reducing the burden on women to gather wood.

WWF collaborates with local Community Forest User Groups (CFUGs) to finance biogas plant installations. In one example, a single CFUG earned about \$175,000 by operating tourism activities, including wildlife viewing on elephant back, canoe trips, birdwatching, and entry fees, in the buffer zone forest surrounding the Chitwan National Park in Nepal. This income is allowing this CFUG to provide roughly \$34 to each member to cost-share for a biogas plant installation.

Many of the CFUGs that WWF works with in Nepal also operate small credit schemes targeted at poor households. The schemes provide small loans at low interest rates that can be paid back in installments. Thus, even poor households can afford biogas.

Allocations from Government Revenues

Government revenue allocations can be an important source of funding for biodiversity conservation. However, in many developing countries, where limited government budgets are needed to support basic human needs, direct government support of conservation is rare or inadequate. Fluctuations in international markets and poor economic conditions cause government revenues to vary year by year, resulting in insufficient and uncertain funding for conservation. By earmarking revenues collected through various fiscal instruments, governments can stabilize and even increase conservation allocations. Examples of such mechanisms include earmarked government taxes on tourism and on commodities such as gasoline, structured debt relief earmarked to conservation, and government bonds.

9.1 Debt Relief

Since the first debt relief for conservation program was executed in Bolivia in 1987, such programs have contributed more than \$1 billion to conservation around the world. Referred to as “debt-for-nature swaps,” they free up debtor country resources that are obligated to paying off international debt, converting a portion of those obligations into local currency to support conservation activities. Such debt relief sometimes provides social benefits in addition.

Two primary debt relief instruments have provided funding for the environment: commercial debt-for-nature swaps and bilateral debt-for-nature swaps. In commercial swaps, a commercial creditor sells debt owned by a foreign government at a discount on the secondary market (usually to an NGO). Historically, commercial swaps generated \$117 million for conservation around the world, but they are no longer common.

Bilateral debt-for-nature swaps are similar to commercial swaps, but involve “sovereign” debt owed by one government to another rather than commercial debt owed to a bank or commercial creditor. In a bilateral debt agreement, the creditor government cancels or discounts a portion of debt in exchange for the debtor country’s commitment to finance local conservation activities. Agreements are negotiated between government ministries, but are often facilitated by conservation NGOs. In some cases, environmental organizations have contributed funds to bilateral debt agreements to further leverage the financial commitment to conservation. Bilateral debt swaps continue to support conservation, with most recent debt swaps taking place through the support of the German, French, and U.S. governments.

Debt relief generates millions of local dollars for conservation but contains some risk. Local currency devaluation and inflation can reduce or even eliminate the cash value of the conservation commitment. Furthermore, the revenue from debt relief arrangements may not actually be put toward its originally intended use. To mitigate these risks, debt relief agreements should be designed to minimize market vulnerability and provide for contingency action in the event such a situation arises. Agreements can be struck with the government in advance to use a trust fund to manage the proceeds from the swap. Also, while debt relief for the environment usually supports a range of conservation priorities, agreements can be structured to promote the conservation of specific species, habitats or protected areas.

Debt Development Contract (C2D), France

The French public development aid program C2D has a forecasted budget of about 3.3 billion Euros. It serves as a debt-reduction program for heavily indebted poor countries. Thirty-eight countries are eligible to receive aid under this initiative. The French government has worked with WWF to structure three major debt-for-nature swaps — with Cameroon (\$25 million allocated over five years), Gabon (\$82 million allocated over 10 years), and Madagascar (see details below).

In 2008, Madagascar and France negotiated the largest debt swap in Madagascar's history. The agreement allocated about \$20 million toward preserving the country's rich and largely endemic biodiversity. The funding went into the Madagascar Biodiversity Fund endowment to help provide the long-term support needed to manage protected areas. That debt swap — together with a 2003 debt swap between Germany and Madagascar in the amount of 11 million Euros (\$13 million) — helped the fund exceed its target capital goal of \$50 million.

In Madagascar, 70 percent of the population lives below the poverty line, making the country one of the poorest in the world. With high levels of debt, Madagascar has limited domestic resources to address environmental degradation. The debt-for-nature swap freed up resources in Madagascar for much-needed conservation activities.

Tropical Forest Conservation Act, United States

www.usaid.gov/our_work/environment/forestry/tfca.html

The Tropical Forest Conservation Act (TFCA) was established by the U.S. Congress in 1998 to provide funding for bilateral debt reduction in support of

tropical forest conservation around the world. There are three types of debt treatment options from which countries can choose.

One option is debt reduction or redirection. Through this option, a country can choose to make interest and/or principal payments on treated debt, in local currency, to a forest fund. The payments remain in the country rather than being paid to the United States. A second option is the subsidized debt-for-nature swap, through which the U.S. government and NGOs contribute funding to reduce or cancel a portion of the eligible host country's debt. Payments on treated debt are made in local currency for conservation activities as agreed by the U.S. government, the host country government, and the NGOs. Under the third option, debt buy-back, a country may purchase one or more eligible loans in U.S. dollars at a discount in exchange for a commitment to a tropical forest fund.

Although TFCA has historically focused on tropical forests, at the time of this writing the U.S. Congress was considering amending the TFCA to include the protection of coral reefs associated with coastal marine protected areas.

Since 2008, the U.S. government has made 14 of these agreements — with Bangladesh, Belize, Botswana, Colombia, Costa Rica, El Salvador, Guatemala, Jamaica, Panama (two agreements), Paraguay, the Philippines, and Peru (two agreements). The most recent agreement, signed with Peru in October 2008, complements past efforts in that country: an existing TFCA debt-for-nature program begun in 2002, a 1997 debt swap under the Enterprise for the Americas Initiative, and the U.S.-Peru Trade Promotion Agreement, which includes a number of forest protection provisions. With the addition of the 2008 agreement, Peru will be the largest beneficiary of the TFCA, with more than \$35 million generated for conservation. All of the TFCA debt-for-nature programs combined are expected to generate more than \$188 million to protect tropical forests (USAID, 2009).

9.2 Taxes Earmarked for Conservation

Government taxes earmarked for conservation provide a mechanism for countries to fund conservation efforts that might otherwise be neglected in direct budget allocations. Taxes can raise money from a variety of products or sources that may or may not have a direct connection between the fund source (taxpayer or investor) and recipient (conservation projects). Taxes can also serve as an incentive to discourage or promote certain

technology, economic development, or consumer behavior while helping to improve environmental quality. For example, a fuel or carbon tax on emissions is increasingly recognized as a viable option for curbing emissions and generating revenue that can be invested in forest conservation efforts (see section 1.3).

Gasoline Tax, Costa Rica

Costa Rica has long been at the forefront of introducing innovative government incentives to protect the country's forest biodiversity. In 1996 the country passed a forestry law that was based on a payment for ecosystem services approach. It sought to recognize the different benefits of forests and arrange for the beneficiaries to pay for forest services. The Private Forestry Project was introduced and became the foundation of Costa Rica's program to stimulate and reward carbon sequestration on private land. The Protected Areas Project was initiated to help finance the transfer of private land into park land or protected areas. Both of the projects are financed through a 1.5 percent value tax on gasoline or diesel paid by Costa Rican consumers. The tax generates millions of dollars each year.

Hunting and Fishing Tax, United States

<http://wsfrprograms.fws.gov/Subpages/ToolkitFiles/wract.pdf>

The Federal Aid in Wildlife Restoration Act (also known as the Pittman-Robertson Act) was approved by the U.S. Congress in 1937 and has been amended several times since. It created a federal excise tax that derives funds based on a 10-11 percent tax on arms and ammunition for hunting, sport fishing, and outdoor recreation equipment, as well as motor boat fuel.

This federal tax generates tens of millions of dollars annually, and those dollars are mandated to go back to state and local organizations to increase game and fish populations, expand habitat and train hunters. The revenue goes into a special trust fund managed by the U.S. Fish and Wildlife Service. Some funds are allotted to state wildlife conservation programs for wildlife restoration and the maintenance of hunting sports. Funds from taxes on motorboat gasoline, special fuel, and small engine gasoline go to the Aquatic Resources Trust Fund for marine-related access, education, and conservation activities. Since it was passed, the Federal Aid in Wildlife Restoration Act has raised \$75 billion.

9.3 Bonds for Conservation

Bonds are debts issued by governments, companies, and other institutions as a way to raise funds. The debt must be repaid by the seller over a specified time period. U.S. government bonds must be issued in one of three ways: as general obligation bonds, which are repaid from future tax revenues; as special revenue bonds, which are repaid from revenues generated by specific projects being financed; and as bonds that are hybrids of both.

Re-Greening Fund and Payment Bond, Indonesia

The Re-greening Fund (*Dana Reboisasi*) is managed by the National Government of Indonesia and shared with the provincial and district governments.

The fund is set up and managed as a performance bond: production forest concessions are required to pay into the fund, and their payment is returned if they have performed forest re-greening and rehabilitation on the areas they impact. The fund is being implemented from 2003 to 2009 to address land rehabilitation and to target 5 million hectares (12.4 million acres)

of degraded land nationwide. The funding allocation comes directly from the Ministry of Forestry's government budget.

The implementation of the Re-greening Fund has received criticism for being ineffective in addressing the problems of land and forest degradation. While funding has been allocated to rehabilitation programs, there is wider-scale failure to effectively manage the

remaining natural forests. The rehabilitation efforts are also short-lived, lasting only as long as funding is available. No clear mechanism for fund distribution to provincial, district or local government exists. This has caused significant delay in implementing activities and achieving the desired conservation outcomes (*Rupes Synthesis Notes No.3*, 2007).

9.4 Lottery Revenues

Administered at the national or state level by government agencies or licensed private operators, lotteries can generate substantial income to supplement government budgets. Since lottery revenues are usually kept separate from the general budget, spending them is not subject to the same legal restrictions as spending tax revenues. This special status has allowed many governments to use lotteries as a way to raise money for socially beneficial purposes such as education, health, historic preservation, and nature conservation. There is strong incentive for lottery promoters to allocate a portion of lottery revenues to good public causes because lotteries are a government-sanctioned form of gambling and are regarded by some people as morally and socially objectionable.

Postcode Lotteries, the Netherlands and Sweden

www.postkodlotteriet.se/Hem.htm

www.postcodeloterij.nl/home.htm

Launched in 1989, the Dutch Postcode Lottery is a national charity lottery that uses postcodes as entries rather than lottery tickets. Thousands of winners are drawn every month. There are standard jackpot winners, as well as shared prize winners (all lottery subscribers in the winning area share the prize). Fifty percent of the lottery's gross proceeds go to direct support of charities, with an emphasis on those pursuing development aid, social justice, and environmental protection. While the individual prize winnings are smaller than in a traditional lottery, the number of

winners is larger. Since 1989, the lottery has donated more than 2.3 billion Euros and donated to many NGOs, including the Peace Parks Foundation, WWF, Greenpeace, and the Clinton Foundation.

The Swedish national lottery system was established in 2005, based on the Dutch model. It has since become very popular — by the end of 2007 about 600,000 Swedish households had participated, with over 700,000 tickets sold per month. A lottery ticket costs 150 Swedish kronor per month (\$22). Participants pay by direct debit and are then entered in all the draws of that month. There's one draw for the Postcode Prize each week, and one monthly draw for smaller prizes. By early 2009, the Swedish Postcode Lottery had 15 beneficiaries, including Save the Children, Greenpeace, and WWF. It has generated about 615 million Swedish kronor (\$66 million).

9.5 Vehicle License Plates

Motor vehicle agencies can sell specialty license plates as a way to raise money and awareness for designated causes. In the United States, most states offer a special environmental license plate, and at least 29 states offer plates specifically to support species conservation. The license plates are sold at a premium compared to the fees charged for standard license plates, and the difference in price is allocated to the earmarked cause. Revenue generated by wildlife plates is typically directed to government wildlife agencies or conservation NGOs. Adorned with images of locally significant species, wildlife plates in the United States help support non-game wildlife programs and the protection of selected species. These plates have raised millions of dollars for state wildlife conservation.

State Conservation License Plates, United States

www.conservationplate.org

Revenue from premium license plates has become an important way to fund conservation activities and state parks in the United States. In the state of Texas, for instance, a licence plate for conservation costs \$30, of which \$22 goes directly to fund conservation efforts in the state. Different license plate

themes support different conservation activities. The Texas Parks and Wildlife Department has offered the Bluebonnet License Plate since 2001, and it has grossed more than \$800,000 to benefit state parks. The Whitetail Deer License Plate has grossed more than \$450,000 since 2002 to benefit big game management and state parks. The department also leverages the license plate revenues by combining them with partner matches from State Wildlife Grants recipients, who are required to contribute 50 percent of their project costs.

9.6 Wildlife Stamps

Wildlife stamps can be developed in a variety of ways to support conservation efforts. They can target specific species such as the marine turtle in Papua New Guinea, or apply to wider environmental issues such as climate change. National postal agencies can use wildlife fundraising or “semipostal” stamps to raise revenue for species conservation. These stamps are sold at a premium compared to regular first class stamps, and the difference in price supports the cause depicted on the stamp. In addition to semipostal stamps, governments can raise revenue for species conservation through hunting and fishing stamps. In the U.S., the Federal Duck Stamp is a collector’s stamp, and in some cases its purchase is required in addition to a hunting license.

Special Postal Stamp, Germany

www.gtz.de/en/themen/umwelt-infrastruktur/oekoeffizienz/8024.htm

Since 1992, the German Federal Ministry of Finance, in collaboration with the German Ministry of Environment, Nature Conservation, and Nuclear Safety, has issued a series of premium-priced postage stamps in support of biodiversity conservation efforts worldwide. The stamps have an “environmental surcharge” above the usual stamp price. The special stamps feature different conservation topics from year to year. The 2005 edition was named “Climate Protection Concerns Us All” and it funded initiatives in climate change education, training, and project implementation. Knut, the Berlin Zoo’s famous polar bear, was featured on a 2008 special issue stamp that shows one-year-old Knut with the slogan “Natur weltweit bewahren” (“Preserve nature worldwide”).



Federal Collectible Duck Stamp, United States

www.duckstamp.com/mm5

The Federal Duck Stamp Program has been called one of the most successful conservation programs ever initiated. Federal Duck Stamps are issued as a collector’s stamp, and the revenue supports wetland conservation in the United States. The U.S. Fish and Wildlife Service sponsors a very prestigious annual stamp-design contest, to which artists from across the country submit their work for judging by a panel of artists and wildlife experts. The winning art is used on the following year’s stamp. Ninety-eight cents out of every dollar generated by the sale of Federal Duck Stamps goes directly to purchase or lease wetland habitat for protection in the U.S. National Wildlife Refuge System. Since the launch of the program in 1934 it has generated more than \$670 million, which has been used to help purchase or lease over 5.2 million acres for protection (The Encyclopedia of Earth, 2009).



In addition to a state hunting license, hunters over the age of 16 must purchase a Federal Duck Stamp on

an annual basis if they want to hunt migratory waterfowl. Birders and other frequenters of national wildlife refuges purchase a \$15 Federal Duck Stamp each year to gain free admission to refuges. The stamps and limited-edition prints are also purchased by many as an investment. The stamps can be bought at many post offices across the country and online.

Junior Duck Stamps were introduced in 1989 to support the U.S. Fish and Wildlife Service's Junior Duck Stamp environmental education program. Revenue generated by the sales of Junior Duck Stamps funds environmental education programs in all U.S. states and territories.

WWF Stamp Collection, International

With over 1 billion stamps printed and close to 400 issues by the end of October 2006, the sale of stamps from the WWF conservation stamp collection has raised over 20 million Swiss francs (\$18.5 million) in royalties and has become an important source of funding for WWF's conservation activities. The WWF stamp collection is the largest thematic collection in the world. Since 1983, some 1,500 different stamps have been issued in 211 countries.

Proceeds from the sale of the stamps have helped fund a range of activities — from the conservation of endangered species to helping forest- and coastal-dwelling communities improve their standards of living through sustainable use of their natural resources. Each year, up to 18 different countries have issued stamps featuring their own threatened animals. In 2007, WWF and Papua New Guinea's national postal service issued a new series of postal stamps that feature the six species of endangered marine turtles found in Papua New Guinea.



Conservation Trust Funds

More than 50 conservation trust funds have been established around the world to finance nature conservation (see map, next page). Most conservation trust funds are set up as legally independent institutions (i.e., nongovernmental) managed by an independent board of directors. These trust funds typically provide long-term, sustainable funding for conservation activities and/or protected area agencies through a local grant-making process. They have become particularly prevalent in Latin America — the Latin American and Caribbean Network of Environmental Funds (RedLAC) was established as an association of more than 20 conservation trust funds.

In addition to providing a stable source of funding for conservation, this type of trust fund often benefits the conservation community by promoting coordination among various stakeholders such as NGOs, government agencies, community groups, and the private sector; by offering technical assistance in the design and implementation of conservation strategies; and by building local capacity for biodiversity conservation and sustainable resource management (*Conservation Finance Alliance Guide*, 2003).

Conservation trust funds are just one of the tools for financing biodiversity conservation and are not necessarily appropriate or feasible for all countries and all situations. Studies (the *GEF Evaluation of Conservation Trust Funds*, 1998) have suggested four conditions essential for establishing conservation trust funds:

- 1) the issue or program to be funded needs a commitment of at least 10 to 15 years
- 2) the government actively supports establishing a public-private sector mechanism outside direct government control
- 3) a critical mass of people from diverse sectors of society have agreed to work together to achieve biodiversity conservation and sustainable development
- 4) a basic fabric of legal and financial practices and supporting institutions (including banking, auditing and contracting) exists in which people have confidence

A trust fund consists of money or other assets that are legally restricted to a specified purpose and must be kept separate from other sources of money (such as a government agency's regular budget). Depending on the country's legal system, trust funds can be established as foundations, nonprofit corporations, or common-law trusts. A conservation trust fund can be incorporated in the country of intended beneficiaries, or it can be incorporated as an offshore fund in a country with more favorable legal regulations and support.

Conservation trust funds may be managed as one of three different types of funds: an endowment fund, where the investment income but not the capital is spent; a sinking fund, where the income and part of the capital is spent every year, eventually sinking the fund to zero within a predetermined time frame; or a revolving fund, which continually receives and spends new revenues from earmarked taxes or fees.

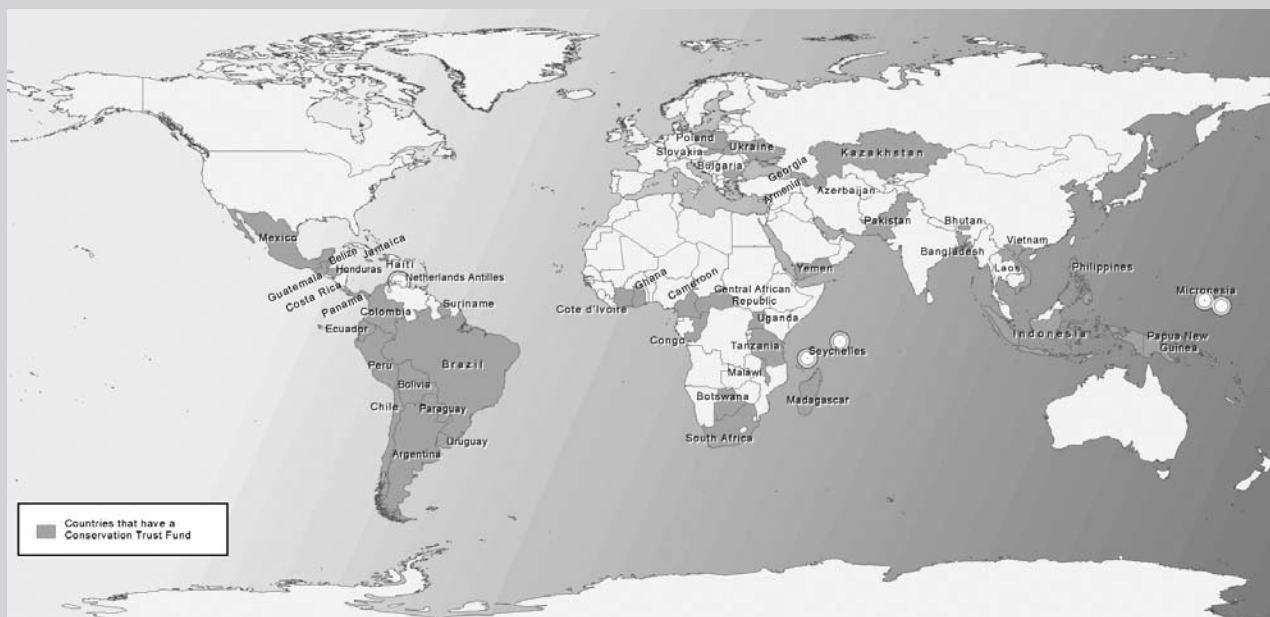
Most conservation trust funds are today managed as *umbrella funds*, meaning they are hybrids of the above distinct categories of funds. Umbrella funds are designed to manage fund accounts for different purposes, but under a single legal and institutional structure (*Rapid Review of Conservation Trust Funds*, 2008).

Trust funds are often set up as the anchor of, or as part of, a financial strategy. Conservation trust funds receive and

manage funding from debt-for-nature swaps, public (GAA) and private grants or donations, and earmarked taxes and fees. Emerging sources of financing for conservation trust funds include funding from private sector and market-based mechanisms, such as payments for watershed services and carbon and biodiversity offset revenue.

Conservation trust funds are increasingly being considered as viable financing vehicles for administering payments generated from ecosystem services. For instance, in the case of the Sierra de las Minas Water Fund, the fund has been set up to receive user fees from watershed services (see case study below). A fund can act as trustee for a payment for environmental services; bundle ecosystem services and/or buyers and sellers to help achieve economies of scale; strengthen institutions engaged in the payment transactions; monitor, evaluate, and enforce compliance with payment contracts; broker negotiations; serve as an equitable distributor of benefits generated by the payment arrangement; and, assist in the valuation of payments (USAID, 2009).

COUNTRIES THAT HAVE A CONSERVATION TRUST FUND



Madagascar Biodiversity Fund

(Fondation pour les Aires Protégées et la Biodiversité de Madagascar)

www.fondation-biodiversite.mg/fr

Established in 2005, the Madagascar Biodiversity Fund supports biodiversity conservation in that country by financing and promoting the effective protection of existing protected areas and the creation of new ones. The creation of the foundation was a major step toward securing sustainable financing for the protected areas system and reducing dependence on external funding. Due to its strong

institutional base, the foundation has to date attracted significant commitment from the national government as well as bilateral institutions and nonprofit organizations.

The foundation has surpassed its funding goal of \$50 million by 2012 with \$53 million committed to date. This success was achieved largely through two major debt-for-nature swaps negotiated between the governments of France (for \$20 million) and Germany (\$13 million). The French debt-for-nature swap (C2D) was the largest yet for Madagascar. Fund donations have also been made by several other private and public donors including the World Bank, the MacArthur Foundation, WWF, and Conservation International.

Mexican Nature Conservation Fund

(Fondo Mexicano para la Conservación de la Naturaleza)

www.fmcn.org

The Mexican Nature Conservation Fund was established as a private, civil association under Mexican law in 1994. The fund's mission is to conserve Mexico's biodiversity and encourage the sustainable use of natural resources. It does so by promoting strategic actions and providing medium- to long-term financial support. It was created through extensive nationwide consultations and with strong backing from then-President Ernesto Zedillo Ponce de León and the NGO and business communities.

When the fund was established, it had little guidance on how to focus its grants program. To help determine its strategic direction and emphasis for greatest impact, the fund used feedback from its grantees and others involved in conservation. It provided partial financial support for, and participated actively in, a national priority-setting process led by the National Council for Knowledge and Use of Biodiversity (CONABIO). This process led to the identification of approximately 150 priority areas for biodiversity conservation (*Global Environment Facility*, 1998).

To date this fund, one of the largest in existence, has raised close to \$100 million dollars toward its endowment. Major donations have come from USAID, the Mexican government, the Global Environment Facility, the David and Lucile Packard Foundation, and the Ford Foundation. Its participatory strategy allows local communities and civil society groups to access grants, training and other support to develop sustainable activities in and around the country's critical ecosystems. A large part of the endowment also goes toward protected areas via the protected area fund managed by the Mexican Nature Conservation Fund.

Sangha Tri-National Foundation, Central Africa

(Foundation Tri-National de la Sangha)

<http://carpe.umd.edu/TNS%20Anglais.pdf>

The Sangha Tri-National (TNS) Foundation is an independent conservation trust fund that was established to raise millions of dollars for the protection

and management of a transboundary forest complex called the Sangha Tri-National. Spanning a breadth of 9 million acres in the Congo Basin, the complex reaches into three countries: Cameroon, the Central African Republic, and the Republic of the Congo.

Established in 2007, the foundation has already received over 10 million Euros (\$14 million) in endowment commitments from both public- and private-sector donors, including the German Development Bank (KfW) and the French Development Agency (Afd).

The TNS Foundation is one of the first conservation trust funds set up in Francophone Africa. The foundation is one of only six multi-country, regional or transboundary funds in the world. The other regional trust funds are the Mesoamerican Reef Fund, the Foundation for Eastern Carpathian Biodiversity Conservation, the Caucasus Protected Areas Fund, the Sea Sustainable Trust, and the Micronesia Conservation Trust.

Sierra de las Minas Water Fund, Guatemala

(Fondo del Agua de la Reserva de Biosfera Sierra de las Minas)

www.watershedmarkets.org/casestudies/Guatemala_Sierra_Minas.html

The Sierra de las Minas Water Fund is a unique conservation trust fund created to generate sustainable funding for the restoration and protection of watersheds in Guatemala's Sierra de las Minas Biosphere and Protected Areas. The fund was set up to administer payments to cover the costs of the watershed services provided and as a mechanism to engage a diverse set of stakeholders in the negotiation of equitable payment for the watershed services program.

Through the program, some of the major water users in the watershed, including local industries, pay a fee to use the resource. Revenue earned from the fees is managed and disbursed by the fund for watershed restoration and conservation efforts. (See longer description in Section 2.1)

The Brazilian Biodiversity Fund

(Brasil Fundo Brasileiro para a Biodiversidade)

www.funbio.org.br/publique/web/cgi/cgilua.exe/sys/start.htm?tpl=home&USerActiveTemplate=funbio_english

The Brazilian Biodiversity Fund (FUNBIO) was founded as a nonprofit association in 1995 with the help of a \$20 million dollar grant from the Global Environment Facility (GEF). FUNBIO provides financial and material support to initiatives related to conservation and sustainable use of biodiversity in Brazil. The purpose of establishing the fund as a transparent mechanism was also to attract further funding from the

private sector and help raise revenue to ensure long-term support of conservation activities.

FUNBIO also administers the Amazon Region Protected Areas (ARPA) Programme and the ARPA trust fund, which has received funding support from the GEF, the government of Brazil, KfW, and WWF. At the end of 2008, the ARPA trust fund had an endowment of about \$24 million and another \$12 million committed by the German government. The program's objective is to expand and consolidate the protected areas system in the Amazon region of Brazil. ARPA is managed like a trust fund and has an independent management committee that supervises the program. ARPA receives administrative and technical support for projects it undertakes from FUNBIO.

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